May-Britt Öhman

Taming Exotic Beauties:
Swedish Hydropower Constructions in Tanzania in the Era of Development Assistance, 1960s – 1990s

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1. INTRODUCTION
Fig. 1. The Great Ruaha River in Tanzania in its calm mood, January 1969. Photo: Erling/Ulla Reinius/ private archive.
The rumour of my death is much exaggerated! Would I be finished as a charmer! Hardly – last time the Swedish girls turned me down I searched for and found comfort abroad and I still remember the conquests of the interwar period. What a wonderful smile had the little Malaysian Chenderoh and how delightful was the mystic Indian Mettur.

(...) The wild Finnish woman Jäniskoski kept me busy during the war. When the borders opened again, I felt ready to conquer the world.

What contrasts were not the warm and soft Rasul in Pakistan and the proud but chilly Laxà in Iceland. The veiled Nubian beauty Aswan occupied me for many years and left a love for Egypt, which eventually took the character of the godlike Abu Simbel.

Oh, these exotic beauties, how tempting, how rebellious. Much too soon I had to abandon the enchanting Sigura-Gura at Sumatra and the passionate Tavera in the Dominican Republic.

Now I am besieging the beautiful negress Senegal and I won’t let the little Serbian Vardar run away without having seen my tricks. And the world-famous Marocca has become no less desirable since the days of Guy de Maupassant – she who in rattling Mediterranean French explained how matrimonial fidelity was perceived down there. ¹

How has Sweden – in the form of Swedish companies, Swedish state agencies and Swedish tax funds - become a major actor in hydropower construction within the framework of development assistance? How has the Swedish involvement influenced the design of those hydropower schemes and their impact on people living in the areas of the large dams created to feed the hydropower plants? These were the fundamental questions that once led me to embark upon this dissertation. The questions arose from my political engagement in the early 1990s, coupled with an essay in the field of development studies on the World Bank involvement, including the Swedish participation, in the Sardar Sarovar Dam, built in the face of much opposition on the Narmada River in India.² Along the way I came across the prose poem published 1966 in VBBnytt, the house magazine of the then largest hydropower

¹ Lg. (1966) Translation from Swedish by the author.
² Öhman (1993)
contractor in Sweden. As well as providing evidence that the Swedish hydropower sector was searching for new rivers to exploit, in many ways, the prose poem offers an excellent introduction explaining how my initial questions turned into academic research and how I ended up by adopting feminist and postcolonial perspectives, methodologies and writing styles.

The prose poem is a description of a Swedish man – the male hydropower engineer, who finds himself rejected by the Swedish girls – the Swedish rivers – and is now turning abroad to find new objects – new girls to conquer - new rivers to tame. Most readers familiar with feminist academic research can already relate to Carolyn Merchant’s work from 1980 on the transition from an organic world view to the modern outlook fostered by the Scientific Revolution. Within the organic world view the earth was described in two opposing metaphors; as a “nurturing mother: a kindly beneficent female who provided for the needs of mankind in an ordered, planned universe” and its opposite, that of an uncontrollable, wild woman that could bring chaos and disaster. Merchant argued that the second world view brought about the modern idea, that of “power over nature”. She writes “[a]n organically oriented mentality in which female principles played an important role was undermined and replaced by a mechanically oriented mentality that either eliminated or used female principles in an exploitative manner”.

Besides the obvious imagery of mechanized control of nature the prose poem also points at things specific to Sweden in the era of development assistance which both ran parallel with and succeeded the period of decolonization. Let us start with the context of hydropower and its setting within Sweden. Sweden being a well watered land, in the early 20th century the exploitation of watercourses was made the backbone of Swedish industrialization. From being a poor and backward country, from which its inhabitants emigrated in great numbers (a fifth of its population left in the period 1840s-1930s) in search of a better future, mainly in the United States, Sweden developed within a few decades into an industrialized nation with the exploitation of the rivers and the expansion of the electrical grid, built by Swedish companies and Swedish engineers. Along with this development, the training and education of engineers was of great importance, and a specific cadre of engineers, “water builders” to translate the

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1 Merchant (1989), 2
2 Ibid.
3 Ibid., 2-6
4 On the Swedish immigration see for instance Beijbom (1995)
Swedish name for them literally, i.e. civil engineers – was developed. The culture surrounding the construction of the Swedish hydropower plant was also very specific in its way. The construction of large-scale hydropower plants took place far from the bigger cities, in remote areas, and the people building the plant would stay for the few years of construction and then move on to the next place. There is even a specific word for the builders of the hydropower plants – vattenrallare – a transfer to the water sector of the word for the worker who built the railway, navvies. The hydropower construction sector became a culture of its own, where its people lived a nomadic life, moving from place to place, according to the pace of new construction sites. The building projects in faraway places, a dangerous and difficult life, also gave rise to myths and tales of heroism.1 Being the ultimate basis for providing electricity to factories, turning the rivers into coal – the “white coal” – during the industrialization of Sweden, the hydropower construction sector also acquired an important status as a symbol of Swedish progress.

By the 1960s, however, hydropower was being questioned in Sweden. Opposition to further exploitation of the so far unregulated rivers had become intense, and at the same time a new technology for large-scale production of electricity – nuclear power – was emerging. The identity of the “water builder” was threatened. The Swedish girls – the rivers – were turning him down. It is a he, as for a long time, the engineer was certain to be a man, in Sweden – as in most other countries – and the sector is still male-dominated.

Now, let us consider for a moment the postcolonial context of hydropower construction in the development assistance era. Daniel R Headrick and Michael Adas have discussed science and technology used in the quest for domination in the age of colonization, as well as their implications for the positioning of the colonized as the “other”, considered primitive, uncivilized.2 The post-colonial perspective, with its forefront figures Edward Said (for the “Orient”) and Valentin Mudimbe (regarding “Africa”), is the view that colonialism has not been consigned to the past, but that today’s society is still marked by the colonial era economically, politically and socially.3

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1 Cf Bursell (1984)
2 Headrick (1981); Adas (1989)
3 Said (1978); Mudimbe (1988)
First, while Sweden – as a nation - had not been successful in the European quest for colonial occupation of other continents in the 19th century, it still, with regard to the “Swedish girls” - the ones that turned down the marriage proposals, forms part of a colonial context. The rivers in question were the big rivers of the northern parts of Sweden – Sapmi – subject since the 16th century to internal colonization and exploitation. Secondly, the “mystic” and “exotic” rivers mentioned are all situated within a European colonial framework. The rivers Chenderoh and Mettur were among the first international “conquests” of Swedish hydropower constructors as they cooperated with contractors in the British Empire in control of Malaysia and India in the 1920s and 1930s. The decolonization and development assistance period from the 1950s and onwards opened up a new market for Swedish hydropower construction in Africa, Asia and Latin America. In the prose poem the new era is present in the hydropower sites Rasul, Assuan, Sigura-gura and Tavera and the rivers Senegal and Laxá. All are sites and rivers are within the context of recently independent nations, opening up for the Swedish art of seduction.

Finally, the vision of the male colonial eye is fulfilled as the author mentions “Marocca”. “Marocca” is not a river, nor a hydropower construction site, but a woman in a short story by the French 19th century author Guy de Maupassant:

Her name was Marroca, and she pronounced it as if there were a dozen r's in it. She was the daughter of Spanish colonists, and had married a Frenchman, whose name was Pontabeze. She was a splendid girl, of a somewhat animal, but superb type. Her eyes were always glowing with passion; her half-open mouth, her sharp teeth, and even her smiles, had something ferociously loving about them; and her curious, long and straight breasts, which were as pointed as if they had been pears of flesh, and as elastic as if they contained steel springs, gave her whole body something of the animal, made her a sort of inferior and magnificent being, a creature who was destined for unbridled love, and which roused in me the idea of those ancient deities, who gave expression to their tenderness on the grass and under the trees. And then, her mind was as simple as two and two are four, and a sonorous laugh served her instead of thought. ¹

¹ de Maupassant (1909) The short story was published also in Sweden, in Swedish, first time in 1909: de Maupassant (1909): Fröken Fifi och andra noveller.
The short novel is about a man having an intimate relationship with a married woman, in “Africa” – by the text understood in the French colonized territory of modern Algeria. The short novel is written like a letter in which the narrator describes his adventures in Africa, and how one of the striking features of the continent is the lack of potable water and attractive women. Marocca, however, is unique, in her animal-like beauty, and the narrator is happy to find that she is also full of passion, a primitive lust for sex, and that she does not bother about the fact that she is married. In the mind of the author of the prose poem on hydropower, sexuality is apparently not only present in a figurative sense. Foreign, beautiful and lustful women are also an aspect of what is promised to the Swedish male hydropower engineer, part of the normality of his nomadic life.

While the prose poem displays a mosaic of the features of male colonial vision, it does not mention the fundamental basis for the new Swedish attempts at conquest, state-funded development assistance. Although Swedish hydropower constructors had been working around the world since the very beginning of the 20th century, “besieging” foreign “exotic beauties”, the decolonization period – the development assistance era – offered something new. Based on the perception of “doing good”, meaning contributing to development of poor nations and starving people, Swedish state funds in the service of “development assistance” gave a huge boost to the export of Swedish hydropower technology from the late 1960s onwards. In 1966, at the time when the prose poem was published, support to Swedish enterprises in hydropower projects in Africa via Swedish tax funds had just begun. Within a few years, the merger of Swedish development assistance and Swedish hydropower export became a fact. From having smaller contracts, alongside the big well known hydropower consultants – as in the construction of the Aswan High Dam, and the Teshi-Teshi in Zambia, the Great Ruaha power project in Tanzania, the case study in this dissertation, concerns the first time that Swedish hydropower engineers, with the help of Swedish development assistance, managed to become the main consultants for a large-scale hydropower project outside Sweden.

Since then, several billions crowns from Swedish tax funds has been spent on the construction of large-scale hydropower plant in Africa, Latin America and Asia. In 1997, a review of Swedish development assistance in the energy sector, consisting of hydropower, steam and gas turbine projects from 1970 to 1995, was carried out by the Swedish development agency,
SIDA. It concluded that, by 1997 the value of the hydropower projects reached SEK six billion, at 2001 prices. The total capacity installed via these hydropower projects amounted to 3170 MW, corresponding to about a quarter of the capacity installed in Sweden. However, these statistics are far from comprehensive. Swedish development assistance within the energy sector also includes contract-financed technical co-operation, meaning that Swedish companies who have won a contract in international bidding were granted credits totalling SEK 8 billion between 1985 and 2000. Nowadays, all hydropower projects with Swedish involvement outside Western Europe and the US have become part of Swedish development assistance finance, either bilateral – directly between Sweden and the receiving country - or multilateral – via international financing institutes, primarily the World Bank. Sweden, via the state development assistance sector, and its consulting and construction companies, has become one of the major actors in the world in hydroelectric power development.

The Swedish charmer, deceived by the Swedish “girls”, has certainly been successful elsewhere, but it would not have happened without help. Starting with seemingly simple questions, this dissertation contextualizes them from feminist postcolonial perspectives. While the case study in focus is the first great investment merging development assistance and the Swedish hydropower sector, the Great Ruaha power project in Tanzania, where construction started in 1970, I have opted to contextualize the events of the “conquest” of rivers within Swedish borders, in Sapmi, and the imagery of development assistance, enabling the “conquerors” to go abroad, in attempts to “tame” foreign rivers in exotic countries.

**Research contextualisation and inspirations**

The empirical focus of this study is on a large-scale hydropower scheme, the Great Ruaha power project, in Tanzania. Kidatu on the Great Ruaha river, where constructions began in 1969, became the first large-scale hydropower station in Tanzania. As such, it paved the way for the Tanzanian entrance into the big dam era. The final completion of the Kidatu/Great

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2 Ibid. Steam and gas turbine projects accounted for a sum of about SEK 1.5 billion, and an installed capacity of 850 MW.
3 Sida (2001); For further information on Swedish support through export credits see Sida Kraftfull…(2005) and Sida Räntefria…(2005)
Ruaha power project in 1980 – when the upstream regulation reservoir Mtera was completed – raised the installed hydropower capacity in Tanzania from 50 MW to 200 MW. Besides bringing Tanzania into the big dam era, the Kidatu hydropower station was the first large undertaking by Swedish bilateral aid, and functioned as the first larger merger of Swedish state funds for development assistance with the Swedish hydropower sector. Yet another aspect of the Great Ruaha power project is the transition from the colonial period to the independence and development assistance era, which at the same time meant a transition from British dominance in the Tanzanian power sector to Swedish dominance.

The Great Ruaha power project thus contains a set of complex aspects. Besides the technoscientific system that is a hydropower scheme, this specific case involves a transition from colonial period to independence and the ensuing development assistance era. It involves a growing Swedish development assistance, with claims of altruism in combination with export of Swedish technology, science, know-how and personnel within the hydropower sector. In this sense the subject treated might be referred to as “development studies”. There is an immense literature that deals with the subject of “development assistance”, “developing countries”, “aid relations” etc., yet relatively few historians and social scientists have ventured into analysing the Swedish state-supported technological transfer initiated during the 1950s -1970s. As these hydropower projects have become numerous and Sweden has become a major international actor in this sector, they are today an important part of Swedish history that calls for investigation. Sweden as an actor within the international development assistance sector is another area of importance for historians to study.

Secondly, this dissertation is written within the wider research field of Science and Technology studies (hereinafter referred to as STS). Within STS the focus is on the social construction of technological and scientific artefacts and statements, as well as analysis of the impact of these artefacts and statements on society. Technology and science are considered both as carriers of values and political ideologies and also as products of values and societal power structures.1 For instance, Langdon Winner argues in his article “Do artefacts have politics?” that technological artefacts are not value-free, but instead manifestations of political ideologies.2 Artefacts, Winner states, have both political intentions and political impacts. In his article he discusses the low bridges of specific Long Island parkways, according to him

1 See Bijker, Hughes, Pinch (1989)
2 Winner (1980)
designed to keep buses transporting poor people from going to a specific area – the Jones Beach. According to Winner, the design was politically motivated, with the intention of favouring someone’s particular interests, as, he argues, are all technological systems.  

Another author within the STS field that argues that technological projects carries political values is Gabrielle Hecht who in her analysis of the French post-war development of nuclear technology has used the concept of the “political design” of technology – meaning that political values are built into a specific design by the engineers - and the concept of “technopolitical regimes” – implying that there may be a clash of political values between different groups of constructors, as well as, on a macro-level, that the construction of technological artefacts is a means of constructing a national identity.  

Seen from this perspective, my study attempts at identifying the values and politics involved in large scale hydropower within Swedish development assistance.

To bring these both aspects together, writing a history of a development assistance project and to bring in the understanding of technology and science as carriers of value systems, I have found it fruitful to depart from postcolonial and feminist perspectives. Before starting on the presentation of my objective and basis for analysis, I first of all present studies to which I consider my study related. This contextualization should be seen as a general introduction to the basis for my perspectives and I have chosen not to include all the studies that I relate to here. Some of the studies of a more specific nature are presented in the different parts of the dissertation.

**Historical studies of technological systems in the context of colonization**

My original questions about Swedish investment in hydropower construction as development assistance have many similarities with those raised in studies on colonial expansion. Among many different aspects, three main themes seem to be prevalent: the role of technology as an

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1 Ibid.
2 Hecht (1998); Hecht (1994)
In The Tools of Empire: Technology and European Imperialism in the Nineteenth Century, Daniel R. Headrick addresses the issue of technology as a tool for colonial expansion, identifying the technologies that were important factors in the “new imperialism” – distinguished from the older form by its extension and legacy. According to Headrick, three stages, related to specific technologies and their functions in the introduction of the “new imperialism”, can be identified: penetration by steamboats and prophylactic use of quinine (to combat malaria), rapid-firing rifles and machine guns for the conquest, and the transport and telecommunications network as a means of controlling and sustaining the colonial territory. While claiming to step out of technological determinism, Headrick argues that the new European technologies functioned as both a motive for conquest, as well as an enabler. The cost of conquest was seriously reduced, and hence justified the enterprise, and once conquest worked out better – at a lower price, the incentive for further conquest became stronger.

The second theme is the theme of failed attempts at technology transfer and consequently the failure to industrialise and bring about economic progress. While this theme is recurrent amongst development economists and economic historians, it is best represented in the work of Daniel R. Headrick, The Tentacles of Progress: Technology Transfer in the Age of Imperialism, 1850-1940, the sequel to The Tools of Empire. Here Headrick discusses the failure of the transfer of technological knowledge and techniques to the colonial territories, meaning the failure of industrialization in the colonies. Headrick points to several explanations: the size of the technological gap between pre-industrial crafts and industrial technology, the illiteracy that obstructed the transfer of complex machine tools and modernization, and the high cost of starting up factories with the modern technology in the colonies being great obstacles. The greatest obstacle of all, however, according to Headrick, was the imperial context in which technical education was limited and indigenous entrepreneurs were discouraged. The European colonial elite did not promote competition from its colonial subjects. Headrick summarizes: “Simply stated, the reason the tropics experienced growth but little development under colonial rule is that investments went into

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1 Headrick (1981)
2 Ibid.
physical not human capital, and that the transfer of technology was more geographic than cultural”.

A more recent study in the same tradition by Jan af Geijerstam, *Landscapes of Technology Transfer. Swedish Ironmakers in India 1860-1864*, analyses the difficulties encountered by Swedish engineers, working for companies within the British colonial empire, in introducing modern ironmaking technology to India in the 19th century. While modern large-scale methods proved difficult to establish in an environment of traditional small-scale family-based ironmaking, the biggest reason for the failure of the introduction of the modern methods, according to af Geijerstam, was the colonial context. While British interests in India wished to develop ironmaking in India, back home in Great Britain, at the hub of the Empire, the interests were opposed. The latter interests won, leading to the abandonment of the attempts to industrialize India.

Although not discussing the technologies involved, this aspect of the conflict between centre and periphery – colonial empire and possessions – and reason for “underdevelopment” (failure in transfer of technology and failure in industrialization) of the former colonies, has also been discussed by the economists Andre Gunder Frank and Samir Amin. Frank and Amin both argue in terms of centre versus periphery, identifying a capitalistic strong centre which exploits the surplus created in the periphery and consequently leads to underdevelopment. Frank focused on underdevelopment in a Latin American context, arguing that instead of being reinvested in the respective countries of origin, the surplus created was transported to the USA. Frank sees this as the result of the lack of interest in the genuine development of the Latin American countries. Amin discusses European intervention in the African colonies, and the legacy of this in the decolonization period. He argues that an interdependent centre-periphery economy was created. While the “auto-centric economy”, corresponding to the European industrialized countries, was characterized by being self-reliant, but not self-sufficient, the peripheral economy was dominated by an overdeveloped export sector producing goods for luxury consumption and only a small sector producing for mass consumption. The weakness of the peripheral economy is its lack of links between agricultural and industrial sectors, as well as its lack of self-reliance, and also its dependence

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1 Headrick (1988), 384.
2 Geijerstam (2004)
3 Frank (1967)
on the world market as well as the dependence on the links to the centres of capital accumulation in the centre countries.¹

The third theme regards the vision of technology as the measure of Western superiority and the motivation for civilizing enterprises – both colonisation, and efforts after independence. The most extensive contribution on this theme is the work of Michael Adas, *Machines as the Measure of Men: Science, Technology, and Ideologies of Western Dominance.*² Adas analyses the role of scientific thought and technological innovation within the ideology of Western superiority in relation to non-Western peoples. The historical period starts with the late fifteenth century and ends with the twentieth. The geographical focus is limited to China, India and Africa. Adas' basic argument is that the ideology of Western technological superiority is one of the fundamental parts of the justification for the paternalistic civilizing mission as well as the rapid spread of European hegemony. According to Adas, European technological superiority was never a reality, but rather an ideological construction of European explorers and missionaries. Adas argues that Europeans, confronted with technological and scientific development on other continents, used a variety of ways to reduce and ridicule the achievements and to “other” them. If technology or scientific thought encountered in the non-Western region was more advanced or equal to the European, the non-Western inferiority was based on abstract elements of the culture such as religion or “barbaric” customs, as well as “primitive” methods of production and limited capacities for productivity. In cases where European science and technology were more advanced than in the non-Western region, for instance in the field of weaponry, this progress was considered a proof of Western superiority and extended far beyond the particular innovation.³

Another feature of the production of the ideology of Western superiority was the comparison of texts of completely different origin. For instance, European scholars would read religious Indian texts and from them conclude that the Indian knowledge in medicine was not as advanced as the European practices, meaning that a religious text could be an authority on medicine. This practice was according to Adas caused by limitations of access and translation capacity.⁴ Coming into the 20th century, Adas argues that the European ideology of

¹ Amin (1976); Amin (1988)  
² Adas (1989)  
³ Ibid.  
⁴ Ibid.
superiority based on technology was questioned, a result of the First World War and its effects on the European peoples. Instead the United States assumed the position of dominance via modernization theory. Modernization theory claims that Western ideas on scientific rational thought, mass production and efficient management of resources by the application of innovative technology is the answer that will bring social order and economic development. Adas argues that this view is latest shape of the imperialist civilizing mission.¹

Studies on Swedish development assistance

Several political scientists have written about Swedish (post-war) development assistance in terms of foreign policy, security policy, international translation of domestic Social Democratic welfare policy and/or pure commercial interest. Attempts to look into the actual activities within Swedish development assistance and historical links to their ideological base, on the other hand, are scarce. Many studies have also been made in an effort to show whether the representatives of Sweden have been altruistic, driven only by a desire to provide for development among the world’s poor – or realistic, safeguarding Swedish interests at various levels. In this section I will discuss the literature that deals mainly with the nature of Swedish development assistance either as altruistic or as driven by specific Swedish national interests.

Susan Holmberg has argued that Swedish development assistance can be seen as an extension of a national welfare policy. Her point of departure is that at the time of introduction of Swedish development assistance, Swedish trade with countries in “the third world” was extremely low. Only four per cent of Swedish exports went to areas in Africa and Asia. Swedish foreign trade was at this time mainly focused on Europe and the US, and “third world” trade partners were primarily located in Latin America, South Africa and Taiwan. From this, Holmberg concludes that the force behind Swedish development assistance in the early 1960s was not primarily commercial. Instead it was based on charity work within the missionary sector, and within the framework of the United Nations and the World Bank, which left a space for an idealistic position.² Ole Elgström gives support to the Holmberg discussion, as he argues that foreign policy led by Social Democratic governments had

¹ Ibid.
² Holmberg (1989), 124.
elements of solidarity, expressed mainly in the development assistance policy, attempts to mould public opinion and use of the politics of sanctions. According to Elgström, there has been a thread running through Social Democratic foreign policy since the 1960s. His interpretation is that the policy is a feature of a conscious Social Democratic policy of international reform.¹

Regarding the Social Democratic government’s having a specific ideological approach to foreign policy, one author, Yngve Möller, has argued that at least regarding the foreign minister Mr Östen Undén in the 1950s, this is not true. According to Möller, Undén was not very interested in development assistance issues, but left this to the cabinet minister Ms Ulla Lindström. Lindström was the only female cabinet minister in the Swedish government when she was appointed in 1954, and did not have any ministry of her own, but instead she had responsibility for a number of different sectors, of which development assistance was but one. According to Möller, the foreign policy of the Social Democratic government during Undén’s time as foreign minister was not primarily Social Democratic, but rather a neutrality policy based on the prospect of Sweden being a small state needing to “stand up for Swedish national interests (...)”.²

Although the most frequent interpretation of Swedish development assistance has been that it has been designed to transfer social welfare to the world, there are more recent studies that say the opposite, i.e. that Sweden has not been any better than any other country, and has sought to profit from development assistance. Steven W Hook has compared the driving forces behind development assistance policy in four modern industrialised countries, France, Japan, Sweden and the US.³ Hook argues that extensive case studies discussing the development assistance policy of individual countries have attributed France with cultural motives (preserving and spreading the French language and French customs), Japan with economic motives, Sweden with humanitarian and ideological motives, and the US with mainly strategic motives. Hook has investigated the period 1980-1989, and his empirical results reinforce the theses for all countries except Sweden. Regarding Sweden, Hook argues that earlier studies have focused too much on the official development assistance doctrines, within which humanitarian objectives predominate. However, Hook argues, the strongest

¹ Elgström (1990)
² Möller (1990), 70.
³ Hook (1995)
driving force behind Swedish development assistance is the limited economic capacity of Sweden. Sweden has had to limit its assistance to a few countries, the ideological support has been primarily to socialist governments, and the assistance has been strongly connected to a Swedish commercial interest in expanding Swedish international trade. Yet, Hook claims that initially, when Swedish development assistance was introduced in the 1950s and 1960s, the humanitarian motives and solidarity with the poor did indeed prevail, and that it was not until the 1980s that the policy became more pragmatic.

In regard to hydropower and Swedish development assistance, both Ann Danaiya Usher (1997) in her article “The Mechanism of ‘pervasive appraisal optimism’”, and Patrick McCully, in Silenced Rivers: The Ecology and Politics of Large Dams, argue that there are strong links between commercial interests and Swedish development assistance. ¹

Historical analyses of Swedish development assistance activities are not common. Viveka Halldin-Norberg has written the thesis Swedes in Haile Selassie’s Ethiopia, 1924-1952: A Study in Early Development Co-operation.² Halldin-Norberg shows how Ethiopia has been the scene of activities by a number of Swedes since the latter part of the 19th century. A mixture of missionaries, industrialists and army officers visited the country, and a credit was given in 1947 to the Ethiopian state for reconstruction after the Italian war of aggression. Swedish economic assistance and credits given for the consumption of Swedish goods to less fortunate European countries affected by the Second World War – showing that commercial interest played an important part – have been discussed by Klaus-Richard Böhme.³ The origins of the Swedish post-war development assistance have been analysed by Per Åke Nilsson, in Impulser, motiv och målsättningar för det statliga bilaterala biståndet till utvecklingsländer. Centralkommittén för svensk tekniskt bistånd till mindre utvecklade områden 1952-1962.⁴ I return to Nilsson’s work in Part 1, Chapter 3. An extensive analysis of Swedish development assistance for the period from the establishment of the state agency SIDA in 1965 up to the mid-1970s was made by Olav Stokke in 1977, in Sveriges utvecklingsbistånd och biståndspolitik.⁵ The work by Stokke is based mainly on policy documents and discusses the ideologies behind the Swedish development assistance. Stokke

¹ Usher, “The Mechanism...” (1997); 59-76; McCully (2001)
² Halldin-Norberg (Uppsala,2002)
³ Böhme (1994)
⁴ Nilsson (1968)
⁵ Stokke (1978)
raises the issue of the motives for the activities and argues that the government has been eager to emphasise their idealistic nature. He also states that the issue of national interest versus solidarity has been controversial in Swedish political debate. This, Stokke argues, says something interesting about the development assistance environment in Sweden – as in most donor nations, the national interest as a motive for development assistance is not foreign to either government or opposition.1

Postcolonial perspectives on development assistance

The postcolonial field contains a vast spectrum of authors, of which early representatives such as Aimé Césaire and Leopold Sédar Senghor – spokespersons of the négritude movement in Paris in the 1930s – and Frantz Fanon are often claimed to have a part or even be leaders.2 The most common contemporary authors referred to as postcolonial theorists are Edward Said, Gayatri Chakravorty Spivak and Homi Bhabha, referred to as the “postcolonial troika”3. While the post-colonial theory field contains numerous views and expressions in different disciplines, the common denominator is the notion that the colonial period, in all respects, despite decolonization, still influences the world. The second common denominator is the attempts to think beyond the borders and identities institutionalised during the colonial period. Discussions on development assistance and its implications are recurrent within the postcolonial theory field. As a ground for my discussion I have selected two non-Swedish scholars and two active within a Swedish setting. Valentin Mudimbe grew up in what was then the Belgian Congo and is of interest as his book The Invention of Africa. Gnosis, Philosophy, and the Order of Knowledge has been called the African counterpart to Edward Said’s Orientalism and brings up the issues of colonisation from an African context.4 The second author outside the Swedish setting is the Norwegian Terje Tvedt. Tvedt has studied Norwegian development assistance to Sudan, a country to which Swedish development assistance has also been directed. Norway and Sweden, being neighbouring countries and as such both competitors and collaborators, having similar historical development assistance.

1 Stokke(1978), 257.
2 Eriksson/Eriksson Baaz/Thörn (2002)
3 Ibid., 17; Anderson (2002), 645f
4 Cf Eriksson/Eriksson Baaz/Thörn (2002)
backgrounds, and both being important international actors within the large scale hydropower sector, provide an extra interesting feature to what Tvedt writes about Norwegian development assistance. Within the Swedish setting I have selected Mai Palmberg and Maria Eriksson Baaz. Palmberg discusses the image of Africa in Sweden, relevant for understanding the values and imageries circulating within Swedish development assistance. Eriksson Baaz has analysed the cultural identity of Swedish aid workers in Tanzania in the late 1990s - how they viewed the people they were sent out to assist, and maybe more importantly how Swedish aid workers view themselves on the international arena.

Valentin Mudimbe published in 1988 *The Invention of Africa: Gnosis, Philosophy and the Order of Knowledge*. Mudimbe argues that the idea of a “primitive Africa” was promoted by the European colonial empires in order to justify the colonial occupation of territories. Still, Mudimbe argues, the idea of the primitiveness of the Africans was not invented by the European colonisers of Africa in the 19th century, but rather an affirmation of a four-century European tradition of describing Africans as the “other”. He argues that from the 15th up to the 17th century the “otherness” was mainly represented within the arts – through paintings reproducing the images given by “discoverers” – and discussed in religious terms, where it was believed that the African could only be a slave to his brothers. Then, Mudimbe continues, during late 17th century a new epistemology became dominant in the western world, with the diversification of species, tables of classifications, classification of races. According to Mudimbe the *Systema Naturae* (1735) of Linnaeus was only one of the paradigmatic classifications of varieties of Homo Sapiens (europaeus, asiaticus, americanus, afer) divided according to physical and temperamental features. During the century of the Enlightenment social scientists offered their own interpretations of the “wild” and “primitive”. Mudimbe argues that as during the same period imperialism and anthropology were formed, they incorporated the notion of the “primitive man”. As the journeys of exploration started in the 18th century, for example, J. Bruce’s expedition to Ethiopia in 1770 and Mungo Park’s journey to the River Niger in 1795, the characteristics that they described were already well known and established images:

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1 Mudimbe (1988)
2 Mudimbe uses the term “the Western world”. I find the term somewhat problematic but I use it here to follow his discussion.
The distinction between the “savage Negro” and the “civil Mohometan”, the commentaries on the African indolence, their unbridled passions, and their cruelty or mental retardation were already there. They formed part of the series of oppositions and the levels of classification of human demanded by the logic of the chain of being and the stages of progress and social development.¹

According to Mudimbe, the ensuing colonisation – carrying this image of primitivity – brought with it three complementary actions, which he calls the colonizing structure: “the domination of physical space, the reformation of natives’ minds [italics by Mudimbe], and the integration of local economic history into the Western perspective.”² With this colonizing structure – embracing the physical, human and spiritual aspects of the colonizing experience - followed a system of dichotomies: “traditionality versus modernity, verbal versus written, societies based on agriculture and customs versus urban and industrial civilisation, barter economy versus high production economies.”³ Mudimbe argues that in Africa attention is often focused on the development that will occur when a transition has been made from one paradigm to the other, from one extremity (underdevelopment) to the other (development). Mudimbe argues that this vision is misleading and shades the space between the so called African tradition and the projected modernity of colonialism. The images from history, perpetuated by the colonisers, were not erased by independence, and are still present in the development era. In “The Idea of Africa”, Mudimbe discusses the concept “colonial library” to express how a specific way of conceptualizing Africa was invented and constructed by the West in popular and scientific discourse on Africa. In the “colonial library” the sum of knowledge that the West has produced about “Africa” is gathered, and continues to colonise the minds of Africans.⁴

Analysing development assistance work performed by a Norwegian Christian non-governmental organisation, Kirkens Nödhjelp, largely supported by Norwegian tax funds, in South Sudan in the 1970s and 1980s, Terje Tvedt argues that development assistance has functioned as the latest in a row of historical western acts of cultural expansion. The project took place between 1972 and 1986, and had a total budget of half a billion Norwegian crowns.

² Ibid., 2.
³ Ibid., 4.
⁴ Mudimbe (1994), 213.
It received 92% of NORAD, the Norwegian development assistance agency, support to NGOs in 1975. Tvedt argues that the profile and organisation of the project had a great influence on NORAD’s cooperation with NGOs in general.\(^1\) According to Tvedt, there is a historical continuity between development assistance, being preceded by the voyages of exploration and the ensuing colonisation and imperialism.\(^2\) He argues that the ‘dark continent’ of the explorers and the ‘poor Africa’ of development assistance have been conceptualised in relation to the dominating ideas of development in the respective era in the West. Africa is not assessed for itself, but as what it is not - a ‘shortfall from a norm’ as development assistance postulates a normative theory and a change of society.\(^3\)

Discussing Norwegian development assistance, Tvedt argues that it rests upon the notion that the purpose of development assistance is to function as a contrast to and payback to Africa of the debt from the voyages of exploration and the colonial era.\(^4\) According to Tvedt, in the US, a different view of development assistance prevailed, as the experts were a kind of “development diplomats” with the ultimate goal of spreading not only modernisation but also democratic institutions, as well as of blocking revolts and communism. The former colonial powers, England and France, Tvedt argues, saw development assistance more as a continuation of the good work of the colonial era than an act of atonement.\(^5\)

Studying the case of the Norwegian NGO in South Sudan, Tvedt argues that development assistance workers became “offensive diplomats for the cultural expansion of the Western civilisation, an expansion in many ways more aggressive than the earlier colonial administration”.\(^6\) Tvedt states that while the British colonial district officers in South Sudan had the task of creating order and calm at the least possible cost, the paramount objective of the development assistance workers was to change and influence local traditional culture and policies. Whereas the colonial district officers had problematized and reflected on the policies they tried to bring in, the development assistance organisation and its experts did not try to anticipate possible outcomes of the ideas they tried to apply. In reality, Tvedt argues, Norwegian development assistance workers had a monopoly on defining local problems and

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\(^1\) Tvedt (1993), 217.
\(^2\) Ibid.,31.
\(^3\) Ibid., 41.
\(^4\) Ibid., 35.
\(^5\) Ibid., 36.
\(^6\) Ibid., 65.
pointing out solutions for societal development.\(^1\) Tvedt also describes how these development assistance workers, who at home had been working in low positions, and often had a modest formal education, received in southern Sudan almost free rein to define development problems and strategies. “The Norwegians who at home would dress in suits and polished shoes if invited to dinner with their boss, would enter the government offices in unironed shorts, dirty socks and demand, as if completely natural, to speak to PhD-educated ministers and insist that a radical decision be taken right away.”\(^2\)

As well as discussing the behaviour of Norwegian development assistance workers and pointing out how they represented a continuity from the colonial era, in some ways pursuing a more aggressive strategy than the representatives of the former colonial power, Tvedt also discusses the issue of “development research” performed in Norway as a way of institutionalising a certain view of those countries receiving development assistance. Tvedt points out that “development research has been founded on a dichotomic division of the world - conceptual barriers have been established for the “developing countries” on the one side and the “developed countries” – on the other.”\(^3\) During the late 1980s, Tvedt argues, this dichotomic perspective was institutionalised in Norway. Development studies became established at all Norwegian universities, in 1983 a Norwegian association for development research was formed, organising by the end of the 1980s 300 researchers whose only common denominator was a focus on developing countries, and in 1986 a national committee for development-related research and education was instituted.\(^4\) Tvedt argues that the colonial research tradition was thus resurrected in a new form. Whereas colonial research had described the colonies as if they had no previous history, the Norwegian development research in many cases approached Africa, Asia and Latin America as “underdeveloped areas” and recipients of development assistance.\(^5\) Tvedt argues that Norwegian development research has a problem of ahistoricism; the perception of development assistance is marked by the surrounding societal development assistance context and he consequently calls for researchers to step out of this context to provide longer perspectives such as are commonplace in other fields of research regarding society.\(^6\)

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1 Ibid., 61ff.
2 Ibid., 64.
3 Ibid, 242. For Tvedt’s further discussion on Norwegian development assistance and its intellectual context see also Tvedt (2002) and regarding NGOs in development assistance Tvedt (1998)
4 Tvedt (1993), 258
5 Ibid., 260
6 Ibid., 263
María Eriksson Baaz analyses the construction of identities within two Scandinavian development NGOs (one Swedish and one Danish) in Tanzania. Based on interviews with development assistance workers in 1998 and 1999, and approaching the subject from a postcolonial perspective, she discusses how “donor” identities are manifested in development assistance aid practices. She analyses how these identities are formed in relation to the colonial library (the concept presented by Mudimbe), at a time when the call within the development assistance sector is to work for “partnership” – an open, transparent relation based on mutual understanding and avoiding paternalistic relations. Within the new setting, the development assistance worker is no longer the decision-maker and controller, but also the advisor that encourages local initiatives. However, despite this new setting, it has turned out to be difficult in reality to achieve this partnership relation, and in her analysis of the relationship Eriksson Baaz discusses the importance of cultural identities and how these manifest themselves in development assistance practices.

The point of departure for Eriksson Baaz is that the discourses that surround development assistance are of great importance to the cultural identities. In this sense, the colonial history influences the attempts to form the “Swedish” and “Swedishness” in development assistance practices. Eriksson Baaz argues that the cultural identities do not exactly mirror the identities of the “colonial library”, but rather “general ideas on Africa and Europe which circulate in media and in popular culture in Europe.” The identities are formed within the development assistance relation, and it is from this specific context that they must be understood. Eriksson Baaz argues that the legacy of the colonial period is “recreated within development assistance, as well as in other contexts, through a complex concurrence between the ‘colonial library’, economic structures, unequal power relations and psychological processes.”

Eriksson Baaz furthermore argues that the colonial legacy cannot be seen as accommodated by specific individuals or groups. According to Eriksson Baaz the debate on development assistance is marked by a division between “evil” and “good” assistance, within which the “evil” is represented by the international and multilateral assistance coming from, for instance, the World Bank. This assistance is described as neoimperialistic. The “good” assistance is represented within this debate by the assistance given to NGOs. She argues that the discussion

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1 Eriksson Baaz (2002), the dissertation in English. I refer to an article on the subject in Swedish from 2001.
2 Eriksson Baaz (2001), 164.
3 Ibid., 165.
often turns into a simplified division between “the good” and “the bad”, “imperialist” vs “anti-imperialists”, “prejudiced” and “unprejudiced".1 Eriksson Baaz questions this division, claiming that no assistance is free from self-interest on the part of the donor, and that assistance from NGOs is influenced by the international assistance in many ways, for instance the discourses used.2

Eriksson Baaz argues that as development assistance is always based on an economically unequal relation, it is the donor that sets the conditions. For the recipient to achieve the objective of receiving the money, the recipient must at least pretend to have the same goals as the donor. Resistance by the recipient, and attempts to promote other aims, are often considered by the donor as lack of knowledge, passivity and unreliability.3 Thus stereotypes from the colonial period are recreated, as the Westerners are considered active, the formerly colonized as passive. This is coupled with the imagery of countries being at different stages of development, a legacy from the colonial assertion that the West should spread civilization.4

Finally, and of special interest for my study, is how Eriksson Baaz among the interviewed aid workers has identified a version of Swedish identity which she argues rests upon the myth of an absence of colonial legacy. In this version of Swedish identity, the former colonial powers are presented as the “Other”, from which Sweden is distanced, and an “anti-imperialistic” identity is part of Swedish development assistance practice. The Swedish aid workers prefer to present themselves as less paternalistic and more respectful towards the aid recipients as Sweden has not been a colonial power.5

Textbooks for schoolchildren are useful for analysing imagery and values circulating in the Swedish society, and in this sense the work by Mai Palmberg is of great value for understanding the importance of the colonial period and how this plays out within the development assistance era. At two occasions, Palmberg has analysed the view of Africa in Swedish textbooks for schoolchildren, on two occasions, in 1987 and again in 2000.6 In her analysis of 1987, Palmberg argues that there exist two sorts of prejudices in the textbooks – remnants of a colonial imagery regarding Africa and new prejudices appearing in and

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1 Ibid. 162.  
2 Ibid., 162-163.  
3 Ibid., 165-166.  
4 Ibid., 166-167.  
5 Ibid., 164. See also Dahl (2001)  
6 Palmberg (2000); Palmberg (1987)
resulting from the development assistance era. The prejudices which are based on colonial imagery she defines as “biological racism”, “Africans as aggressive savages”, “an Africa without a history”, “Africa – the exotic” and “Africa – at the bottom of an imagined development ladder”. The new prejudices, Palmberg argues, contribute to a condescending attitude, but have their grounds in a new kind of dependence. Within this “development assistance” has inherited the role of the African “rescuer”.1 The idea that “we” will help “them” is recurrent in the textbooks’ representation of Africa, as nowhere are the African efforts and own initiatives discussed. Palmberg also highlights the fact that Africa is often presented in ways that aim to create compassion. “It’s an Africa marked by misery and hopelessness, which fosters compassion, i.e. a condescending attitude, and not equality of status.”2 Palmberg’s study of 2000 is a more extensive analysis on the same theme, discussing the latest tendencies within Swedish school books.3

Feminist perspectives

A number of authors within the STS field have pointed out the importance of bringing up gender issues in the study of science and technology. Gender and sexuality are an inherent part of the society, and these matters play important parts in the making of technologies and sciences, as well as in their impacts.4 While the postcolonial perspective is a major point of departure for this study, I also wear feminist spectacles. Historical events and the production of historical narratives are never value-free, but are indeed contextualised by the author and his/her position and context. There are numerous screens through which the historical narrative may be produced and viewed, whether the historian is aware of it or not. In this sense, feminist and postcolonial perspectives can be seen as two different conscious screens through which I analyse and produce the narrative. In certain respects these perspectives coincide. However, there are authors writing within postcolonial tradition without attempting at applying feminist perspectives or even considering gender as important in their basis for

1 Palmberg (1987)
2 Ibid., 6ff, 26f. Translation from Swedish by the author.
3 Palmberg (2000)
4 See for instance Lerman/ Palmer Mohun/ Oldenziel (1997)
analysis. Likewise, “white Western feminism” has been criticised for its claims for universality when extrapolating from women from a white western middle class.\(^1\)

The historian Joan Wallach Scott discussed in an essay article published in 1986 how gender might be used as a category for historians.\(^2\) Scott encouraged historians to use “gender” as a fundamental basis for analysis of power in society as she stated that gender concepts structure perception, as well as the concrete and symbolic organization of all social life. She urged historians on these grounds to examine not only women, sexualities or families but in principle everything related to human activity. Furthermore, Scott did not stop at asking historians merely to add gender, she also urged them to work out relationships between gender, race and class. Encouraging historians to use gender as an analytical category she claimed that it would have a great impact on historiography:

*Investigation of these issues will yield a history that will provide new perspectives on old questions (about how, for example, political rule is imposed, or what the impact of war on society is), redefine the old questions in new terms (introducing considerations of family and sexuality, for example, in the study of economics or war), make women visible as active participants, and create analytic distance between the seemingly fixed language of the past and our own terminology.*\(^3\)

Scott ends her argument by stating that this new history may provide feminists with new perspectives for formulating feminist strategies, as well as including not only sex, but also class and ethnicity.\(^4\) I am not pretending to fulfil the call by Scott in this dissertation. However, I have reflected over possible ways to introduce feminist perspectives and gender into the analysis and into the narrative. To start with, in this section I discuss feminist research related to science, technology, large-scale hydropower, energy and electricity.

While mainstream social studies of science and technology often lack a discussion on the importance of gender relations, the literature on gender and energy suffers from another problem. A study of the literature and a search of the Internet seem to suggest that most work on “gender and energy” deals with “women and household energy”, with such problems as access to fuel wood, time spent in gathering fuel wood and health hazards. It seems that

\(^1\) Mohanty (1984)
\(^2\) Scott (1986)
\(^3\) Ibid., 1075.
\(^4\) Ibid.
feminists are more used to discussing smaller artefacts, or artefacts closely related to what is perceived as belonging to a female sphere. Studies on large-scale technologies and technological systems are still scarce in the feminist research field. Until now I have come across only one empirical study that could be described with the keywords “women and hydropower”, “women and electricity”, “gender and hydropower” or “gender and electricity”. This is by Annika Vänje, whose dissertation within the field of industrial economics deals with the career opportunities of and obstacles to female engineers at a turbine company in Sweden. ¹ On the other hand, literature that could be described as “men and hydropower” mainly takes the form of popular historical works which deal with the engineers and workers and their lives at hydropower construction sites. In this literature the men are often depicted doing hard and heroic work in the “wilderness”, while women are sometimes mentioned in their roles as wives, fiancées, cooks, nurses and prostitutes, but never as having any roles in decision-making processes concerning technological designs, nor doing the “real” work – the physically demanding work of constructing the power plant and the reservoir. ² In her ethnological study on builders of the Swedish transport, communication, water and energy system, Barbro Bursell reinforces this image of a male group as she describes the construction workers as a “body of men who exhibit many distinctive features in their special working and living conditions.” ³ While focusing on the male workers, however, Bursell briefly mentions the importance of the female cooks, housekeepers for the men living at the construction sites. ⁴

While I have not come across any lengthy studies on gender and cultural and socioeconomic impacts of electrification, those few studies that touch upon the issue indicate that despite high expectations, electrification does not necessarily have a positive impact on women. In his study of rural electrification in Kenya in the 1970s Anders Hjort pointed out a consequence of electrification that was negative for women. Hjort notes that with the increasing use of money in the economy the number of bars has grown, and the tendency has been accelerated by the advent of electricity:

"Jukeboxes, orchestras and illumination have made them more attractive and they are open longer than before. (...) This has resulted in men staying away from home longer at night, and

² See for instance Bengtsson (1976); Santesson (1983); Forsgren (1987).
³ Bursell (1984), 203.
⁴ Ibid., 13, 151.
as a consequence the wife’s traditional role has been even heavier. She has now no alternative than to take care of the home, the children and the cooking together with the daily work in the fields. The man spends a large part of the 24 hours away from home. The beer-drinking in the bars is socially very important for the men and is linked to their prestige. This seems to be reinforced when the service of the bars is increased.¹

Discussing the implications of electrification for American society, David Nye has revised the arguments that Ruth Schwartz Cowan presented in her historical analysis of the arrival of modern household technology in the United States. Nye concluded despite the expectations of feminists calling for electricity as the liberator for the women at home, the new technology, the electrical tools, to the household did not bring about the expected relief for the women in general. Instead, in many cases, the workload became heavier for women, the mothers, as their responsibilities and time-consuming tasks increased with the advent of new technology and electrification.²

Although an important issue, I do not embark in this dissertation upon the question of water resources from a gendered perspective. This specific issue has been dealt with by a number of feminists in a variety of case studies. The general conclusion drawn is that as in all other aspects, decision-making processes in water resources are highly gendered. While water is a crucial aspect of daily life, women are usually left outside the decision-making structures.³

There are numerous studies of the construction of large hydroelectric dams, and its negative social and environmental impacts. To mention a few, there is the extensive volume edited by E. Goldsmith and N. Hildyard, The Social and Environmental Effects of Large Dams.⁴ Inga Lill Aronsson has studied the negotiations around the displacement of indigenous peoples in connection with a large-scale hydropower dam in Mexico.⁵ It is also in regard to large-scale reservoirs that most feminist analyses have been made on gender issues. Within the recent World Commission on Dams, publishing its report in 2000, four submissions with this

1 Hjort (1975)  
2 Nye (1990); Cowan (1983)  
3 Khan (2005); Hannan (2000); Singh (2006); Zwartveeen(1997); Zwartveeen (1998); Jordans/ Zwartveeen (1997); Rydhagen (2002); Bediako (2004)  
4 Goldsmith/ Hildyard (eds)(1984-1992)  
5 Aronsson (2002)
perspective have been presented. To this can also be added the work by Joseph Decosas on the prostitution of women and consequent spread of HIV/AIDS in relation to the construction of the Akosombo Dam in Ghana. Yet, with the growing numbers of large dams, there is scope for many more investigations and conclusions concerning their social impact and assumptions about the negative impact on women as distinct from the negative impact on men may be challenged.

A feminist perspective on the activities denominated “technology” as the measure of men has been elaborated by Ruth Oldenziel (1999). In her historical analysis of American engineers at the turn of the 19th and 20th centuries, Oldenziel argues that these male engineers promoted a “new” knowledge domain which they called “technology” and that at the same time they made universal claims for its application. Oldenziel argues that the American engineers and their allies used discourse, language and narrative strategies to support a gendered division of cultural labour. This is why the term “technology” today has a connotation of modern, Western and male activities. Oldenziel claims that focusing on the men, instead of the women, when writing the history of technology “helps to understand why technology developed into a powerful symbol of male, modern, and western prowess; how machines like cars, bridges, trains, and planes have become the measures of men, from which women have been excluded as a matter of course.”

In 1984 Chandra Talpade Mohanty challenged the homogeneity of women within “Western feminism” as being part of a colonialist project in its attempts to define a specific “Third World woman” – a stereotype used for research as well for generalized conclusions. Together with Joan Scott’s advocacy of “gender” as an analytical category in writing history, the call can be expressed as a wish not to identify women as victims of development, but rather to avoid writing a narrative about men taking decisions as being without a gender, to identify normalities as a male vision, to identify women when they are active agents within decision-making processes, or left out of these processes, and to identify social networks

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1 The report of the World Commission on Dams (2000); Submissions to World Commission on Dams: Mike Anane (undated); Mehta/ Srinivasan “The impact of…”(undated); Mehta/ Srinivasan “Balancing pains and gains…”(undated) http://www.dams.org (February 1, 2005)
2 Decosas (1996)
3 See for instance Leach/ Green (1997)
4 Oldenziel (1999), 11.
5 Mohanty (1984)
within their gendered setting and also other possible gendered issues that may turn up. In this sense, I have taken up the debate within feminist STS on the issue of whether feminists can contribute to a better science and technology, by questioning scientific “objectivity”.

While not always claiming specific intentionality, feminist authors within the STS field focus on values, power and control in relation to technology and science. In this sense, Donna Haraway has presented a number of useful concepts. Dealing with the issue of “scientific objectivity”, and the problem of defining whether certain positions can provide a better understanding than others, Haraway has introduced the term “situated knowledge”. The intention is to challenge the notion of scientific objectivity and at the same time to balance between constructivism and complete relativism. Haraway’s term “situated knowledge” challenges the established manner of presenting scientific facts as an “unmarked gaze”. According to Haraway, “objectivity” is nothing but a device of power-holders in society to present their own views as universal and disembodied, a “gaze from nowhere” – a “god-trick”. Haraway means that this “gaze from nowhere” is impossible, the knowledges are always embodied. Gender is one of the important parts of the embodiment, but far from the only one. The embodiment also includes (power) position and (geographical) location. Production of scientific facts is closely connected to the producer of the facts, and must be considered as a “partial perspective”. However, Haraway does not claim that all partial perspectives are equally good. Certain positions may have the potential to produce better-informed partial perspectives. A partial perspective may be the one produced from the embodied, gendered experience, but it is also a product of the conjunction of numerous other contexts. In feminist postmodern thinking the actors are not just white/black, women/men, development assistance representatives/receiving country representatives. All of them also depend on a number of other contexts, historical contexts, within which the colonial settings – climates, topographical, professional experiences, life experiences as well as professional and social networks – are of great importance.

1 Haraway, “Situated knowledges”(1991)
2 Ibid.
3 Ibid.
Objective, Structure, Research process and Sources

This study is an attempt to analyse the history of a specific large hydroelectric scheme – the Great Ruaha power project in Tanzania. In brief, the objective is to establish why and how this specific scheme came about, and as part of this to identify the key actors involved in the decision-making process, including the ideological contexts within which they acted. Recognizing the complexity of large-scale hydropower and the attempts to control watercourses that this necessitates, in the specific context of decolonisation and development assistance that the decision-making process behind the Great Ruaha hydropower scheme reveals, I have opted to base my analysis of the actors involved on feminist and postcolonial perspectives.

With the discussions on postcolonial perspectives, development assistance, feminist perspectives, gender and technology in mind, the question is what a feminist postcolonial perspective on large-scale hydropower would be when writing a historical narrative. While recognizing that Scott’s call to the historian is indeed tricky to achieve completely, in certain respects my application of gender as a category approaches what the anthropologist Clifford Geertz would call “thick description”. Borrowing the notion from the philosopher Gilbert Ryle, Geertz advocated the use “thick description” when interpreting cultures and attempting to capture symbolic meanings of different events in social life. The notion was illustrated by Ryle in discussing the implication of a seemingly simple human act, a person blinking rapidly. While a “thin description” would say that an eye opened and closed, and nothing else, a “thick description” can explain the context and the meaning of the act and thus provide for understanding.1 In regard to gender as a category, this dissertation can to some extent be read with Geertz’ “thick description” in mind. On the other hand, in regard to technoscientific practices, questions about technoscientific facts and artefacts, symbols and visions of nature and underdevelopment, I use feminist perspectives as coinciding with the postcolonial approach.

In my analysis I have chosen to use a terminology that I consider turns the particularities into generalities that may make the specific case useful for studying other similar cases and serve as a way of discussing Swedish development assistance as something other than “development assistance”. “Colonialism” is a word which means different things in

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1 Geertz (1973)
different countries and settings and is used differently by scholars analysing processes within the colonial period. In 1972, Horvath stated in an article in which he attempted to define “colonialism”, that it arouses emotions, and depending on the horizon from which it is seen, may be considered an “evil business”, or a “praiseworthy endeavour”:

The changing morality of colonialism contributes to our lack of understanding. People feel strongly about colonialism - it has either been a dirty business engaged in by evil people or a praiseworthy endeavor undertaken by fine gentlemen for the noble purpose of saving the wretched, the savage, the unfortunate. We can hardly talk about colonialism without referring to the way people feel about it, because this feeling has given the word myriad connotations.  

Using the word “colonialism” certainly does arouse feelings. But when analysing an event that took place within a period of transition from colonial era to independence, the term is hard, even impossible, to avoid. In this study I refer to colonialism as described by Mudimbe. Colonialisation is about economic power and control as well as the spread of specific cultural images consistent with domination and control. The legacy of the colonial period continues to cast its shadow over societies and individuals, practically and mentally, even after independence and within the activities denominated development assistance. The transition from colonial period to decolonization and independence has brought discussions on the continuity and consequently attempts to use new terminology. Imperialism and neo-colonialism are terms still used, but also marked by political contents. A number of scholars taking up postcolonial perspectives argue that a continuity from colonialism can be traced to development assistance. Within a historical analysis, the term “colonialism” may appear a tool far too blunt to be useful in any discussion. Discussing the importance of colonial relations within the development assistance era, Hecht has introduced the concept “conjugation”. In her article on French nuclear policies and decolonization in Madagascar and Gabon, former French colonies, Hecht argues that sociotechnical practices “conjugated” colonial power relations:

Conjugating - a verb preserves its root while changing either its tense, its subject (person), or both. Conjugation transforms the meaning of a sentence by shifting its time frame or by

1 Horvath (1972), 45.
changing who performs the action. Sometimes these are radical transformations, sometimes not. Conjugation thus enacts continuity and change simultaneously. When I say that sociotechnical practices conjugated colonial power relations, therefore, I am both highlighting the dynamics between rupture-talk and continuity and emphasizing their inseparability.¹

The concept proposed by Hecht seems useful in this specific context, and probably in other contexts involving former colonial powers and their colonial territories. However, “conjugation” does not seem to apply to the Swedish involvement in Tanzania. French state representatives discussing assistance with their former subjects during decolonization processes is not the same as Swedish development assistance entering Tanzania at the time of independence from the British colonial power. On the other hand, development assistance is about export of something, and this something is not only about technical artefacts, but also technoscientific practices and specific views related to these practices.

I have used a set of concepts that relate to “colonialism” and the colonial era: colonial discourse library, colonial science – development science, development assistance paradigm and technoscientific paradigm. While the “colonial discourse library” and the “development assistance paradigm” are discussed in Part Two, and “colonial science” and “development science” in Part Three, I will here introduce the framework of “technoscientific paradigm”, to be further exemplified in Part One, Chapter 2. Hecht uses the word “conjugation” to describe continuity and change at the same time. My use of “technoscientific paradigm” has certain resemblances. Within the concept I merge feminist and postcolonial perspectives with the scientific paradigm model proposed by Thomas Kuhn. The term “technoscientific paradigm” is used in an attempt to describe the basis for the big dam era, being an elaboration of Thomas Kuhn’s “scientific paradigm” and feminist “technoscience”. The term “technoscience” in the feminist version not only signifies non-existent boundaries between “science” and “technology” but also the multitude of actors involved as well as the cultural, societal and political implications.² The big dam era can be defined as the period since the 1950s, when the construction of large dams became the leading technology for water resource development in the world. A “large dam” is a reservoir with a dam wall measuring 15 metres or more from

¹ Hecht (2002), 693
foundation to crest.\textsuperscript{1} Although questioned and met by much opposition, the big dam era still prevails in the 21\textsuperscript{st} century. Large dams and hydroelectric projects are inherently political, as they occupy and influence large territories and they are demanding competitors for the use of water resources, especially in areas where water resources are scarce.\textsuperscript{2}

According to Kuhn, scientific thinking and performance are predetermined by a historical social context. The scientific paradigm gives the framework for the interpretation of an examined object, as well as the methods and theories to be used in the interpretation and definition of “good science”.\textsuperscript{3} Kuhn describes how a crisis may appear within a paradigm, when new discoveries show an anomaly between the existing theory and the experienced reality. The crisis may be resolved in three different ways – “normal science” may prove capable of handling the problem – and then everything reverts to ‘normal’. The problem may persist, and be labelled, but may then be perceived as a result of a failure within the scientific field and set aside for future generations to deal with. In a few cases, the anomaly may lead to the paradigm being overthrown after a period of paradigm war.\textsuperscript{4} Although Kuhn’s scientific paradigm has been challenged as a theoretical model by historians of science, returning to the roots of the terminology makes sense.\textsuperscript{5} My intention in applying the concept is not to present a new theory, but to use it in a wider sense, returning to the roots of the word “paradigm”. The Oxford English Dictionary defines “paradigm” as a “pattern”, “exemplar” “example”.\textsuperscript{6} The technoscientific paradigm is a structure for the thoughts within a specific time and setting that influence technoscientific decision-making and design. It is also linked to the social and political power to enforce this specific structure for the thoughts, and to neglect other, opposing ideas and views.

I have therefore decided to use the concept of a technoscientific paradigm in regard to large-scale hydropower having a specific context in Sweden, with the state-induced hydropower exploitation of Sapmi and the view of the territory as belonging to the Swedish state, free to do whatever the state wishes. I argue that, merged with a specific Swedish development assistance paradigm, the technoscientific paradigm is the context that surrounds the Swedish actors in Tanzania in the decision-making processes for the Great Ruaha power scheme.

\textsuperscript{1} See for instance Khagram (1999), 6ff.; McCully (1998), 2f.
\textsuperscript{2} See further the discussion in Part 1, Chapter 2.
\textsuperscript{3} Kuhn (1962)
\textsuperscript{4} Ibid.
\textsuperscript{5} Cf Purtill (1967); Brackenridge (1985)
\textsuperscript{6} Simpson/Weiner (1989), 183.
However, no paradigm is without anomalies that challenge it. In my study, I set out to identify anomalies of the technoscientific paradigm consisting of both persons and water flows: watercourses that do not submit to the attempts to be “tamed”, put under human control, and also active opposition and/or questioning by the engineers and scientists within the technoscientific design process.

Structure

My main focus is on the Swedish actors involved in the decision-making and consequently enabling of the Great Ruaha hydropower scheme and their encounter with the actors in the Tanzanian context of decolonization and nation-building. The analysis of the actors is made on both a macro level and a micro level. Within the macro level I analyse the background of the support from Swedish tax funds for a hydropower project far from Sweden, and I seek to establish the milieu within which the Swedish actors acted. I argue that the Swedish actors were influenced both by a specific hydropower technoscientific paradigm developed in Sweden in the 20th century – and a specific Swedish development assistance paradigm based on colonial imagery established during the 1950s. The analysis on a micro level involves studying the Swedish actors within the decision-making processes meeting the actors from Tanzania, the former colonial power and the World Bank, as well as technoscientific processes of preparation and design of the power plants and reservoirs.

The structure of the study is consequently essentially threefold. Part One discusses the macro contexts, first of all Swedish large-scale hydropower exploitation of indigenous people’s territory, and forms the basis of what I propose as a Swedish technoscientific paradigm in regard to large-scale hydropower. It is followed by a study of Swedish development assistance in the 1950s and the evolution of a Swedish development assistance paradigm.

In Part Two I enter the case study of the Great Ruaha power project in Tanzania, analysing how the development assistance paradigm merged with the technoscientific paradigm in practice, translating money into action and a specific project, and its setting in the period of Tanzanian decolonization. Part Three consists of an analysis of the production of knowledge that formed the decision-making process, a discussion of the importance of individual actors within this setting with massive funding provided by development
assistance. In Part Three I also provide a view from the perspective of those that were left outside of the planning process. The studies are of different character and in the concluding chapter, the main conclusions and the analytical basis are discussed.

Research process and sources

The sources used for this study have been selected for the purpose of identifying actors, decision-making processes and the contexts of these processes. The sources are very different in character. While I here present how my research took form and initiate the discussion on the sources, these are also discussed within the different chapters.

Once it was decided that I would do a study on the Great Ruaha power project in Tanzania, I set out to get my own understanding of large scale hydropower. My hometown Luleå in the north of Sweden, being the starting point, I decided to investigate the Lule River, being the most hydropower exploited Swedish river. I visited the State Power company office in Luleå, and then went to see the reservoirs and powerplants along the river, including the reservoir where I never managed to catch fish during all those summer holidays visiting my grand parents. I also visited the Porsi hydropower station and learnt that one of the employees there had actually worked at the Kidatu hydropower station back in the 1970s, Gösta Bodén. Bodén talked about his experiences from Kidatu and the specific role that he had found himself in as a white person in Tanzania, “Medical doctor, family planner – your skin colour gives you power, it remains from the colonial period”. Bodén told stories about difficulties of teaching the Africans to plan and organize work, and that the most important for the Africans at the powerplant was to receive their salary. He also told me an anecdote about how the Swedes had to help the Tanzanians with the hydropower plant in Hale, constructed by British, which apparently had not put much effort into making it a good construction, as he explained: “the English were spending their time on the beach.” It turned out that there was a technical problem with the turbine, which the Swedes manage to arrange without having access to

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2 Ibid.
3 Ibid.
proper spare parts. During the same journey, I also visited Porjus hydropower station, and the Jokkmokk school (Vattenfall Training Centre) – a school for training of hydropower engineers, both national and international, but mostly Africans. The school was established as a means of providing alternatives as the demand for Swedish hydropower constructions decreased in the 1970s. In my group discussion with the manager of the school and other employees, I was confronted directly with the aspects of hydropower plants related to the importance of the colonial period and the difficulties connected with development assistance: “The problems are the priorities made. Instead of investing in upgrading the powerstations, the moneys are used for incentives to the managers.” As the discussion went on, my informants stated that this kind criticism was hard to put forward – the development assistance sector being gigantic with many persons having their income from this industry.

Thus, by starting by the hydropower plants along my own home river, which I had thought would have nothing at all to do with the Tanzanian case, I was directly confronted with the complexities of colonial era and its influence on the development assistance, leading me to starting by looking into this aspect. This experience is reflected in Part One, chapter two, which became the very first chapter that I produced within the work on the dissertation. For this chapter I have used earlier academic literature, archival sources from organisations that dealt with the early development assistance as well as and images, posters and booklets used for publicity purposes in two national fund drive campaigns, published reports, papers and a governmental proposition from the period in question. Initially I made one interview, with Mr Sixten Heppling, the first employee in Swedish international development assistance, when he started out in the 1940s, an interview that was recorded and typed.

As my work continued and I started planning for visiting Tanzania, I decided to start approaching engineers who had been involved in the decision making process of the Great Ruaha power project. This resulted in interviews with Petter Narfström, Ingvar Jernelius and Sten Lööf. The interviews were not structured, but instead I asked general questions about the Swedish involvement in Tanzania and the Great Ruaha power project. Within these interviews, the impression of the importance of the colonial era, and decolonization was

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1 Ibid.
2 Group discussion with Göran Öhlund, Gösta Uusitalo, Jan Erik Eriksson, June, 22, 1999
3 Ibid.
4 Ibid.
further strengthened, together with a lot of useful information on what to look out for. The interviews were recorded and I also typed them.

Going to Tanzania, I was hosted by both the Department of Electrical Engineering at the University of Dar es Salaam, and the Research department of the Tanzanian power company, Tanesco. In total I spent six weeks in Tanzania, going through Tanesco archives in Dar es Salaam, and also, with the assistance of Tanesco, visited the hydropower plants of the Great Ruaha power project, as well as the Kihansi powerplant. During this stay, which I at the time believed would be followed by a second and longer stay, I did not do more than one planned interview. Instead, I spent my time talking to people, while taking notes, within Tanesco at the headquarters, at the Department of Electrical Engineering as well as with others that I met during the stay. Visiting the hydropower the powerstations I talked to employees, managers and consultants there. Escort by Tanesco staff to three villages by the Mtera reservoir I also briefly met with people living in this area. During the whole stay I kept a diary, writing down every day impressions, observations and notes from discussions and conversations. Besides again being confronted with the complexities of development assistance and the influences from the colonial era on peoples minds (including my own), I was confronted with the problems of electricity and also experienced the load shedding resulting from the lack of water in the hydropower reservoirs. A feature of specific interest is the noise of load shedding, in the cities where there is an electric grid available – the sound of diesel motors used for back up.

These experiences and investigations are the basis for Part Two and Part Three, in combination with further interviews with Swedish engineers and persons involved in the decision making process of the Great Ruaha power project. After my visit to Tanzania, I returned to two of the former informants, and also met others that I had not interviewed before. Some of them I met in the company of their wife, who had followed along to the projects and in one case I interviewed the widow as the scientist himself had passed away over a decade ago. Again, the interviews were recorded and typed. At this point I also started the investigation of the Swedish national archives, the SIDA archive, as well as the SWECO archive in Stockholm, which turned out to be full of documents from the Great Ruaha power project as well as the initial attempts at starting water resource projects in Tanzania. I opted to focus on project level as it turned out that much of the decisions taken on higher level were represented in those documents. What is not represented there, however, are the discussions
on governmental level, or discussions held within the Swedish Parliament. However, studying
governmental level or Parliamentary discussions I believe would be another study than what I
have set out to make. When interviewing the engineers and experts involved I also got access
to their personal archives that provided me with documents otherwise hard to find. Especially
the archive of Sten Lööf, that I got hold of at an early stage has been of great help.

Due to different circumstances, my planned second trip to Tanzania did not take place, and
my intentions to visit and interview people affected by the reservoirs could thus not be
fulfilled. However, having started out by the Lule River, and directly meeting with Tanzania,
I figured it could work the other way around. At this point I started looking into the contexts
of the Swedish hydropower exploitation in the north of Sweden, in Sapmi, and I saw aspects
that I had not considered before, the importance of land questions – simply put, the issue of
who owns the territory and the watercourses and has the right to exploit these - and the view
of the Swedish state on this territory. Hosted by Camilla Sandström, I made a visit to a
reindeer herding community, and opened up for perspectives from the reindeer herding Sámi
living in the area since thousands of years, but not being considered as owners of the territory.
This experience resulted in a conference presentation and an article in collaboration with
Sandström and also became the basis for the first chapter of Part One.¹ This chapter, within
which I present the idea of a Swedish technoscientific paradigm in relation to large-scale
hydropower, is a review of existing literature, as well as an identification of information gaps
completed with documents from the Swedish State Power Board and writings on the impact
of the exploitation by the people affected. This approach is then followed up in my discussion
on the people around the Mtera reservoir, in Part Three. Concerning indigenous people within
different national settings, as different as Tanzania and Sweden might seem to be, in regard to
land questions and territory there are several parallels to be drawn, also providing an
understanding for the ideological basis on which Swedish large scale hydropower rests when
being exported as development assistance.²

¹ Öhman/Sandström (2004)
² Cf Usher, "Reflections on power… (1997)
Situating the research

Apart from meeting with the archives and the informants, the interpretations, as well as my questions and the method of dealing with them have been raised as a consequence of my own embodied experience. Two authors within the STS field, Donna Haraway and John Staudenmeier S.J, both encourage the researcher to describe who they are and why they are writing about the specific issue they have chosen. For Donna Haraway it is a way to show that the researcher does embrace the idea of “situated knowledge”, and that the criticism of “objectivity” forms a part of the researcher's own agenda.1 Haraway calls on the researcher to form one of many “myths” about reality, and the world surrounding us, as there is no such thing as one true story. Staudenmeier calls on historians of technology to “step out onto the visible stage of their own writings”, in an attempt to explain the passions that formed their research questions, as well as the questions that “lie beneath the argument they choose to explore”.2

I embrace the idea of “situated knowledge”, and I have continuously attempted to explore the driving force behind my writing this thesis. Although I am not certain of the answer, I will give a brief explanation of what I believe forms the platform on which I stand.

The fascination of electricity, a critical questioning of energy policies and a family history of losing land for large-scale reservoir construction all form part of my personal background. I experienced energy and water issues from growing up by a regulated river, as well as the debate about energy which took place when I started to grow conscious of the world around me as a teenager. The year after my birth, the Letsi reservoir on the Lule river was completed. On my mother’s side, the family lost 90 hectares of forest land to the reservoir, and received a lump-sum compensation, a very small compensation in view of the profits later earned by the state power company. I spent many summer weeks by the Letsi reservoir, my image of the river becoming that of a lake and not understanding until an adult that it had been different there before – there had been a current, and there had been plenty of fish.

1 Haraway, “Situated knowledges”
2 Haraway, “Situated knowledges”; Staudenmeier (2002): “SHOT’s [The Society of Historians of Technology] move toward a crowded narrative frame invites historians of technology to step out onto the visible stage of their own writings. If technological narratives can include wage workers, consumers, non-Westerners, women and minorities, surely there might be room for the historian author as well”.
In 1980, when I was 13 years old, a referendum was held in Sweden on whether nuclear power should be abandoned or not. As a part of my education within the Swedish school system, I was encouraged to find out as much as possible about this technology and to form an opinion of my own. Later on I became politically active, campaigning for sustainable development and against further regulation of Sweden’s last unregulated rivers. My interest in electricity production probably also stems from the fact that during a part of my early life I had an electronics workshop in the garage of the house where I lived. My father, an electronic engineer, also took me to visit the great hydropower schemes along our road, the E4, on our journeys between Stockholm and Luleå. It may be that it is from these experiences that my fascination with large dams and hydropower plants stems.

Furthermore, I was born and grew up in a country full of images of poor, black/coloured people in countries far away. I was made conscious of poor, starving black/coloured children that literature, textbooks, and TV programs made me think about every time I ate food, and I was encouraged not leave anything on my plate, as there were so many children starving far away, especially in “Africa”. I learnt early that it is a good thing to give money to poorer countries, or at least, to give development assistance. At the age of 18 I became an actor in “development assistance”, amongst other raising money at Christmas to help the poor in poorer countries under the theme “Christmas here, starvation there”.

Later I spent time working for an NGO “promoting democracy” in Mali, after finishing studies of international relations within political science. During my experience in Mali, and also during two years of academic studies in Paris, talking to people from the former French colonies, I came to seriously question the idea and the activities of “development assistance”, that I once had been so sure was something inherently “good”. Along the way, I also came to reflect on my own origin within what I long thought of as a homogenous country. Being from the northern part of Sweden, which had been subjected to internal colonization since the 17th century, and since the early 1970s subject to “development programs” but under a different name from those in African countries, I came to see the ideological parallels.

Another issue that has grown through the years is a fact that for a long time I did not even consider. I am, in a Swedish context, partly of ethnic minority descent, with roots from two different groups of people of which one is known to live in the areas of Swedish hydropower exploitation – the Sámi. Still, in my discussions with people from former and

1 “jul här – svält där”
currently colonized regions, I realized I was part of the people labelled “white” or “Westerners”. Being blond, having blue eyes, I am rarely seen as having any specific ethnic background other than “Swedish”/”North European” outside Sweden, although I sometimes get questions about the origin of my “extraordinary” cheek-bones. These experiences are the starting point and the reasons for my writing this thesis in the way that I do, the feminist and postcolonial perspectives presenting the tool I needed.
PART ONE

CONTEXTS
Fig. 2. The Lule River is no longer a river but a series of reservoirs, forming a staircase: Dry river bed downstream of the Ligga hydro power plant. Photo: The author, July 2004.
2. On Visible Places and Invisibilized Peoples:
Contextualizing Swedish state-supported hydropower exploitation
(of indigenous peoples’ territories)

*When the water came closer to the village, some of the villagers tried to write to the government to protest. But it was already too late. The water was already there. We had to move.*

Magomba Meshack, a married man and father of seven children, is one of the displaced inhabitants of the “Great Ruaha Power Project”. He and his family lived in the (Old) Mtera village, submerged since the early 1980s by the Mtera Dam. The Mtera Dam became the largest artificial lake in Tanzania when it was finalized and reached its full supply level for the first time in 1984.2 The dam was constructed with the objective of giving the downstream Kidatu hydropower plant a capacity to produce 200 MW.

Before the era of the Mtera Dam, Meshack was a farmer cultivating the fertile land surrounding the old village. Once the water threatened his village, Meshack was one of the fortunate few. As he could show proof of his land tenure, the family was paid one of the highest amounts of compensation that any of the displaced villagers could receive. Even so, the 5000 Tanzanian shillings they received was not enough to pay the cost of constructing a new house for the family. Since then his wife and the children have lived in the “Italian camp”, a housing area within the Mtera Dam construction site. After construction was finalized, the consulting firm SWECO handed over control of the regulation reservoir to the Tanzanian electricity company, Tanesco. Meshack then was one of five lucky villagers who managed to obtain employment at the dam.3

The fates of Meshack and his co-villagers of the (Old) Mtera village are similar to those of many people living close to large-scale hydropower projects around the world. Nevertheless, there are differences in the power relations between the different affected

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riparians, depending on the historical and societal context. The Mtera Dam, and the whole Great Ruaha Power Project, was a state project, with massive financial support from development assistance donors, the Swedish Development Assistance Agency, Sida, and the World Bank. The local inhabitants seem to have been unable to exert any influence whatever, and attempts at resistance were futile. When the water came, they had to move.

[Fig. 3. The large Suorva regulation dam, on the Lule River in Sápmi, turning five small lakes into one inland sea. The tour boat takes tourists from the village Vaisa to the Ritsem tourist station. When water is low in the dam, people can cross over by foot. Photo: The author, July 2004.]

The Swedish development assistance participation in the financing of the Great Ruaha Power project is not too surprising. Sweden is a major hydropower nation. Early in the 20th century the Swedish State Power Board became the main actor within the sector, which it has remained ever since. Unlike the initiators of the Great Ruaha Power Project, the power
companies, whether private or state enterprises, have in many cases been forced to enter into extensive negotiations and have had to pay compensation to landowners.\(^1\) Yet, the state-supported hydropower exploitation in Sápmi, in the northern parts of the Swedish territory - shows many similarities to the project on the Great Ruaha River. Sápmi stretches across the borders of Sweden, Norway, Finland and Russia, and has been inhabited by the Sámi ethnic group for many thousands of years. When Sweden and the neighbouring states colonized the territory, and the borders were demarcated, the Sámi became citizens of different nation states. Then, as hydropower construction began in the area, any land and water not judicially proved to belong to a private person was considered to belong to the Swedish state, which was free to initiate industrial activity.\(^2\) The inhabitants, many of them belonging to the Sámi ethnic group, descendants of Sámi or mixed with Sámi, suffered severe losses. A particularly severe blow was inflicted on a traditional Sámi economic activity, reindeer-herding, an activity already under heavy pressure from industrial mining and forestry.\(^3\)

In the introduction chapter, I presented the concept “technoscientific paradigm” as an important part of the Swedish export of large scale hydropower within development assistance. Within the academic debate on what Swedish development assistance should be seen as, Elgström and Holmberg has argued that it should be considered as an export of a welfare state policy or as an international reform policy.\(^4\) This argument is interesting in the sense that even if we consider Swedish development assistance as not being about commercial interests, it opens for a closer look on what the Swedish welfare state is founded upon. As shown by earlier studies, the Swedish welfare state during the 20th century has had many aspects, not all of them quite so democratic.\(^5\) Now, the question would be: what is the part of the welfare state that Sweden has exported in regard to large scale hydropower projects. In this chapter, drawing on the experiences of the Sámi minority in Sweden, and specifically along the Lule River, I go into the concept of “technoscientific paradigm” further as I argue that the Swedish state has established a pattern of thought and a basis for action, in relation to

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1 See Jakobsson (1996) -for an English article version see Jakobsson (2002); Vedung/ Brandel (2001); Anshelm (1992)
3 Agriculture had earlier been a complementary activity, with exchanges between reindeer-owning peasants and Sámi reindeer herders. This relation changed in the early 20th century, due to Swedish state policy, and instead agriculture also became a competing interest. See for instance Nordin (2000) Recently activities within tourism and ecologism have also become competitors for the territory. Beach (1997)
4 See discussion in introduction chapter - Holmberg (1989)
5 On the involuntary sterilizations of women, racial biology and eugenics in Sweden in the 20th century cf Broberg/Tydén (2005); Runcis (1998)
large-scale hydropower within its own national borders. The main pillar in the technoscientific paradigm, in relation to hydropower, I define as the view that equates large-scale hydropower plants with progress.

Let’s stop for a moment and consider this view versus the research that has been made regarding large scale hydropower technology in Sweden and its role within Swedish industrialization. In his dissertation treating the first large scale hydropower plant in Sapmi constructed by the Swedish state power board, Porjus, completed in 1915, Staffan Hansson shows that although the arguments used when debating and deciding to construct the Porjus hydropower plant were all about great visions of industrial development, these expectations failed soon after construction was completed. The great industrial projects that were envisioned when starting construction were shelved. The State power board then both helped the existing consumers to finance the use of electricity and started a quest for exploiting new markets focusing on electrical utilities for household equipment and electrical heating.\(^1\) Mats Fridlund has in his dissertation on the close cooperation between the State power company and the Swedish enterprise ASEA shown the importance of their common efforts to develop amongst other the technology needed for high tension power lines. Through the high tension lines, the State power company could make use of electricity produced in the hydropower plants in the very north of Sweden, in the south of Sweden as well as for export to Denmark and further to the rest of Europe.\(^2\) The mere construction of large scale hydropower plants did not bring about industrialization in Sweden. Instead they were a part of a complex industrialization process, involving a set of different social actors, political contexts and access to extensive funding provided by the Swedish state.

My argument is that the prevailing view on large scale hydropower plants as equating progress sets the basis for related science and technology and helps to exclude opposing views and knowledge. However, one precondition of the persistence of this specific technoscientific paradigm is access to land areas for reservoirs and rivers. In order to achieve this, the state makes use of territory inhabited by peoples (often indigenous and/or ethnic minorities) without a strong voice, without political influence. In the process of planning the large-scale hydropower project, these peoples are “invisibilized”, which can be seen as a kind of problem-solving within the paradigm. There are, as the term “technoscience” indicates, other important components of the paradigm, in terms of technology and science as well as of

1 Hansson (1994), 226-266.
2 Fridlund (1999)
social, economic and political factors. The main focus in this chapter is on the question regarding access to land and water courses. This chapter is based on earlier research combined with a short empirical study of published documents exposing views by representatives of the Swedish State power board, contrasted by views from the people, mainly reindeer herding Sámis, living in the exploited areas.

_Taking and inundating the land of indigenous peoples_

In the 20th century, large-scale hydropower construction and electricity became a model for energy supply, a symbol of progress and of modernization.1 Hydropower is, as the name indicates, energy taken from water. Electricity is provided by using the potential energy of falling water, from a higher level to a lower one. A problem within hydropower production is that electricity has to be consumed immediately; it cannot be stored. The consumption of electricity varies over 24 hours, over the year and over long periods, depending on a number of climatic, economic and political factors. The demand does not correspond to the natural flow of a river. All rivers have their own unique flow of water, depending on climatic and environmental context. The solution to the problem is to save the water in reservoirs, and to release it according to the need for electricity.2 The larger the hydropower plant, i.e. the greater its capacity measured in megawatts, the larger the water storage facility – the regulating reservoir – has to be. In consequence, hydropower plants with a high capacity demand large reservoirs. Or at least, this is the technical solution that has come to prevail throughout the 20th century.3

The creation of the reservoirs has a number of serious negative impacts on the local inhabitants. Land is inundated, to various degrees. The inundation results not only in a loss of land for agricultural and pastoral activities, but also in chemical pollution, and, depending on

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1 See also Usher (ed.) (1997); McCully (1998); Khagram (1999); Hughes (1983); Kaijser (1994); Jakobsson (1996) and (2002); Fröjd (1999); Hansson (1994); Thue (1995)
2 Jakobsson defines regulated rivers as technological systems. Jakobsson (2002), 44.
3 The capacity of the hydropower plant depends not only on the water available, but also on each technical component of the construction, as well as the daily management, including maintenance of the technical components, of the plant. The “Powerformer” is an example of how a technical innovation can increase the capacity of an existing hydropower plant. Kjell Isaksson, Personal communication, Technical manager at the State Power Board, Porjus, Jun., 21, 1999; Florence Gwang’ombe, Personal communication, Research engineer at TANESCO, Kidatu, Nov. 16, 2000. See also Fröst/ Bergström/Freby/Hanssen (2001)
the environmental context, often in fatal waterborne diseases. The regulation of the water is in itself troublesome to local inhabitants. In Sweden, with its cold climate, water regulation in winter affects snow and ice tracks on frozen lakes and rivers. Furthermore, the change of the exploited landscape may also lead to gender-related changes in economic activities.

Large-scale hydropower generation thus causes numerous kinds of environmental, social and health hazards to those in the area where it takes place. Yet, when it comes to large-scale hydropower exploitation in “remote areas”, i.e. areas far from the central decision-making institutions and inhabited by people that have few opportunities to make themselves heard in political arenas, the hazards are easily disregarded, invisibilized, as are the affected people themselves.

With the big dam era that started in the 20th century, power companies, construction companies, governments and financiers within the development assistance area tended to share a common view of the land where the projects were to take place: the land belongs to the state. In most cases, indigenous people/ethnic minorities living in an area for centuries or even thousands of years have been treated as though they do not have a right to stop or influence major hydropower projects. Nor have they been acknowledged the right to generous financial compensation. Inga Lill Aronsson has in her dissertation on the negotiations preceding displacement of indigenous people for the construction of a hydropower dam in Mexico described the land inhabited by indigenous people as being considered “empty” by the dam developers.

The main issue discussed in this chapter is thus the relations between the state and the people living in the land to be inundated. The state authorities or representatives of the state, besides the State power company mentioned in this chapter, are county administrative boards, state commissions and inquiries, the Royal Academy of Sciences, water courts and the National Board of Agriculture. As a model for understanding how opposition from the affected people in Sápmi was met by the Swedish state, I use the term “invisibilization”. States may make use of violent measures to stop any opposition to a state project – such as torture and imprisonment of opponents, but “softer” measures may also be used. One “soft” strategy is to deny affected people access to a national political agenda, moving the cases to

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1 See Goldsmith/Hildyard (eds) (1984); Fearnside (2001)
2 Arnft (2002), 43-44, 69-99. Since the outbreak of the fatal virus HIV and the disease AIDS the relation between hydropower construction and prostitution has been discussed by Decosas (1996)
3 Aronsson (2002), 28. Also Lins Ribeiro (1994), 8ff, 86ff; Berger (1985): Berger (1977) In an analysis of the relation between the modern western state and indigenous people within its borders in Canada, Norway and Australia, Dyck (1985) argues that the state always has had a leading part in the exploitation of the land and resources.
different courts and thus depoliticizing the issue.¹ A further step is to belittle and play down the damage inflicted upon certain groups of people within a framework of official rhetoric and historiography. The term “invisibilization” has mainly been developed within theories on gender, to refer to the phenomenon of social and economic activities performed by women being neglected, declared unimportant or even ridiculed.² However, the concept can also be used to define peoples of (internally) colonized territories, as well as people without strong voices or influence. Using the term “invisibilization” reflects how the affected people are turned into “non-actors” by the decision-makers. One important connotation of the term “invisibilization” is that the peoples affected by hydropower development are not actually invisible – they are “invisibilized”. That is, the failure to see the affected people is a matter of choice, not a miscalculation. There is, furthermore, an attempt to avoid meeting the affected peoples on their own terms, designed to reduce and/or make it possible to ignore their demands.

Within the field of political science, the term NIMBY (Not In My Back Yard) syndrome is a term used to describe the often fierce local opposition to environmentally hazardous industrial activities, considered necessary for the public good or for the benefit of a whole nation.³ Opposition to hydropower exploitation conducted by a state company in the name of progress and for the alleged benefit of a whole nation could be cited as a perfect illustration of the NIMBY syndrome. However, the NIMBY syndrome assumes a state in which there is space for opposition. It also assumes that affected people are informed of the project plans and their consequences, have enough skills to deal with judicial processes, and have the time and organization to make their voices heard. Finally, and maybe most importantly, for the resistance to be successful, the people affected have to be considered the rightful owners of the land to be inundated and damaged. When it comes to large-scale hydropower exploitation, or other industrial exploitation, in “remote areas”, it seems appropriate to describe these areas as a sort of “nobody’s back yard”. The ones objecting and protesting are unimportant, they are “nobodies”.⁴

¹ Jakobsson (1996)
² See for instance Frissen (1995); Hannan (2000), Part two, 4 ff; Nyberg (2001); Martin (1994)
³ See for instance Kraft/Clary (1991); Quah/Tan (2002)
⁴ Only in a few cases has opposition from indigenous people towards hydropower exploitation been fierce, although even then not very successful in the end. For instance the alliance between Indian environmentalists and local inhabitants of the Narmada rivers is an exception, as is the opposition of Sámi people in Norway when fighting against the Norwegian state over the River Alta. Öhman (1993); Saeltun ( 2001); Paine (1985)
Fig. 4. Mats and Niila Gällman by an ice displacement on Akkajaure, the Suorva reservoir. The ice displacement results from the regulation of water of the reservoir for the production of electricity. Photo: Victoria Harnesk, April 2006.

Fig. 5. Niila Gällman falling on the slippery ice of the Suorva reservoir, helped by his father Mats. Water on the ice turns it slippery, and the cracks are a result of the water regulation, turning the reservoir to a death trap in severe circumstances. Photo: Victoria Harnesk, April 2006.
We have not been able to avoid damages for the inhabitants along the river, for the Sámi, for the conservation of nature nor for the interest of recreation. The issues raised have, however, to a large extent, been resolved through negotiation and one might even say on the best of terms.1

The regulation has most of all destroyed the migration route above Suorva. The letting out of water causes ice barriers. These are due to the storms bared of snow and very slippery, pointing in different angles. Add to this cracks and holes in the ice. (...) To dare to go out on such a lake with a herd of pregnant reindeer does is a sure death. 2

The quotations above are two opposing views on hydropower during the height of the Swedish hydropower exploitation in the 1950s. The first quotation is from the speech made by the then Swedish prime minister Tage Erlander, at the inauguration of the Messaure Dam on the Lule River in 1963. Erlander exposes a view based on his experiences and political and geographical position. Being the prime minister, he was the representative of the Swedish state, furthermore he was not living in the exploited area, and thirdly, he exposes a view from his ethnical background – the majority – Swedish. An opposing view, pointing at the negative impacts of hydropower, is presented by Inger Utsi, who in most respects differ from Erlander, in political and geographical position as well as in ethnicity. She lived in the village Vaisa, by the Suorva dam, three times moved due to regulation, and she was a reindeer herder and of the ethnicity of Sámi.

The Lule River is today the most hydroelectrically developed river in Sweden. The first hydroelectric plant was inaugurated at Porjus in 1915.3 Construction of the first stage of the great reservoir at Suorva, upstream from Porjus, took place between 1919 and 1923. Since then the Suorva Dam has been enlarged three times, to its present level and size.4 Over the

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3 Hansson (1994), 272; Forsgren (1982), 76.
years the Lule River has been made into an energy-producing factory, with fifteen hydropower plants and a total installed capacity of 4350 MW, or an annual output of 13.6 TWh. The Lule River alone now produces almost half of all the electricity from hydropower in Sweden.¹ Yet, over eighty years after the first hydropower constructions in Sápmi, there has still been very limited academic research into the effects of the displacement of the people, many of them Sámi whose major economic activity and livelihood was reindeer-herding. Two of the very few academic studies on the specific issue of the Sámi people and hydropower exploitation are by Hanes-Nutti (1987) and (1988) who has described the judicial proceedings in which the Sámi at the first three regulations of Suorva, as well as the impacts on the Sámi of Vaisaluokta and Änonjalme. Two doctoral theses dealing with Sámi questions discusses the issue of hydropower exploitation, Lantto (2003) and Amft (2002). Lantto argues that the hydropower exploitations was a driving force for ethnic mobilisation for the Sámi. Amft argues that hydropower exploitation had impacts for the gender division of work within reindeer herding.² I return to these studies within this chapter.

¹ Vattenfall (2002)
The basis for the introduction of the big dam era, and thus the technoscientific paradigm, in Sweden has been described by the historian Eva Jakobsson. Jakobsson has in her thesis identified a specific group of actors, whom she calls “hydropower developers”. They were engineers who owned hydropower companies, leaders in the Swedish state hydropower production, consultant engineers in the water development area, and water rights lawyers who campaigned and won the battle that paved the way for large-scale hydropower construction in Sweden at the beginning of the 20th century. Prior to 1918, the complete harnessing of a river was prohibited by law, and thus no large-scale hydropower plant could make use of the water according to the demand for electricity. With the new Water Act, the principle of “reasonable use” was established. If the “benefit” of the regulation could be proved three times greater than the damage, engineering projects and water regulation would be allowed. One important tactic of the hydropower developers in achieving their objective was to depoliticize the controversial issue of water regulation. The hydropower developers managed to shift the decision-making process from the political agenda to special water courts. These water courts were staffed not only by lawyers, but also by technicians, and thus a highly political issue was handed over to technicians and bureaucrats. Against this background, large-scale hydropower construction could take off; the “industrialization” of the Swedish rivers, as Jakobsson describes it, could start.

The industrialization of the rivers was dependent on another important factor, the financing of the hydropower projects. At the start of the 20th century, hydropower plants in Sweden were built mainly by private companies. As the potential of the rivers of the northern part of Sweden was discovered, the State Power Board, established in 1909, became the prominent player, and paved the way for far bigger investments, technological development of transmission lines and consequently large-scale projects. The hydropower exploitation of the northern parts, in Sápmi, took off with furious haste. It was part of a national strategy to make use of the dormant resources of northern Sweden. Initially, exploitation did not meet with any serious protests, although the national conservationist organization, the SNF, and the national tourist organization, the STF, made their voices heard.

1 Jakobsson (1996)
2 Ibid., 251ff.
3 Jakobsson (1996), 65-109, describes it as the establishment of a “Swedish system”. Fridlund has described the close cooperation in the development of the electricity technology between the State Power Board and the company ASEA. See also Vedung/Brandel (2001), 24 f.
from time to time. Also Sámi people protested, the first organized protest of any size starting in the 1950s, in the Sámi national organization, SSR.¹

By the early 1960s, the opponents of large-scale hydropower construction managed to get themselves onto the national political agenda and to assemble political support to slow down the harnessing of certain rivers.² Still, they did not manage to completely stop further hydropower exploitation until the 1990s. Only in 1993 did the Swedish parliament pass a law which stopped further hydropower exploitation of a number of Swedish rivers.³ All the major rivers rising within and flowing through the land of Sápmi, except three, are now regulated.⁴

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Sápmi – a non-existent land?

As mentioned above, protest and resistance against hydropower exploitation has come from the Sámi people and the SSR, in particular. Yet, until today, there has been very little research into the impact of hydropower on Sámi culture and livelihood. To understand why, it is important to recognize the depiction of Sápmi as a “remote area”, an “empty land”, a “terra nullius” or “nobody’s back yard”.

Sápmi is the Sámi name for the area populated by the Sámi people. The area stretches over four states, Norway, Sweden, Finland and Russia. As ethnic categorization is not allowed in Sweden, Norway and Finland, and as it is difficult to establish who actually is a Sámi, an exact number is impossible to give. The majority of Sámi live in Norway, while in Sweden there are an estimated 20,000 – 40,000 Sámi.⁵ The term “Sápmi” has not gained official recognition, meaning that there is no official area defined as Sapmi. In the Swedish language the north-western part of Sápmi within the Swedish territory has been known as “Lapland”. The name dates back to the 16th century, while the demarcation on the western side, towards Norway, was settled in the 18th century, and also as the “Lap tax land” – Lappskatteland – land owned by Sámi who paid taxes to the Swedish state. During the 19th century, the local state representatives, without having any actual legal support, started claiming the Lap tax

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¹ Lantto (2003), 99f.
² Vedung/Brandel (2001), 32ff, 60-68; Anshelm.
³ Ibid., 397, 416.
⁴ Four rivers in Sápmi are supposedly protected from hydropower exploitation. However, one of them, the Vindel, has a confluence with a regulated river, the Ume, and thus its status as an unexploited river has been questioned.
land as state property. By the 20th century, the name “Lapland” became used as reference to the north east area of Sapmi, without having to any administrative function. Another name has become a Swedish designation for the vast Swedish territory north of the River Dal, “Norrland”, (corresponding to about 2/3 of the whole Sweden of today). Directly translated into English, this means “north land”. The name given to the area is in itself of interest, as it represents a view of the land as far removed from the centres of power in the Swedish capital, Stockholm, and the southern parts. “Norrland” is a remote area, unfamiliar to the majority of the Swedish people living outside it, and often referred to as a geographical site, like “Africa” is sometimes used in the sense of a country instead of a whole continent. When I use the term “Sápmi”, it is to emphasize the perspective of a person familiar with the area and with a personal historical relation to it, as well as to challenge the Swedish terminology referring to the area.

[Fig. 7. Sápmi, seen from the North pole. Source: Samiskt Informationscentrum, Utsi/Labba (2001)]

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1 Lundmark (2006)
2 The 25 traditional provinces called landskap, in Sweden, of which Lappland is one, have long been without administrative functions. Instead Sweden is divided into a number of regional administrations, “län”, which have county administrative boards. Of these, five are found within the borders of “Norrland”: Västernorrland, Jämtland, Gävleborg, Västerbotten and Norrbotten. Västerbotten and Norrbotten together contain “Lapland”. At the same time all these five län lie wholly or partly within Sápmi. See Lundmark (1999); Hägerstrand/Sporrong (1983), 95; Lundholm (1983), 132.
3 See also Sörlin (1988), 12ff, 21ff.
4 My own family historical background displays quite a typical mixture of ethnicities of “Swedish” people in the north. It is a combination of Forest Sámi, late and early immigrants from southern parts of Sweden as well as natives of Tornedalen. I grew up in Luleå, at the delta of the Lule River, and spent numerous summers in Skällarim, by the Little Lule River, with my maternal grandparents.
The inhabitants of Sápmi, the Sámi, have lived here since long before the Swedish state was founded. Archaeological research bears witness to a territory, not of wilderness, but full of economic activity going back thousands of years.¹ The Sámi people were never an exotic group, foreign to others. Researchers have pointed out that the area consisted of a mixture of ethnicities, generally categorized into Sámi, Swedish and Finnish. Intermarriage and economic exchange were common. Until the early 20th century, peasants of ethnic backgrounds other than Sámi had reindeer which were tended by Sámi reindeer-herders, who earned extra income through this arrangement.² With the establishment of the Swedish state under Gustav Vasa in the 16th century, a state-conducted colonization of Sápmi began. Along with the wish to establish Swedish control over the territory at this early stage, there was a view of the area as a prosperous land to develop for the benefit of the Swedish nation. A number of scientific explorations of the area and of its inhabitants have been made by outsiders since the 18th century. In many cases the Sámi have been depicted as closer to nature than to civilization, and different ideas on how they should be developed, or on the contrary kept in their “natural state”, have even been discussed on a national level by the Swedish Riksdag.³ One important issue has always been the land rights of the Sámi peoples versus the Swedish state, an issue which still remains unresolved in the 21st century.⁴ One concrete example of the problems occurred when the union between Sweden and Norway was dissolved in 1905 and the frontier between the two countries was closed for the traditional grazing of reindeer. The reindeer used to migrate freely between the two countries for pasture. When the pasture in Norway was restricted, the area within the Swedish territory became too small to feed all the reindeer. Certain Sámi families were then forced by the Swedish state to move southwards, and to integrate with other Sámi villages. This was problematic for many

¹ According to archeological researchers Sápmi has been inhabited since the last ice age, i.e. for about 9000 years. However, there is an ongoing debate as to whether the inhabitants were Sámi, “Scandinavian”, or a mixture of the two. See Baudou (1992), 151ff; 157; Bayliss-Smith/ Mulk (1999); Zachrisson (2005)
² Elenius (2002); Nordin (2000), 174f.
³ See for instance Granqvist (2004); Kvist (1992); Sörlin (1988), 33f; Mörkenstam (1999); Bäärnhielm (1976); Lindgren (2002); Landmark (2002); Eriksson (1982), 89-101; Broberg (1981/1982)
⁴ Concerning Sámi and the Swedish state position regarding their land ownership, see Korpijaakko, “Land ownership among the Sámi of Sweden-Finland: theory and practice” in Roger Kvist (ed.), Sámi readings III, 79-89. Korpijaakko (1992) states that Sámi do not retain rights to the land and water in their environment comparable to actual ownership. This is based on an understanding of the nature of Sámi livelihoods: hunting, fishing and reindeer husbandry are not considered to need possession of land.

Still today, the issue of who has the rights to the territory has not been settled. For instance, the ILO convention no 169 of 1989, which states the right of indigenous people to their traditional territory, has still by 2007, not been ratified by Sweden. Concerning the Swedish discussion on ratification of the convention see, for instance, Heurgren (1999); Johansson/ Klang (2003)
reasons; not only did the incoming Sámi feel that they were intruding on other Sámi, but there were also differences in language, as well as in ways of managing the reindeer.\footnote{Hanes-Nutti (1987), 18ff.}

\[Fig. 8. Reindeers and Sámis resting on the frozen lake Malgomaj during spring migration, before regulation, the sledge raid going from the coast zone towards the mountains, some time between 1913-1925. Judged by their clothes, the people on the photo are probably south Sámis. Photo: Lage Dahlberg/Västerbottens Museum.\]

\textit{Constructing the Suorva Dam and neglecting the Sámi}

The Suorva Dam was first constructed as the reservoir regulating the Porjus hydropower plant. The area in which the dam was planned to be constructed had actually already been protected from exploitation as it had been declared a national park in 1909. Furthermore, the area had earlier been assigned to the Sámi, by the Swedish law on reindeer pasture of 1898, primarily for reindeer-herding and related activities.\footnote{Hanes-Nutti (1988), 12, 23.} However, the strong economic interest of the State Power Board in obtaining permission for hydropower exploitation led to its
receiving approval for the project. Among the Swedish authorities that were asked to express their views on the proposed venture was the Royal Swedish Academy of Sciences (Academy of Sciences). The Academy replied in 1917 that regulation would damage the area, and reduce its value as a natural environment. However, the Academy of Sciences also stated that the benefit to the national economy would be such that it could not oppose the plans.\(^1\) Other bodies that were consulted were the Norrbotten County Administrative Board, and the National Board of Agriculture. Both stated that there might be a negative impact on the Sámi people in the area, but that this should not be allowed to put a stop to the project, in view of its great national importance. On the strength of these opinions, the State Power Board appealed two years later to the water court, for the right to construct a dam at Lake Suorva. In the appeal, the State Power Board claimed that the landed properties that would be affected belonged to the Swedish state and were located above the geographical limit for cultivation. Thus, as this land was located in “uninhabited territory, unused for agricultural or industrial purposes”, there was no other holder of legal rights than the state.\(^2\)

In the 1950s, the recently established national association of Sámi villages and Sámi organizations, SSR, started to protest against the regulation of the water. In 1953 the SSR wrote to the Swedish Government, demanding that profit from the hydropower plants in Sápmi should be distributed among Sámi peoples, in the form of funds for education and research. The SSR also encouraged Sámi people to be active in the judicial process, and to be sceptical and cautious regarding the short-term compensation promised by the State Power Board. Yet, the demands and proposals from the SSR were left unheard by the Swedish state representatives. For instance, in the instructions for the establishment of the state hydropower enquiry in Norrland, the Sámi and their reindeer-herding activities were not mentioned. In the report presented two years later by the commission the issues were still not mentioned. Also the state inquiry commission on electric power of 1943, which published its main report in 1954, although touching upon the hydropower exploitation and its impact in Norrland, did not mention the Sámi and their reindeer-herding.\(^3\)

\(^1\) Ibid., 23.
\(^2\) Ibid., 24.
\(^3\) See Lantto (2003), 105.
Thirty-seven years after the first regulation of the river at Suorva, Åke Rusck, the then General Manager of the State Power Board, expressed his views on hydropower exploitation in Sápmi at a conference on the future of the administrative district of Norrbotten.\(^1\) In his paper, Rusck told a story of how the State Power Board first entered “pure wilderness”, to build the Porjus hydropower station.\(^2\) Rusck continued by stating that Sweden had a great advantage in its access to harnessable waterfalls “of which most are located in Norrland” at a low cost.\(^3\) The Lule River would become the most productive river in Sweden, providing “12.5 billion kWh per year”.\(^4\)

Besides the high figures for the Lule River’s energy potential, Rusck’s address is full of verbal images of the future, of how the State Power Board would bring wealth and progress, by means of large-scale hydropower exploitation in “Norrland”, to both the region and the whole country. In the reprint of the speech, the Messaure Dam on the Lule River, at that time under construction, is pictured together with a sevenfold image of the Cheops pyramid in Egypt. The subtitle reads: “The dam at Messaure will have a volume corresponding to seven Cheops pyramids”.\(^5\) At the end of his speech Rusck referred to the cost of the exploitation for protection of the environment and tourism. He stated that the development would improve the prospects for tourism, through the construction of “better communications”.\(^6\) There was no mention whatever of the Sámi as an ethnic group or of their dependence on traditional economic activities which were damaged by large-scale exploitation.\(^7\) The “local inhabitants”, though, are mentioned, as Rusck states that a “few” of them would have to move, but that their losses were to be fully covered:

*I will not deny that damage often occurs – people have to move, homes are abandoned. It is of course not enough to claim that the water law ensures more than full compensation for this. The problem is not only economic, it has also a human aspect. The State Power Board also tries in various ways to alleviate this dislocation – whenever the person concerned so wishes,*

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\(^1\) Mr. Rusck was also a member of the TANESCO board 1965-1968. Öhman (2003), 34.
\(^2\) Rusck (1956), 208.
\(^3\) Ibid., 203, 206.
\(^4\) Ibid., 208.
\(^5\) Ibid., 214.
\(^6\) Ibid., 223.
\(^7\) See also Lantto (2003),97.
we try to help him to a new estate. (...) On the other hand there will be quite a few people that will have to leave their homes on account of these new hydropower constructions in the Lule River.¹

By the 1980s, the harnessing of Sweden’s rivers had run into fierce opposition and there were at the time a number of campaigns against further hydroelectric power in Sweden.² Probably in response to the criticism, the State Power Board produced five folders dealing with different aspects of the impact of hydropower on different economic activities and the environment. In the folder dedicated to the problems of the Sámi people entitled “Hydropower and Reindeer Management” it is stated that there are a number of negative impacts of hydropower exploitation – but that there are also positive effects, such as the construction of roads which facilitate transport to the benefit of the local inhabitants and their economic activities.³ Furthermore it is also declared that the State Power Board and the Swedish state have paid for the construction of fences, specific enclosed work areas, reindeer-herder cottages, slaughterhouses, roads, migration routes and bridges for the animals, as well as paying compensation for the damage:

_The power companies have aimed to give full indemnity for damage and intrusion through a combination of measures and financial compensation. (---) The power companies have now settled the issues of damages and intrusion with most of the Sámi villages affected by hydropower exploitation._⁴

One example is mentioned, the Sirkas (Sirges) Sámi village which according to the folder received SEK 11.7 million in 1983 for damage to fishery, and for damage to reindeer-herding in 1984 an amount of SEK 10 million.⁵ Together with the amount of money that is mentioned, a statistical perspective is used to show that reindeer-herding has not suffered any great losses.

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¹ Rusck (1956), 203-224, 221.
² See Vedung/Brandel (2001)
³ Lif (1986) The other folders deal with fishery, tourism, demography/employment/municipal economy, and natural environment. The author of the 19-page folder on “hydropower and reindeer herding” is according to the introductory text Mr Torvald Lif, of the State Power Board unit for investigations and water court cases. The main information in the folder derives from two state reports from the 1960s concerning the reindeer-herding land areas, and another concerning the reindeer-herding economy of 1983 together with statistics on the number of reindeer within certain Sámi villages: SOU 1966:12, Renhetsmarkerna, the Appendix 5 of “Betänkande avgivet av 1964 års svensk-norska renbeteskommission” and SOU 1983:67 Rennäringens ekonomi, The statistics concerning number of reindeers are so called “Renlängder”.
⁴ Lif, 18.
⁵ Ibid.
In six diagrams and a table it is stated that the actual number of reindeer has not gone down as a consequence of hydropower exploitation.\(^1\) Finally, by the end of the 1990s, the State Power Board had developed an environmentally friendly profile. In the age of the Internet, the strategies and achievements in “life cycle analysis”, environmental protection, and risk analysis of the company are presented on the State Power Board home page in downloadable documents.\(^2\) In this setting, the issue of reindeer-herding had almost completely vanished. On the company website, the term “reindeer-herding” is mentioned once, when referring to the effect of hydropower exploitation on the activities:

*Hydropower exploitation affects agriculture, forestry and reindeer-herding in different ways. The most concrete is the loss of land and damage to land due to inundation for water regulation. On the other hand the water flow becomes more uniform with less risk of flooding.*\(^3\)

The same sentence is found in the document on life cycle analysis of electricity production by the State Power Board.\(^4\) In the environmental declaration on the Lule River,\(^5\) a number of risks – environmental and health hazards – related to hydropower dams and power plants during and after construction are discussed. Yet this document says nothing about risks or health hazards faced by reindeer herders.\(^6\) On the main Internet site, describing how hydropower is adapted to the environment, hydroelectricity is referred to as an “economic, renewable resource which is in principle free from environmentally damaging depletion”.\(^7\)

It is important to stress that during the 20\(^{th}\) century the State Power Board has never been unaware of the Sámi people’s situation. On a number of occasions, the State Power Board has actually financed scientific investigations of the Sámi villages and Sámi traditional activities, the first as early as 1922.\(^8\) The State Power Board has thus had several indications of the severe negative impact on reindeer-herding and related activities.

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\(^1\) Ibid., 5, 12, 13, 33,35.  
\(^2\) Vattenfall (2004)  
\(^3\) Ibid.  
\(^5\) On environmental product declarations see further for instance Jönsson (2000)  
\(^6\) Vattenfall (2002)  
\(^7\) Vattenfall, *Vattenkraft* (2005)  
\(^8\) See Manker (1944); Manker (1953); Manker (1961)
In this section I have mentioned a few examples stretching from 1917 to 2004 of how Sápmi has been considered deserted, sparsely populated, and roadless and how the damage inflicted upon the “few inhabitants concerned” has been considered fully compensated. Another phenomenon I have identified is the invisibilization of the ethnic group of the Sámi, their traditional activities, their attempts to protest and their culture. Hydropower exploitation has, by the state representatives, been considered a way of developing the area. The examples are collected mainly from the small amount of existing research literature dealing with the impact of the hydropower industry on Sámi activities and traditions, together with a brief analysis of the views argued by the State Power Board. It is obvious that more research is needed in this area, but I consider it possible to argue that the examples mentioned are indicators of a technoscientific paradigm promoted by the Swedish state, with the “invisibilization of the Sámi people” and their land rights being used as a way to overcome a severe anomaly in the paradigm.

*Viewpoints of the “invisibilized”*

As a contrast to the view, the paradigm, adopted by the Swedish state and presented in the preceding part, I will now deal with the issues from the viewpoint of the “invisibilized”: roadlessness, compensation and cultural values and how these things have a great impact on their “back yard”.

First of all, the issue of roadlessness is of great interest, as it is a good example of the way in which perspective changes with the beholder. Sápmi has never been a roadless land or a “pure wilderness”. I have already described the inhabitants of Sápmi and their long history. Furthermore, the Lule River, desired by the State Power Board for the production of electricity, is assumed to have received its name from the Sámi language, Lulij-jokko, meaning the river of the Forest Sámi or the river of the Easterners.1 The Lule River was for many centuries a central highway between two seas, the Atlantic Ocean and the Gulf of Bothnia, and as such an important cultural and economic link between eastern and western

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1 Edlund (1996), 112.
societies.\textsuperscript{1} As a consequence of the hydropower exploitation transport has been made much more difficult, both in summer and in winter. The former water link between the two seas has been replaced by a bitumen road built to give access to the different construction sites. The river is nowadays no longer a river but instead a series of reservoirs, like a staircase. At the hydropower sites, the water disappears underground for some kilometres, leaving the old watercourse bare, like an open wound in the landscape. In winter time, the ice that used to provide safe and easily accessible roads is damaged by constant variation of the water level, in response to the peak demands of electricity in the Swedish cities.

\textsuperscript{1} Fjällström (1996), 83.
In a book based on her academic investigation of the impact of the Suorva regulations on the people of the Sirges Sámi village, Gertrude Hanes describes the issue of the ice tracks:

One of the problems that came after the second and third regulation of the river at the Suorva Dam was the deteriorated ice conditions. There was so much water on the frozen lake and the cracks in the ice and the hanging ice by the shores made it difficult to reach land. The sledges broke and reindeer were hurt. Sometimes reindeer fell into the cracks and they had to worry all the time in case the children fell too. There was no longer pasture to be found for the reindeer during their yearly migrations, as the islets were flooded. They had to start bringing reindeer moss to feed them during the migration. As there was no pasture in the valley they had to move faster and so the reindeer herd was moved separately from the family. The reindeer herd was moved partly over the mountains instead of through the valley all the way as before. The protected areas where the reindeer cows used to calve were gone and they had to use sites for calving in the border mountains and on the Norwegian side. After the third regulation boats were more often used when moving up to Vaisa. They continued to move with the raid to Vaisa early in spring, but then took the sledges back to Suorva and went by boat back to Vaisa. In the autumn boats were used to go to Suorva, and then they waited for the ice to be able to continue with sledge raid to the winter pasture. Downstream from Suorva the delayed freeze and water on the ice were the biggest problem. Finally they gave up, one by one, and started moving by boat on open water even below Suorva. The younger men who did not have a family stayed behind and watched the reindeer. Then the men, the family fathers, went back and took the reindeer herd down. Eventually some families chose to stay in Porjus in spring and wait for open water, while only the reindeer herders followed the reindeer westwards. Thus, the reindeer herd and the family were separated during both spring and autumn migrations and the activity became something that men dealt with. The time when the whole family and the reindeer lived close together had gone.¹

The ice road problem discussed above is one very important consequence of the hydropower exploitation in Sápmi. The State Power Board is obliged by agreements to strengthen the ice tracks. There also exists an agreement that when required by reindeer herders, the State Power Board has to make measurements to establish whether the passage at a certain location is safe or not. However, in real life, the request to the State Power Board has to come in one or two

¹ Hanes (2000), 118 f.
days before passage, while reindeer-herding is not predictable work. The herders cannot know if the reindeer will be at that specific location or not, two days later, which means that this option is never used and thus irrelevant.  

Not only have the traditional paths for the annual migration been damaged by the hydropower exploitation, the working environment of the reindeer herders has also been affected. The animals have to be collected at certain times and the herders sometimes have to cross the reservoirs in order to succeed. These reservoirs are dangerous at any time of the year. When the water is open, the size of the reservoirs makes them windy and thus difficult to navigate. In winter the ice is fragile and treacherous due to the changing water levels, caused by peak demands. This has helped to make reindeer-herding one of the most dangerous economic activities in Sweden.  

The damaged snow roads have led some Sámi villages to start moving their reindeer by truck, which has had a great economic impact. The activity has become a lot more expensive, and even led some to give it up. Amft has presented a calculation of costs from one informant:

*If the transport, at a low estimate, costs around sixty crowns [SEK] per reindeer, and a family needs about 700 animals to manage their economy, and if you then consider that all reindeers have to be transported back to the summer pasture, the final cost will be around 84 000 crowns for the reindeer transport alone every year.*

For reindeer owners with small herds, these costs are likely to make the whole enterprise much too expensive. Amft refers to how this, in combination with the fact that the Swedish legislation assumes as a norm that the reindeer herder is a man, has led to a masculinization of

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1 Öhman/ Sandström (2004)  
2 Hassler et al. (2003) See also Utsi (1958)  
3 A Sámi village is an economic association for the administration of reindeer-herding, in a certain geographical area. Only persons belonging to a Sámi village have the right to carry on reindeer-herding in Sweden. With the passing of the reindeer grazing acts of 1886 and 1898, the Sámi definitely lost their ownership to land and individual pasture rights were made into an exclusive right of the Sámi villages. The latest regulation of Sámi villages was established in the Reindeer Grazing Act of 1971. By 2002 the number of reindeer-herding enterprises was 928, reindeer owners 4487 and the number of reindeer was just above 228 000. the number of Sámi villages was 51. Ritzén (1960); Kvist (1992), 70.Samernas Riksförbund (2005), Jordbruksverket (2005)  
4 Amft (2002), 43f.  
5 Ibid., 43.
the activity, as few women have been able to continue it. Yet another complication of the damming of the Suorva was that the trees were not removed before the flooding. As a consequence the fishery, which is an important ancillary occupation for the reindeer herders, has been disturbed as, for instance, nets are damaged by the wood debris.

Financial compensation was, as mentioned, promised by the State Power Board and representatives of the Swedish Government as good enough to make up for the losses. Before, during and after the exploitation of the great rivers in Sápmi, judicial proceedings actually took place on a number of occasions, but in several cases the Sámi minority did not manage to make their voices heard. Amft refers to an informant who has described how he was treated during the judicial proceedings in his village in the 1940s. The villagers had to go to court to get any compensation at all. According to the informant it was more difficult for the reindeer-herders to be compensated for their losses. The informant stated that the Swedish farmers received a lot more compensation, that every word they said was believed while the Sámi reindeer-herders were not believed.

The issue of categorization of ethnicities also forms a part of the hydropower exploitation. The category “farmers” had already earlier been restricted to non-Sámi. By the early 20th century the Swedish state had introduced the “Lapp should be Lapp” policy, with clear racist overtones. Sámi were considered to have specific characteristics, which made them suitable only for nomadic reindeer-herding. If they were to turn to anything else, they would in this view sink into wretchedness. Thus it was considered important to keep them as far from the Swedish culture as possible. Sámi who were not reindeer-herding were to be considered Swedish. Through the Swedish state policy of “Swedification” they had been transformed into Swedes. As Amft describes, the ones that already had been “Swedified”, the peasants and

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1 Ibid., 44, 69-99.
2 See Utsi (1958)
3 Amongst other Lif (1986)
4 Amft (2002), 44.
5 Lundmark (2002), 63. According to Lundmark the “Laplander should be Laplander policy” was an attempt by the Swedish state to categorize the “Laplanders”. Although racism was an important part, the economic policy was also of interest. This led to a position where state policy regarding the Sámi had to pay respect to three different criteria: First of all the race, i.e. the origin. Secondly the way of living, i.e. whether the person was nomadic or not. Thirdly, the economic activity, i.e. if the person was a reindeer herder or not. This led to three distinct categories, the real “Laplanders” were the ones who were nomadic, living in special huts and herding reindeer. The second category was the “forest Laplander”, living in normal houses but still reindeer-herding, who were considered something in between Laplanders and the other population. Finally, the persons of
landowners, were again separated from the reindeer-herders, and received better compensation than those without any formal land ownership.¹

When it comes to the cases where financial compensation has been paid, the Sámi reindeer-herders have had to pay a great part of it back to the Swedish state, in the form of taxes. One example is presented by Mr. Lennart Pittja, who tells the story of how he was compensated in 1984, but then ten years later was asked to pay taxes on the compensation. This meant that he had to pay back half of the compensation to the state.²

One issue rarely touched upon by the representatives of the Swedish state is the emotions and cultural values of the displaced Sámi peoples. Lennart Pittja has expressed some of the emotions, speaking of sadness over the intrusion into the landscape of the power lines. He stated that one consequence is that the children no longer have to learn to find their way in the terrain via traditional knowledge, because instead they just follow the power lines.³ Other examples of these emotional and cultural values, and the sense of being expelled from one’s own land, are expressed in the poetry of Paulus and Inger Utsi, of Vaisa (and the Sirges Sámi village). Paulus and Inger Utsi started writing poetry in response to the regulation of the Suorva Dam in the 1940s. I will deal further with this in the following section.

Revisibilizations of the Sámi in consequence of hydropower exploitation

Although the hydropower exploitation of the rivers in Sapmi was based on the invisibilization of the Sámi people, the very same phenomena has led in certain respects to revisibilizations of the Sámi.

First of all, according to Lantto, Sámi reindeer-herders who were not capable of resisting the constructions and expropriations focused instead on organizing themselves to receive as much financial compensation as possible. This has led to an ethnic mobilization amongst the Sámi, which has had a concrete outcome in the establishment of the Sámi

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¹ Amft (2002), 44.
² Pittja (1994)
³ Ibid.
parliament in the 1990s. Secondly, as a result of the early investigations of Sámi culture at the time of the hydropower development of 1922, and specifically since 1942 and the passing of the law on ancient monuments that forced the exploiter to finance archeological investigations before any larger industrial project, thousands of ancient Sámi habitations have been discovered along the harnessed rivers of Sapmi. There are, however, two peculiar aspects to these investigations. Research on Sámi settlements has shown that the early investigations were quite faulty. Sámi settlements, graves and holy sites are now inundated, and lost forever to any future research. The results of the investigations have also led to a debate on historical ownership. The question has arisen of who the peoples were that used the settlements discovered and who made the rock-carvings near, for example, the power stations in Nämfor and Stornorff. The State Power Board, which is responsible for the maintenance of the rock-carvings in Stornorff, presents them not as a Sámi heritage, but as a national heritage without any specific ethnic background. Thirdly, Vaisa, by the Suorva Dam, is one of the villages within the Sirges Sámi Village, which has been used by the State Power Board in support of the assertion that compensation has been adequate. The view of the affected people, though, seems quite different when interpreted through the poetry of the poets Paulus and Inger Utsi. Their poetry writing, starting in the 1940s, and published from the 1960s, became an emotional response to the exploitation of the area. The poetry of Paulus and Inger came to serve as a sort of a wake-up call to Sámi people, expressing the sense of loss of ancient traditions and cherished landscapes. Newspapers have written about the poetry, and Paulus appeared on radio and television and at concerts. Some of the texts were also out to music and as such they have reached Sámi youth as well as an international audience. 

1 Lantto (2003), 91ff. The Sámi parliament was established in 1993. The sessions are held in Kiruna, in Sapmi, 1500 km north of the Swedish capital. The parliament is not a public authority and has little to no political impact in Sweden. There is no specific representation of the Sámi in the Swedish national parliament. Cf Sámi Parliament (2004)
2 Baudou (1992), 32f, 43, 151ff.; Janson/ Hvarfner (1960); Bayliss-Smith/ Mulk (1999)
3 See for instance Manker (1944)
4 Baudou (1992), 39.
5 Visit to the Stornorff power plant and rock carvings by the author in July, 2004.
6 Paulus Utsi lived from 1918-1974, and his wife Inger Utsi, from 1914-1984. Their life and poetry has been described by amongst other Valkapää (2000)
7 Paulus became internationally renowned, while his wife Inger only after the death of her husband officially claimed to be a part of the creative process when she presented herself as co-author of the second collection, Giela Gielain, in 1980. See for instance Gaski (1997); Ruong (1986), 147-156.
These two poems are by Paulus and Inger Utsi, from the second collection, *Giela Gielain*, 1980. The poems are originally written in the North Sámi language and via Swedish translated into English. The first poem is called “Molested Village”, and describes how the people of a village flee the rising waters in fear, carrying their old homes, how former creeks and lakes turn into an open sea - the Suorva dam. It says that there is no mercy for the Sámi, they are forced to move. The second poem is a tribute to their village “Old Vaisa”, which was inundated by the Suorva dam.

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Recently, the State Power Board has on two specific occasions contributed to the revisibilization of the Sámi culture. In 1998, the inauguration of a new technical innovation, the “Powerformer”, at its first location at Porsí Power Station on the Lule River had a Sámi cultural contribution. A woman dressed in Sámi costume performed a yoik, standing on top of the Powerformer unit. The State Power Board has also invited artists to make a painting inspired by Sámi symbols called *Uvssat davás*, in the Sámi language meaning “the Doors to the West”, at the Akkats Power Station on the Lule River. Both these events can be and have been questioned: do they represent further exploitation of Sámi culture by the Swedish state, treating the Sámi as a kind of cultural curio, or are they actually a step towards the revisibilization of Sámi identity.

### Conclusion

In the 20th century, electricity produced in large-scale hydropower plants, has become a symbol of progress and modernization. It has been referred to as the “big dam era”. This chapter discusses the issue of states taking land from indigenous people/ethnic minorities for the construction of large hydropower projects, and with the argument by Holmberg, that Swedish development assistance can be viewed as an export of a Swedish welfare state, in mind, I have discussed the Swedish large scale hydropower exploitation. At the same time I have further developed the term “technoscientific paradigm”, that I introduced in the introduction chapter. The “technoscientific paradigm” is in my view the pattern of thought and basis for action that sets the limits to the kind of science and technology considered good technology/science. The paradigm gives guidelines on the kinds of objects that are investigated, and the kind of questions that are asked in the investigations, excluding other views. By “technoscientific paradigm”, I also stress the structures of power related to the views. It is not only a few persons that carries this specific view, but is supported by powerful actors, in this case representatives of the Swedish state, having powerful positions.

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2. The paintings inaugurated in 2000 have been made by artists Lars Pirak, Lars J:son Nutti and Bengt Lindström. Cf Hällgren (2004)
I have identified as the main pillar in this technoscientific paradigm, related to hydropower, the view of large-scale hydropower plants as synonymous with progress, bringing benefits for the whole nation, something that gives the paradigm further strength and power. However, there is a crucial condition for the survival of the technoscientific paradigm, the access to territory on which the large dams may expand and within which the waters may be regulated. In Sweden these areas are inhabited by the indigenous Sámi people, many of whom been performing a nomadic pastoral activity (with yearly migrations) highly dependent on the water/ice/snow routes. Their land Sápmi, or as it is called in Swedish – Lappland/Norrland – was considered by the Swedish state representatives “empty” or “sparsely populated”. The inhabitants were considered to have few or no formal rights to the land on which they depended for thousands of years, as the territory was claimed by the Swedish state.

Earlier studies have shown how a part of the success in establishing the basis for the technoscientific paradigm (and thus the big dam era) within Sweden, access to land, was due to the strategy of refusing affected people access to the political agenda by transferring the conflicts to water courts. A further step was for the water courts to deny the Sámi people their right to extensive compensation, which could have placed a heavy cost burden on the projects. In order to achieve its objective, the Swedish State Power Board, the main actor in the hydropower exploitation in the area, has used a strategy of ‘invisibilization’ of the people living in Sápmi, and of the Sámi with traditional economic activities in particular. Throughout the whole big dam era of the 20th century, the Swedish state has had to deal with the Sámi through different authorities as well as through scientific investigations. There has also been organized opposition from Sámi groups, particularly since the 1950s. Yet, the choice of the state representatives has been to invisibilize the Sámi instead of fully recognizing their specific rights as traditional landholders. While recognizing their rights would probably have proved costly to the state and even contributed to a severe contestation of the technoscientific paradigm, and to avoid this, the affected peoples have been invisibilized, turned into “nobodies”, and seen their land treated as “nobody’s back-yard”.

However, although hydropower exploitation has had a severe impact on traditional Sámi activities, as well as on Sámi cultural values, there is also another perspective that has emerged in this chapter. The response of Sámi peoples to the extensive hydropower exploitation and the inadequate compensation has led to a certain revisibilization of Sámi culture in Sweden. Yet, the main issue, an anomaly that could undermine the prevailing technoscientific paradigm in Swedish large-scale hydropower exploitation, the question of land ownership, has remained unsolved and is left for future generations to deal with.
[Fig. 10. Uvssat Davás – “the Doors to the West”, work of art on the Akkats hydropower station on the Lule River. Photo: The author, July 2004.]
[Fig. 11. Scene from the harbour of Gustavia, St. Barthelemy, acquired with the objective to serve as a base for Swedish slave trade, as well as a base for the Swedish West India company. The slave trade was abolished in 1847. In 1878 the island was sold to France. The picture is painted after 1814. Artist unknown. Source and reproduction: The Maritime Museum, Stockholm.]
3. Misery and Malnutrition vs. Power Stations and Electrification:

The creation of a Swedish development assistance paradigm

A dark-skinned man in a wooden canoe, dressed in a loin cloth, putting out from the shore. Maybe he is going out fishing. In the background there are three simple huts. The caption reads: “In certain parts of the world, such as Equatorial Africa, the inhabitants still live in very primitive conditions”. Nothing is stated regarding the man’s circumstances, whether he is actually suffering in any way, or whether he is a relatively prosperous person going out on his

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1 Bo Liljedal, Telephone communication, Feb. 16, 2004.
2 Centralkommittén för svenskt tekniskt bistånd till mindre utvecklade områden [Centralkommittén](1959) 25.
daily fishing expedition in rich fishing waters. The picture of the man, assumed to be primitive, contrasts on the next page with a picture of a gigantic hydropower dam, a huge switching station and two transmission pylons. The caption here is: “Various examples of rapid industrial development can be found in a country such as India. Here is the new power station in Hirakud [sic]”.¹ Again, nothing of the background to the hydropower dam is mentioned, the implication being that large-scale hydropower brings modernity and thus a good life.

The pictures are found in a report on Swedish bilateral technical assistance, or development assistance as the term became a few years later. The report was finalised in July 1959, the work of ten male representatives of Swedish commerce, industry, NGOs and political parties. The inquiry group defined “technical assistance”:

(…)a modern name for an old phenomenon. It is a form of international cooperation, intended to transfer expert knowledge of different kinds from one country or area to another. This knowledge is considered to be an essential precondition for the economic and social progress of the recipient country, as it puts this country in a better position to use its natural, capital and human resources.²

Furthermore, the inquiry group suggested why Sweden should engage in such activities. Among the main arguments is “humanity”³ and an image of faraway countries is painted in terms of misery and malnutrition:

Well known conditions, such as extreme misery, the spread of malnutrition, illiteracy and the ravages of disease in underdeveloped countries, seem incompatible with our view of human dignity.⁴

Another important argument is the wish to contribute to a peaceful future in the current wave of decolonised countries that were becoming independent nations. Sweden could and should

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¹ Centralkommittén (1959), 27.
² Centralkommittén (1959), 17.
³ Author’s translation of the Swedish word “medmänsklighet”: Centralkommittén (1959), 20.
⁴ Ibid.
help to safeguard international security by promoting democracy and economic progress in newly independent countries.¹

Finally, the last argument is directly linked to the position of the small and vulnerable country dependent upon exporting, which Sweden itself is. In view of the importance of its own international commerce, Sweden has every reason to “support the expansion of the world economy and a differentiation of the commercial sector of underdeveloped countries.” ²

The development assistance provided by Sweden should in consequence, according to the report, be directly linked to the “needs which can be met by Swedish interests”, such as “power stations, electrification, forestry, (…) ore-prospecting.” Furthermore, the report clearly states that sectors “not represented in Sweden, although they are specific for some of the recipient countries - such as certain technological specialities outdated in Sweden or never used here” - should not be considered. Modern Swedish knowledge and expertise should be the basis for Swedish development assistance, nothing else.³ The report represents a compromise between compassion and self-interest in the era of decolonisation and the opening up of new markets.

“Sweden Helps – A Programme for Action”, as the report was named, was the first inquiry into the subject of Swedish bilateral development assistance. The report, issued at the request of the Central Committee for Technical Assistance to Less Developed Areas (henceforth referred to as the “Central Committee”), established seven years earlier, illuminates the whole spectrum of issues linked to early Swedish post-war development assistance: the images of misery and poverty, primitive peoples, as opposed to modernisation and progress with large-scale modern, mainly male-dominated, technological and scientific projects. The images of wretchedness and the appeal to sympathy for these poor peoples were used as an argument for Swedish people to help. At the same time, the obvious Swedish business export interest was acknowledged with the participation of representatives of the industrial and commercial sector in the inquiry group, as well as in the arguments addressed to the Swedish business sector.

¹ Ibid., 21. Concerning the view of Swedish development assistance during 1950s and early 1960s, and the objective of contributing to international security, see for example Demker, (1996); Lödén (1999), 207ff; Möller (1990), 70.
² Centralkommittén (1959), 21.
³ Centralkommittén (1959), 24ff.
However, for the Swedish people in general, the opportunities for new export markets were not considered a valid argument; instead, a dichotomous world view, with links to a “colonial discourse library”, was used. Sweden, a country of great technological progress and even supremacy, had to help poor nations living in misery and suffering from malnutrition. A specific image of the underdeveloped world and its sufferings was presented. Wearing loin cloths and using wooden canoes implied poverty and suffering, while large-scale power stations implied modernity, and hence welfare and happiness. Machines and technical know-how were used as a measure of peoples on an imagined scale of development, on which Swedes belonged to the top level and peoples of the so-called developing countries to the bottom.\(^1\) The solution to the problems was presented in terms of engaging in charity, sending money, or more precisely the revenue from Swedish taxes, and Swedish people out to help these poor to climb to a higher level, to become civilised, modern, and happy like the Swedes.\(^2\)

**Objective, method and sources**

When the decision to finance the construction of the Kidatu hydropower plant was taken by SIDA, in 1970, an amount of SEK 69 million was guaranteed as a bilateral credit from Sweden. This was the largest sum ever allotted to a single Swedish development assistance project.\(^3\) At the same time, it was an export of Swedish hydroelectric technology and competence within the framework of development assistance. Whereas the previous chapter served as a contextualisation for understanding Swedish state hydropower politics in regard to large-scale technology and the territorial view of the Swedish state, the object of this chapter is to describe and analyse a second aspect of Swedish hydropower technology when sent abroad, namely the framework of development assistance.

As proposed by Palmberg, Baaz, Mudimbe and Tvedt, the imagery and perception of peoples in “developing countries” in the context of post-war development assistance rests on discourses of the colonial period, and includes a dichotomous and hierarchical view. So far

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\(^1\) Cf Adas (1989); Oldenziel (1999)
no analysis has been made of these aspects of Swedish post-war development assistance in the
1950s. The argument put forward in this chapter is that during the 1950s and early 1960s
certain actors worked to promote a Swedish development assistance paradigm. In the early
1950s, it started as propaganda designed to convince the Swedish people that it was necessary
to invest taxpayers’ money far from Sweden in “development assistance”. Over the years, I
will argue, the propaganda became a reality, a way of thinking or a model. I have chosen to
use the term “paradigm”, to emphasise the similarities with the discussion in the preceding
chapter on the Swedish model for large-scale hydropower technology.

In the introductory chapter I discussed studies of Swedish development assistance – common
mainly within political science – and showed that it has been argued that Swedish
development assistance started out as free from commercial interests, and as a part of a Social
Democratic welfare policy. According to Hook, this situation has only changed in later years.
Hence the feature of Swedish development assistance described by these authors is that in the
beginning it was truly altruistic, but that it later, from the 1980s onwards, became tainted by
commercial interests. Alternative views have been presented. For instance Yngve Möller
argued in 1990 that Swedish foreign policy – including development assistance – during the
later period of the foreign minister Östen Undén (he held this office from 1924-26 and again
between 1945-62) was not to export a specific Social Democratic welfare policy, but instead
to pursue a policy of neutrality intended to defend Swedish national interests. Regarding
hydroelectric power, Ann Danaiya Usher and Patrick McCully have argued that the links
between Swedish commercial interests and development assistance are close.

In short, the point at issue has been whether Swedish development assistance has been all
about altruism, or all about the national interest. The assumption has been that if the Swedish
state was adopting an altruistic approach, this would automatically be something good, while
the other reason, self-interest, would be something bad. I have chosen to step outside this
dichotomy. To me, altruism is not necessarily “good”, and commercial interests are not
necessarily “bad”. What is of interest is the overall context within which the actors operate
and how they view themselves. If the nature of Swedish development assistance is an export
of a Swedish “welfare system”, as argued by Holmberg, then it is of primary interest not to
decline whether this export is an act of altruism or commercial interest, but instead to dissect

1 Holmberg (1989); Elgström (1990); Hook (1995)
2 Hook (1995)
the content of this system and the ideas that is promoted within its context. Part of this has been done in the preceding chapter, showing that large scale hydropower exploitation, electrification and industrialisation was an important part of the Swedish society in the period, with the progress of the nation in mind, while at the same minority groups, living in the area of hydropower exploitation were disregarded and invisibilised. Furthermore, as I will show, it turns out to be very hard to distinguish the two approaches, altruism or national interests, in the actions taken during the 1950s. Instead, to put it metaphorically, they seem to be two sides of the same coin. Hence, in my analysis, looking more closely at the actors and their networks, I will show that commercial interests were indeed involved from the beginning of the 1950s. Instead of assuming two different approaches, I prefer to see altruistic ideals and commercial interests as two sides of the same thing, albeit presented differently in different contexts. The historical analysis of the period and the actors involved provides a basis for understanding how certain technology and certain science were to be promoted within the framework of Swedish development assistance. Departing from the notion that technology and science are not value-neutral, but instead carry ideological content, it is of importance to identify the actors promoting development assistance, as well as their ideologies.

Part of the work of identifying the actors within Swedish development assistance in the 1950s and their motives has been done in the historical thesis by Per Åke Nilsson, *Impulser, motiv och målsättningar för det statliga bilateral bilståndet till utvecklingsländer. Centralkommittén för svenskt tekniskt bistånd till mindre utvecklade områden 1952-1962* [Impulses, Motives and Objectives behind State Bilateral Assistance to Developing Countries. The Central Committee for Swedish Technical Assistance to Less Developed Areas, 1952-1962].¹ A large part of my work was done before I became aware of the existence of the dissertation. Nilsson’s thesis was presented in 1968, but remained unpublished and difficult to access until 2004.² He has done extensive work on the period of the 1950s, work that until now has had no competition. However, there is still a void to fill regarding the linkages between development assistance and technology and science. My interpretations are also somewhat different from Nilsson’s, as I have embarked upon a deeper analysis of the actors involved, and as I adopt feminist and postcolonial perspectives.

¹ Nilsson (1968)
² The publication of the dissertation resulted from my contacting Nilsson, and urging him to do so After finalising the dissertation, he radically changed research field. Nilsson (2004), iv.
The issue of state-funded development assistance needs to be seen in the light of the post-war conflict between the industrialists and the Government on economic policies. Regarding the issue of state-funded development assistance Nilsson argues that the disagreement involved two major issues: bilateral versus multilateral assistance, as well as the amount of state funds to be used for these purposes. In this regard, the positions differed between individuals within the Government, as well as the political parties. Positions also changed over the period. 1 This historical context provides an understanding of why there was a need, or at least a wish, for public acceptance and consequently for support from “public opinion” and the business sector for using Swedish taxpayers’ money far away from Sweden. 2 In this chapter I analyse the methods, imagery and arguments used in order to gain this public acceptance and support for state-funded development assistance. I also discuss how these arguments and this imagery differed according to whether the target group was industrialists or a general public.

Analysing the discourses, I use a feminist and postcolonial perspective, focusing on the imagery conveyed in both pictures and text. Valentin Mudimbe, presented in the introductory chapter, has established the concept of the “colonial library” to evoke the idea of knowledge and imagery of Africa constructed by the “West”, and the dichotomous world views linked to this. I use the notion “colonial discourse library” somewhat similarly, but emphasising the discourses – the imagery and concepts used in texts, speeches, photos and posters - not the knowledge produced. I then analyse the images and arguments in relation to the dichotomies in the colonial discourse library, to see to what extent they fit into this description.

Discussing aid organisations in the 1990s, Maria Eriksson-Baaz has pointed out that the colonial discourse library has a specific Swedish version – the argument of Sweden being a country of higher morality and no imperial ambition compared to former colonial powers – that is used by the proponents to justify the Swedish involvement per se. 3 This aspect is in need of historical analysis, and I set out to establish to what extent and in which contexts it was argued that there was a need for introducing Swedish knowledge, science and technology on the implied moral grounds that Sweden was better than other Western countries.

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1 Nilsson (1968)
2 Cf Appelqvist (2000) 121f; Lewin (1967); Karlsson (2001), 71-78; Stenlås (1999); Malmborg (1994); Silva (1999); Aunuesluoma (2003); Lacroix-Riz (1991); Sévon (1995); Karlsson (1992); Jonter (1995)
Since this is a historical account, I have attempted to give a partly chronological structure to the chapter. However, I have considered the chronological theme less important than the focus on the actors and ideologies involved. The sources used are published documents, journals, books and notes from conferences, primarily those accessible at the Royal Library in Stockholm, as well the Swedish Institute archive, where minutes from meetings of the Central Committee are kept. For the identification of actors involved I refer to a number of documents from study groups, government committees, boards and conferences. In certain cases, these documents are the published documents analysed regarding discourses. For this chapter, I have held one single interview, with one of the key actors of the Swedish development assistance of the early phase, Sixten Heppling. I opted out of interviewing other actors, partly because some of them had been interviewed by Per Åke Nilsson. Also many of the informants that would have been of specific interest had passed away by the time of my research. Most of the information provided by Heppling is supported by historical documents to which I have had access. The interview, undertaken at an early stage of the research, has helped to a certain extent to guide me through the archives, and to identify the debate going on during the period in question. The research could have been expanded to include the archives of the General Export Association. However, I have decided to consider the archival research sufficient for the conclusions that are drawn.

From colonialism to the development assistance era

The terms development assistance, development co-operation and development aid or in some cases overseas aid were introduced after the Second World War and linked to the decolonisation period. However, what these terms denoted was in many respects older. In their colonial territories Great Britain and France had spent money and effort on various programs of economic development. In the post-war era this was often a last attempt to preserve their influence at a time when colonialism was being challenged. The United States too, was involved in overseas transfer of science and technology before the Second World War. Most of the activities, both during colonialism and after independence, were technology-related; the drilling of wells, the construction of water and sanitation systems, roads and

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1 The archives of the Swedish Institute from the period are deposed at the Swedish National Archives in Stockholm.
railways, telecommunication and energy systems, as well as the education in technological practices.\(^1\) An immense amount of literature deals with the subject of “development assistance”, “developing countries” and “aid relations” in the post-war era. Rist (1999) claims that “development era”, or “development assistance era”, was a term adopted to distinguish a new era which would differ from the colonial settings.

The new era was inaugurated and the term “underdeveloped areas” established on an international level by the US president Harry S. Truman in his inauguration speech in 1949. He said that the US and other “prosperous areas” should make available the benefits of their scientific advances and industrial progress for the growth of “underdeveloped areas”, where more than half the people of the world were “living in conditions approaching misery”.\(^2\) President Truman outlined his program for US foreign policy in four points. The fourth point dealt with how the US would “embark upon a bold new program to make the benefits of our scientific advances and industrial progress available for the improvement and growth of the underdeveloped areas”. From this was derived the name for the US foreign policy on development assistance, the “Point Four Programme”. Through development assistance, different from “[T]he old imperialism – exploitation for foreign profit”, the world would become a better place, for everyone.\(^3\)

In short, a new and better era was starting, an era in which old-fashioned colonialism had to be rejected as evil and egoistic imperialism. The new era was the development assistance era, promising a better future for all peoples.

**Sweden – from colonial power to development assistance promoter**

Discussing the Swedish entry into the development assistance era, it is of importance to consider the context of Swedish colonial history. Officially, Sweden can claim to have lost, or given up, its status as colonial power in 1878, when St. Barthélemy was sold to France after

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\(^1\) See for example Davidson (1989); Rist (1999); Curti/ Bhir (1954); Geijerstam (2004); Departments of State and Official Bodies. Central Office of Information. Reference Division London (1964)

\(^2\) The quotations are from the Inaugural Speech of United States President Harry S. Truman, quoted in Rist (1999), 71.

\(^3\) Rist (1999), 71.
ninety years in Swedish possession. Having been a regional great power in the 17th century, Sweden had by the end of the 19th century little of this glory left. The imperial venture outside the Nordic region had started in the 17th century. In the African context, it resulted in the establishing of Fort Carolusborg on the Ghanaian coast, to be used as a trading base for a private trading company, supported by the Swedish king, Karl X Gustav.\(^1\) In the late 18th century new attempts were made as King Gustav III wished to enjoy the benefits of slave trading and colonisation. In 1784 the island of St. Barthélemy was acquired to function as a Swedish basis for slave trading, and to serve as a base for the Swedish West India Company, in which the king held a large share. The slave trade went on until 1847, when it was finally abolished after long discussions in the Swedish parliament.\(^2\) Another 18th century Swedish adventure in the global colonial sphere was the Swedish East Indian Company, which functioned between 1731 and 1813.\(^3\) The question of why Sweden did not succeed in, or put more effort into, overseas colonisation in the 19th and 20th century has not been much investigated. However, scholars discussing the internal colonisation of the northern part of Swedish territory and the accelerated colonisation of this area in the late 19th and the early 20th century have argued that the Swedish efforts were focused on the North instead of the South.\(^4\)

On the other hand, while not being successful as a colonial power, and giving up its last colonial territory in 1878, Sweden was well represented overseas in other colonial undertakings. Swedish enterprises, missionaries and individuals had long been part of colonial missions and enterprises around the world.\(^5\) The most important example is to be found in the large number of Swedes participating in the Belgian colonisation of the Congo, from 1880 up to 1930. The Swedish presence in Congo was supported by the Swedish state and the Swedish king, with officers being awarded medals for bravery as they participated in punitive expeditions against local villagers. Traces of the Swedish, and Scandinavian, colonial presence are largely to be found in the Scandinavian ethnographic museums, in which a large number of objects, religious artefacts, handicrafts etc, have been deposited.\(^6\)

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1 Cf Granlund (1879); Norman (1998)
2 Lindqvist (2005) Nordh (1999); Skytte (1986); Hellström (1987); Högström (1888); Hildebrand (1951)
3 Lundahl (2006)
4 Sörlin (1988), (2002); Hanson (1994); Blåmhild (1976)
6 Granqvist (2001); Lundahl (2006); Jeness-Tusch (1902-1905); Tygesen (2005); Gustafsson Reinius (2005); Axelsson (1970); Svinhufvud (1942)
Sweden as a nation also sent representatives to the Berlin Conference of 1884-85, where European nations took decisions on how to divide up the African continent.\(^1\) Swedish missionaries have been active in Africa since the 1860s, when the first missionaries travelled to Ethiopia. Relations between Sweden and Ethiopia continued during the 20th century and involved missionaries and state representatives and enterprises.\(^2\) At the beginning of the 20th century, Swedish international trade depended to a large extent on contacts with the United Kingdom and its colonies.\(^3\)

As for the “development era” after the Second World War, Sweden formally entered it in the late 1940s via the United Nations programs for the international exchange of experts and scholarships. A number of Swedish experts, from both industry and social work, started travelling out to spend months or years in other countries, in South America, Asia and Africa, and in some countries in Europe, mainly Italy and Yugoslavia. Holders of scholarships also came to Sweden.\(^4\) The exchange was financed through the United Nations. In Sweden the exchange was organised by the new Swedish Institute in Stockholm, and its Department for Technical Assistance. The Swedish Institute was established in 1945, as an attempt to spread positive information about Sweden through projects in the cultural sector. After the Second World War, Sweden experienced difficulties in its relations with the countries that fought against Nazi Germany, due to Sweden’s support to and trade with that country up to 1943 and the turn of the war, and the prospective victory of the Allies.\(^5\) The Swedish Institute was in no way a grassroots NGO, but a state-financed institute established with the aim of promoting Swedish international trade and cultural relations. The Swedish Institute had financial support from Swedish tax funds and its board consisted of a mixture of representatives from the industrial sector, NGOs and the state.\(^6\) The Department for Technical Assistance at the Swedish Institute was for the first five years a one-man department headed by Sixten Heppling. Initially its unique task was to organise the United Nations exchange programs.\(^7\)

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\(^1\) Cf MacKenzie (1983); Wesseling (1996); Lucas (1922)  
\(^2\) Halldin Norberg (1977)  
\(^3\) Andersson (1912), 78.  
\(^4\) Within the program, Swedish persons also went to the UK, USA and France to study. Svenska Institutet, (1960)  
\(^5\) The background of the Swedish Institute has to certain extent been described in Hildeman, (1995) See also Ljunglöf et al, (1944) Regarding the early post-war debate on Swedish support to Nazi Germany and the perceived need to renegotiate the Swedish position in an international context see Appelqvist (2000)54-56.  
\(^6\) Hildeman (1995); Ljunglöf et al.(1944)  
\(^7\) Heppling, Pers. interview, 16th Feb., 2000
Bridging Swedish pre-war and post-war involvement in Ethiopia

While a superficial glance at the actions taken and the actors involved might give the impression that there was a clear division between the pre-war and post-war periods, as well as between the categories of the missionaries, colonialism and Swedish export interests, the Swedish involvement in Ethiopia serves as an example of the close ties and linkages between them all. In 1866 the first Swedish missionaries, sent out from the Swedish Evangelical Mission (EFS, an organisation within the Church of Sweden, the protestant Swedish state church), arrived in Eritrea, their aim being to continue to the Galla people in Ethiopia to take over after English missionaries who had to leave two decades earlier.\(^1\) Initially the EFS planned to establish a colonial trading station by the coast (Massawa), to facilitate trade between Sweden and East Africa, but the plans had to be cancelled due to political instabilities. In 1896, the Swedish missionary couple Nils and Mrs Edla Hylander arrived in Ethiopia, only to be expelled a year later by the Emperor Menelik.\(^2\) A decade later, in 1904, another Swedish missionary, Karl Cederqvist, managed to obtain the Emperor’s permission to settle in Addis Ababa, also establishing a school for boys, the “English School”, where several future important Ethiopians spent their first school years. In the 1920s, Ethiopia employed several foreign experts within different sectors to modernize the state administration. At this period, the foreign minister, Blangeta Hiruy, who had attended the Swedish-run school, employed several Swedes, within education and medicine, as advisors in foreign affairs and as military advisors.\(^3\) In 1935, the Swedish General Export Association organised a four-month long propaganda trip for Crown Prince Gustaf Adolf to the Mediterranean and Middle East, including Ethiopia. At this time, Ethiopia already imported matches and telephone equipment from Sweden. During the visit, further contacts were made between the Swedish companies and the Ethiopian Ministry for Trade. A few months after the Swedish visit, Ethiopia was attacked by Italy and during the ensuing war, four Swedish officers who had served as training experts stayed in the country with the support of the Swedish authorities.\(^4\)

More Swedish support came in the form of a Swedish Red Cross ambulance, this being the first occasion that the Swedish Red Cross assisted during a war on the African

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\(^2\) Halldin Norberg (1977)
\(^3\) Ibid.; Agge (1936); Tamrn (1936)
\(^4\) Halldin Norberg (1977)
continent. An appeal was made to the Swedish public for money for the ambulance, and yielded SEK 700,000 after six weeks, double the amount required. Five specially constructed Volvo trucks were sent to Ethiopia. By 1945, Ethiopia was again a sovereign nation, and through the work of a son of the missionary couple Hylander, Fride Hylander, a Swedish state credit was given to Ethiopia, in order to provide the capacity to rebuild the war-damaged country. Besides Hylander, representatives of the Swedish commercial sector were also involved. The condition for the loan was that all goods and services had to be bought in Sweden, and that Swedish companies should be given certain licences and franchises. A company named the Ethiopian Company AB was established in 1947, with the objective of developing trade and general economic relations between Sweden and Ethiopia. In 1953, as the first bilateral development assistance projects were started, Ethiopia became one of the two selected countries. The argument forwarded was that close relations existed between Sweden and Ethiopia, through missionary activities and Swedish experts who had been working in the country, while the existence of commercial relations was not stressed as important.

*Business sector actors in the post-war period*

During the 1950s, two committees were established to deal with state-funded development assistance. The *Central Committee* was created in 1952. Its purpose was to organise and promote the Swedish bilateral aid. The second committee was established in 1953 to facilitate decision-making within the increasing multilateral aid: the *National Committee for Technical Assistance*. In the following section I will examine a few specific actors in these settings, with direct links to the Swedish business sector. The aim is to show that the links between commercial interests and state-funded development assistance existed from the very

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1 Söderberg(1965), 260 f; Yrlid (1993)
2 Halldin Norberg (1977), 205
3 Nilsson (1968), 21, 22.
4 Cf Nilsson (1968), 13.
5 "Nämnden för internationella expert- och stipendiatrinden". The Swedish name of the body can be translated literally as “Board for International Expert and Scholarship Issues.” It was established in 1955, but its forerunners, three committees of advisers, were formed in 1953. Swedish national archives, Archive of the Swedish Institute, Stockholm (SIRA), Protokoll för Kommittén för Internationella Expert- och Stipendiatrinden, 1/7 1954-15.4 1955, 2711, B:5; SIRA, 2711, B:1 Fritiof Söderbäck and Gunnar Granberg, Skrivelse till Konungen, 18 jan. 1954.
beginning, and continued throughout the initial phase of Sweden’s entry into the development assistance era.

Sixten Heppling and the two national committees for development assistance

The two committees for development assistance established in the early 1950s provide good examples of the involvement of business actors through their official and unofficial networks. While the Central Committee and the National Committee for Technical Assistance were intended to deal with different tasks, bilateral projects and multilateral assistance, they were both closely tied to the Swedish Institute. Furthermore, they had the same secretary, Heppling, and they both had their secretariats at the Department of Technical Assistance at the Swedish Institute.\(^1\) This meant that the work continued to be organised at the Swedish Institute and in many cases by Heppling, who had been in charge of international exchange within development assistance since 1947.\(^2\) The function of Heppling as secretary of both national committees calls for a closer look at the individual actor and his networks. During the Second World War, Heppling had worked at the Foreign Ministry, in the radio department.\(^3\) Heppling himself was not member of any NGO. Although he was not himself a representative of the Swedish business sector, he was part of a social network that included at least one prominent person within the business sector, Lennart Cronqvist at SAF.\(^4\) While Heppling’s career in development assistance had started with work for the religious association (EFS) organising state-funded support for Ethiopia, it was through his private social network that he was recruited to continue with international development assistance with the Swedish Institute as a platform.\(^5\) Another example of the close ties between Heppling


\(^2\) Heppling, Pers. interview 16th Feb., 2000. The importance of Heppling as a promoter of Swedish development assistance in the early phase has led to his being given the epithet “Father of Swedish development assistance”. See for instance Andersson (1989), 24.

\(^3\) Sixten Heppling was born in 1918 and obtained a Master of Arts degree in 1943. Between 1941-45 he was employed at the radio department at the Foreign Ministry. Between 1952 and 1962 he was the secretary-general of the Central Committee. In 1962 he was employed as head of division at the NIB. Heppling, Pers. interview, 16th Feb., 2000; Harnesk (1962), 555.


\(^5\) Ibid.
and prominent persons within the business sector was the fact that he was asked to write an article in the paper of the main organisation for Swedish industrialists, the Swedish Employers’ Confederation (SAF). The purpose of the article, published in 1953, was to explain development assistance to people within the business sector, showing that it was not a “communist invention” and hence fully worthy of support.\(^1\) Heppling states in the interview that the request to write the article came unexpectedly. However, given his friendship with Lennart Cronqvist, it may be described as a result of the social network of which Heppling was a part. Furthermore, not only was his article published, it was also approved in advance by one of the important promoters of development assistance within the industrial sector, Ragnar Sundén.\(^2\)

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Business sector links within the national committees

Both the National Committee for Technical Assistance and the Central Committee were examples of Swedish corporatism, collaboration between state institutions, industry and popular NGOs.\(^3\) Beside the popular NGOs and the state representatives, most of the people employed at the Ministry of Foreign Affairs, in the Central Committee and its executive committee, were representatives of the Federation of Swedish Industries (Industriförbundet), the Swedish Employers’ Confederation (SAF), and the General Export Association.\(^4\)

The National Committee for Technical Assistance lasted until the end of 1961, when its duties, as well as those of the Central Committee, were taken over by a state agency, the Board for International Development Aid, the NIB. The composition of the board was decided each year by election. Representatives of the industrial sector entered and/or remained within the board until it was dissolved. During this period, two of the important persons within the business sector represented were the General Manager of the General Export Association,  

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\(^2\) Ibid.; Heppling(1953)  
\(^3\) For further discussion of corporatism in Sweden, see Rothstein (1996) See also Stenlås (1999) who has studied the influence of the Swedish business elite on Swedish politics 1940-1949.  
\(^4\) SIRA, 2710, F1, Vol C1, Centralkommittén för svenskt tekniskt bistånd till mindre utvecklade områden, protokoll 12/5 1952-30/11 1961. See also SIRA, 2710, F1, C75, Aktuellt från centralkommittén nr 4, 10.11.1954.
Hans Swedberg, and Folke Petréén, Managing Director of Svenska Metallverken, Västerås.\(^1\) The president of the Central Committee, Axel Gjöres, also had experience from both Swedish export industry and the economic policy sector. For instance, when he was elected president, in 1952, he held the position of General Manager of the Swedish National Board of Trade (1948-1954).\(^2\)

**The General Export Association as a promoter of Swedish development assistance**

The General Export Association was founded in 1887 to promote Swedish exports. Its activities in this capacity up to the Second World War have been described by Örjan Appelqvist. According to Appelqvist the Association was the preparatory institution for the Department of Commerce of the Swedish Foreign Ministry during the 1930s.\(^3\) At the beginning of the 1950s, and throughout the existence of the Central Committee, the Swedish General Export Association was an important advocate of development assistance, for which it argued at conferences and in publications. The Association also had the opportunity to put forward its ideas during multilateral development assistance negotiations between the Swedish Government and the World Bank.\(^4\)

I will here point out a few ways in which the General Export Association worked. A particularly important figure was Hans Swedberg. He was employed by the Association from 1942 onwards, and became General Manager in 1953. Swedberg had served as an expert in the Swedish trade negotiations with among others Japan, China, the Philippines, Burma, India and Pakistan in 1948 and in the GATT negotiations in 1949.\(^5\) In 1952 he became a member of the Swedish Export Credits Guarantee Board (Exportkreditnämnden). From 1955 to 1961, he

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1. SIRA, 2711, Box B:6, Nämnden för Internationella Expert- och Stipendieärenden, protokoll 1955-1961. “Svenska Metallverken” produced weaponry and also copper and copper-based alloys for electrical applications, in energy, power and transportation systems. The name of the enterprise has changed and today it is named “Luvata”. See Luvata (2006).
2. Harnesk (1962), 446; Nilsson (1968), 13, 91; Centralkommittén för svenskt tekniskt bistånd, Årsberättelse... (1961) 6.
4. Svenska Institutet, Översikt... (1960), 1.
5. GATT stands for General Agreements on Tariffs and Trade and was created within the setting of the Bretton Woods Conference after World War II, as part of a plan for international economic recovery. Cf WTO (1998)
was a member, representing the General Export Association, of the National Committee for Technical Assistance.¹

At the start of the work of the Central Committee, the General Export Association took the lead. As early as 1952, it published a pamphlet, in collaboration with the Swedish Institute, containing information on international development assistance and arguing that it was of great importance for Swedish exports.² In April 1955, at the end of the first national fund drive, "Sweden Helps", the National Committee for Technical Assistance and the General Export Association organised a conference. The conference was intended to stimulate engagement in development assistance among representatives of the Swedish business community.³ Several persons who had been out on UN missions as experts were invited to share their experiences at the conference and thus encourage the participating companies to send out their own experts.

At this conference, however, a certain reluctance to accept state involvement and collaboration with the United Nations was expressed. For instance, the general manager of the telephone company LM Ericsson, Hans Thorelli, declared that the company already had business activities in a number of “underdeveloped countries”, which he claimed to be a contribution to skills development and the building of infrastructure.⁴ The need for state involvement was thus not so important. Another view, in the same spirit, was expressed by Folke Petréns, the managing director of Svenska Metallverken in Västerås. Petréns stated that any efforts to promote development needed to be purely commercial if they were to be successful. Petréns mentioned his company’s current undertaking in India, where a factory for the production of power transmission lines had been supplied:

_We see this as a business agreement and the Indians take the same view. It surely has a certain importance to put the whole thing on a commercial basis. In this way the_
responsibility will often be taken more seriously and a maximum of interest from the parties involved is likely.¹

However, the General Export Association, represented by Swedberg, countered the perceived opposition to state-funded development assistance with different arguments, such as the possibility of joining forces to open up new markets for Swedish exports.² Yet another example of the ideas and promotional work of the General Export Association is the debate booklet on Swedish exporting published by Swedberg in 1954. In this book Swedberg argued that Swedish companies should venture into the former colonies, to compete with the former colonial powers. He argued that a possible way of increasing Swedish exports was by using established Swedish development assistance. One example he mentioned was Pakistan, the second of the two countries first selected for a bilateral aid program from Sweden after the establishment of the Central Committee in 1952. According to Swedberg, openings existed in Pakistan, as Swedish experts had been there to support the hydropower sector, and as Sweden had embarked upon development assistance within the United Nations framework.³ Towards the end of the booklet he went on to plead for cooperation between development assistance and Swedish exports to safeguard Swedish interests:

*The economically less developed areas across the seas are particularly interesting future markets for Swedish exports. The lack of economic and political stability and the unavailability of domestic investment capital have not deterred our big rivals, the Germans and the Dutch, from devoting a lot of energy to exporting to these markets. We must not leave a vacuum for our skilled competitors to fill in the coming industrialisation of the less developed areas, and risk a future exclusion from markets for new products. In a geographic perspective it is important to expand our markets in those areas where we already have a good position(---). In addition we must work to enter new markets like the Belgian Congo and Pakistan.*⁴

By the end of the 1950s, Swedberg was a member of the inquiry committee for the “Sweden Helps” report, as was also the first secretary of the General Export Association, Per-Gunnar

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² Swedberg (1955), 33
³ Swedberg (1954), 34.
⁴ Ibid., 70
Jerring. Within the General Export Association, there were ideas on how Swedish development assistance could pave the way for Swedish exports to the coming new markets in Africa. The ideas were promoted directly to the Swedish public, to the business sector, and to the Government, at conferences, in reports and in other publications from the very first establishment of the Swedish development assistance institutions. The General Export Association was one of the most influential formulators of Swedish development assistance during the 1950s.

Two reports on Swedish development assistance

By the end of the 1950s, two reports on future Swedish development assistance had been presented. The first was requested by the Central Committee, and the inquiry group contained representatives, all men, of Swedish industrial organisations, the Government and one NGO, the Swedish Red Cross. The report on their deliberations was published in 1959 under the title “Sweden Helps – A Program for Action”. Although not officially a government inquiry it was treated as such. The same procedures took place as for an official inquiry, as it was sent out to a large number of important NGOs, industrial organisations and state agencies for consideration. Furthermore, the participation of Olof Palme, who was secretary to the then prime minister, indicates close links with the Government.

The second report was prepared by a working group within the Swedish Centre for Business and Policy Studies (SNS), and given the name “The Swedish Commercial Sector and the Underdeveloped Countries: Report from a Working Group within the SNS”. While far from having the same status as the “Sweden Helps” report, it was nevertheless important in being aimed at the business sector.

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1 Centralkommittén (1959); Nilsson (1968), 59.
2 Centralkommittén (1959), 13.
3 Centralkommittén (1959)
4 Riksdagens informationsenhet (1996) According to Nilsson, the reason that the Central Committee inquiry was not an official government inquiry was that certain actors, primarily Gunnar Heckscher of the Conservative Party, objected to the fact that the government favoured multilateral development assistance, while resisting allocation of resources to the Central Committee and its bilateral development assistance. According to Nilsson there was also a conflict of ideas between Heckscher and the Social Democratic Cabinet Minister with responsibility for development assistance, Ulla Lindström. Nilsson (1968), 53-55.
5 Studieförbundet Näringsliv o. Samhälle (1960)
The “Sweden Helps” inquiry was as close as it could be to a government commission without formally having this status. The SNS inquiry involved prominent persons in the business sector, thus giving it a high status. The two inquiries were not only parallel in time; they also had co-opted members, and held a number of hearings and seminars together.\footnote{Centralkommittén, \textit{Aktuellt från Centralkommittén} (1959); Studieförbundet Näringsliv o. Samhälle (1960)} This is a further indication of the importance of the ties between the business community and the Swedish development assistance. The significance of these two inquiries lies both in their status and their target groups when presented. As such they can be used to identify the actors involved and also serve for discussing the existence of the colonial discourse library.

Per Åke Nilsson has discussed both reports in his dissertation and argues that the report by the Central Committee is more idealistic and not so commercial, as the SNS report, and concludes that business interests did not affect the Central Committee report to a very large extent.\footnote{Nilsson (1968), 53-63, 79-85.} My reading of the two reports and my interpretation from the identification of the actors involved in the process differ somewhat from those of Nilsson. I have analysed the two reports from the point of view of the terminology and imagery of the colonial discourse library. Comparing the two reports, although they were closely linked, may shed important light on the rhetoric regarding Swedish development assistance in its early period, as well as provide a basis for discussion of what can actually be described as “commercial interests” in the context of promoting state funding. The SNS study uses a terminology which relates to the opportunities for investment, and proposes state measures to facilitate these investments. There are phrases about the Swedish absence of colonial legacy or imperialistic ambitions, and about a high level of technological competence in Sweden compared with the “underdeveloped countries”.\footnote{Studieförbundet Näringsliv o Samhälle (1960),17.} On the other hand, the SNS report also contains a discussion of what “underdevelopment” and “development assistance” actually are. There is no generalisation of “underdeveloped countries” as a category in itself. The definition of underdeveloped countries in the SNS report reads “When characterising a country as underdeveloped, this means that
Central Committee Study Group

Henrik Beer, S.Gen. Swedish Red Cross
Secretary, Sixten Heppling
Ass. Secretary, Curt Lidgard
Mauritz Bonow, Swedish Cooperative Wholesale Society
Einar Forssell, Stockholm City Vocational Schools
Hans Swedberg, General Export Ass. of Sweden
Jonas Nordenson, Grängesbergsbolaget
Olof Palme, Parliament member, assistant to the Prime Minister (Social Democrats)

Co-opted additional members:

Bo Thomé, Skandinaviska Banken
Carl-Fredrik Gadde, General Manager
Per-Gunnar Jerring, First Secretary of the General Export Association of Sweden.

Folke Petrén, works manager

Folke Petrén

Ragnar Sundén, Swedish Steelproducers’ Association, member of the board of the Swedish Institute, former member of the Central Committee

Tore Tallroth, Vice-President of the Swedish Institute

Gunnar O. Rising

Torsten Carlsson

Wilhelm Peppler

Prof. Sune Carlson

[Fig. 12b. The members of the Central Committee inquiry group and the members of the SNS study group]
the country is underdeveloped only in an economic respect, i.e. the term refers only to the economic production capacity of the country.”¹ The discussion then continues for ten pages There, specific differences between particular countries are outlined. There is a discussion of the backgrounds of the countries referred to as “underdeveloped”. Here reference is made to the political and economic status of groups of countries using the terms “countries with subsistence economies,” “raw material exporters,” “semi-industrialised countries,” “colonies,” “recently independent states” and “states that have long been independent”.² There are no photographs or pictures in the report. In contrast, in the “Sweden Helps” report, there are no attempts to define “underdevelopment”. Instead, in one single picture, with the title “Underdeveloped areas” most of the southern hemisphere of the globe is marked as underdeveloped. Within the picture, a panel with figures states three degrees of underdevelopment, based on Gross Domestic Product per capita in 1957/58. The three levels are defined as: countries achieving more than one hundred dollars per capita, those achieving between one hundred to two hundred dollars, and those achieving more than two hundred dollars.³ Nothing is stated regarding local and regional economic differences, or whether specific problems such as war or drought have disturbed food production. Nor is anything said about political situations or available natural resources. The Sweden Helps report merely identifies a gigantic area said to be in need of (Swedish) help.

The SNS report does call for support to investments abroad as well as cooperation between Swedish enterprises and development assistance, which may be interpreted as a call to both the Swedish state and the Swedish business sector to support the new export opportunities. In this sense, the SNS report can obviously be interpreted as pursuing Swedish commercial interests.⁴ However, it makes recommendations that are said to strengthen not only the Swedish part, but also the cooperating countries in question. The proposals of the SNS study include international commercial cooperation aimed at stabilising commodity prices, which is stated to be in the interest of the underdeveloped countries as well as of Sweden; possible liberalisations of both trade and capital transfers, and use of a multilateral

¹ Studieförbundet Näringsliv o Samhälle (1960), 26. [svensk lydelse: När man karakteriserar ett land som underutvecklat, menas därmed att landet är underutvecklat endast i ekonomiskt avseende, dvs. begreppet hänför sig endast till landets ekonomiska produktionsförmåga]
² Ibid., 26-36.
³ Centralkommittén, Sverige Hjälper (1959), 19.
⁴ Studieförbundet Näringsliv o. Samhälle (1960), 80ff., 91.
financing institute. The SNS report furthermore calls for a liberalisation of international trade, with the argument that this would be of benefit to both Sweden and the underdeveloped countries. Here the report places Sweden among the nations that are vulnerable to larger and economically stronger nations.

The “Sweden Helps” report is a lot more influenced by the colonial discourse library and dichotomous views, both in the text and in the photographs presented. The “primitivity” of the underdeveloped countries and the supremacy of Swedish and Western technology are recurrent themes. In the introduction to this chapter, I showed how a photograph of a person in Equatorial Africa in the report was followed by a caption that contains the word “primitive conditions”, and how another picture, of a large hydroelectric power station, had a caption with the words “industrial development”.

Other examples are found in the report, for instance the picture showing a person, seemingly an African man, on a gigantic bulldozer-like machine in a forest landscape that seems to have been altered by the passage of the machine. The caption reads: “Through the virgin forests of Africa new ways are made for a fast industrial development. Here is a picture from the Lameco project in Liberia.” Lamco was the Liberian-American-Swedish Minerals company, a mining company working in Liberia. Grängesbergsbolaget was Lamco’s Swedish partner and Jonas Nordenson, general manager of this enterprise, was president of the SNS inquiry group and also a member of the Central Committee inquiry group. In the Central Committee report, a vocational training school to assist Lamco is proposed for support by Swedish development assistance. My interpretation of this message is that Swedish assistance has led to development, and that the African man can now himself, thanks to Sweden, contribute to the economic progress of his country.

A contrast to this picture appears ten pages later, with the photograph of a man, a foundry worker, sitting on the floor, working with some kind of casting. He is using the toes of his left foot to stabilise the object on which he is working. The caption reads: “Traditional work methods are only slowly replaced by modern methods. This is from an Indian foundry.” Without discussing what modern methods would imply as opposed to the “traditional work method” besides coming from Sweden, the proposal from the Central Committee inquiry

1 Ibid., 25.
2 Centralkommittén, Sverige Hjälper... (1959), 94 f.
3 Ibid., 94f. Also Atlas Copco had a share in the Lamco project. See Gårdlund (1974), 201.
4 Ibid., 104.
group concerning intervention in India is accordingly the training of mechanics, toolmakers, carpenters and cabinet-makers. Courses proposed are in casting, forging, galvanisation and welding techniques. The technological know-how should be transferred from Sweden, and taught by Swedish instructors.¹

The Central Committee report was a proposal to the Swedish Government for the future organisation of development assistance, stressing the importance of bilateral aid. ² The bilateral aid part is of importance in the context. However, my interpretation of the report is that it is a plea for support for exports to new markets of Swedish technology, scientific products and know-how, playing on the traditions of the colonial discourse library, its dichotomous views, and the civilising mission that Sweden would have to undertake. It is also a reflection of a Swedish identity, as belonging to the developed, modernised nations of the world, and as such having to respond to a call for a “civilising mission” in its new version of the development assistance era. In short, Sweden and its people, having the knowledge and the know-how, had to go out in the world to make sure that the world would get better, or at least become as good as Sweden.

In this respect, the SNS report is interesting as it poses another framework for development assistance within the same time period, but employing alternative methods. The SNS report shows that at the time of discussing the options for a Swedish state-funded development assistance, there existed an alternative way to present the “underdeveloped” countries, as potential allies and not primarily as “underdeveloped nations” inhabited by underfed people for whom one had to feel sympathy. Instead, these countries were discussed in the SNS report more in terms of nations having parallel interests to the Swedish – those of a vulnerable nation in need of allies in promoting trade liberations on a global market.

¹ Ibid., 105.
² Nilsson (1968), 53, 63 f.
Fig. 13. The Swedish Socialdemocratic youth organization proposing various activities to collect money for the "Sweden helps" fund drive campaign, in 1961. For instance collecting children’s pocket money, organizing parties, lotteries, masquerades, dances, auctions etc. The photo is the official photo used in the campaign, here accompanied by the text “The little Indian girl gazes at the future with questions in her eyes: Is it hunger and fear that awaits her?” Source: SIRA, 2710, Aktionen Sverige Hjälper, Vol. 20.]
Educate the Swedes to help the poor - the “Sweden Helps” fund-raising campaigns

I have shown that during the 1950s and early 1960s, there were alternative ways of describing the decolonising part of the world. In this respect, a line can be drawn between the business sector and the sector within which NGOs and political parties were represented. In this section I will show how one of the perspectives, that which is found in the colonial discourse library, was promoted in the two national fund campaigns of 1955 and 1961, which both had the title “Sweden Helps”. The fund campaigns were supported financially by the Swedish state, and their headquarters were located at the Central Committee secretariat.

The fund-raising campaign of 1955, “Sweden Helps”

The fund drive of 1955, starting in February and ending in May, had been planned from the very first days of existence of the Central Committee. The collection of money was not an end in itself, but rather considered as a means of raising public awareness. Making people contribute with their own actions and money was considered a way to stimulate and enhance interest in development assistance. It was also considered important to obtain support from the industrial sector. The representative of the Swedish Employers’ Confederation, SAF, on the Central Committee’s executive had expressed some opposition to participation in the fund-raising activities, claiming that there had been too many similar activities recently, which made the big corporations unwilling to participate.

However, the 1955 campaign was successful, in terms of both the amount raised and the breadth of participation. By the end of the drive, the sum of SEK three million had come in.

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1 See Nilsson (1968), 33. The campaign was initially planned to be held earlier than 1955, but due to a flooding catastrophe in the Netherlands and a subsequent Swedish national relief fund to help the victims, it was postponed a couple of years. SIRA, 2709:2, C109, Allmänt angående insamlingsverksamheten Sverige Hjälper 1955. Although the fund drive was officially ended after eight weeks, documents in the archives indicate that active campaigning went on until the end of May, and that the collection of money went on until the next fund-raising drive of 1961. See for instance, SIRA, 2710,F1, C13, protokoll 1953 – 1958, the minutes of the committee "Upplysningsdelegationen, and SIRA, 2710, F1, C75, Aktuellt från centralkommittén, no. 1, 30 sept 1954 to no. 20, mars 1959; Centralkommittén, CKRapporten, 1, (1960); Centralkommittén CK rapporten, 2 (1961)
2 2709: 2, C110, Stenografiskt protokoll vid sammanktåte med topporganisationerna den 13/12 1954, Centralkommittén. SIRA,
3 Centralkommittén, Sverige Hjälper…(1959), 297.
Contributions had come from both individuals and industrial enterprises. The Swedish Government contributed by guaranteeing twice the amount collected. The industrial sector contributed in numerous ways. For instance, a sum of SEK 25,000 was paid by the SAF to the campaign administration. The secretary of the SAF, who also was the SAF representative on the Central Committee, wrote an article in the organisation paper giving readers details of the fund-raising drive. The article stated that the SAF would not urge the member organisations to participate. However, recognising that the two trade union confederations, TCO and LO, had decided to encourage their members to arrange fund-raising at their work places, and that they might ask the companies to give the same amount as they managed to collect, the SAF board had decided not to oppose the campaign. According to the correspondence of the secretariat of the fund campaign, many other enterprises also participated in different ways. For example, Svenska Kullagerfabriken (SKF) used a special fund postage stamp on its correspondence during the period. Åtvidabergs industriert lent three typewriters to the fund drive secretariat, and Holmens Bruk and Volvo (AB Volvo Pentaverken) collected money at certain work places.

Among the preparatory tasks, an important part was to get access to a specific account number, a "90 number", giving the fund-raising the status of a serious project. For this specific fund-raising project a 90 number together with the number of the year, 1955, was allotted, giving the account number “90-1955”. No ordinary fund-raising campaign would have been given such an account number. The number was granted by the Swedish Post Office on the recommendation of the Business Organisations Inspection Board, a national monitoring agency set up by business organisations for the control of fund-raising operations.

1 SIRA, 2710, F1, C13, Protokoll nr 4/1954, Sammanträde med upplysningsdelegationen, 22/11 1954,
2 Christer von Stedingk
3 Stedingk (1955), 3; SIRA, 2710,F2, 6, Brev från Centralkommittén, författare okänd, till Sekreterare Christer von Stedingk, Svenska Arbetsgivarföreningen, 15/2 1955,
5 I have not delved much further into the history of the Swedish charity monitoring agency, "Näringslivets granskningsnämnd”. However, it seems that the establishment of the monitoring agency was inspired by business and industrial organizations in 1943. The objective of the agency was to entrust control of the fundraising activities to a charity directed at the member organizations, in order to save the "men of the business sector from unnecessary calls". Hessler (1949), 27. The name of the monitoring agency has later been changed to "Stiftelsen för insamlingskontroll". Stiftelsen för insamlingskontroll (2004).
However, the seriousness of the fund drive was also guaranteed by the Government, which had the actual responsibility for the whole campaign. The Minister for Development Assistance, Ulla Lindström, had ultimate responsibility. She also worked actively on certain practical issues for the campaign, like finding a site for the secretariat, and convincing the Swedish king, Gustav IV Adolf, to promote the campaign in a speech on national radio. A further aid to the promotion of the posters and the fund-raising campaign was the agreement with another national fund-raising drive whose aim was to raise money for research on and treatment of cancer and which was going on during the same period. The agreement was that no posters for the cancer fund drive would be displayed during the height of the Central Committee campaign, from February to the end of March 1955. Thus the visual impact of the “Sweden Helps” campaign was not diluted.

The work, the ideas and the design of the campaign were mainly developed by a specific committee for information and propaganda, established in 1953. Sixten Heppling was the secretary of this committee, which was headed by Sven Arne Stahre, representing the Social Democratic study association ABF. Another important part of the design and promotion work was done by a specific fund drive secretariat based at the Swedish Institute, consisting of five persons working full-time. One prominent idea within the committee was to focus on the needs of the people in misery and starvation, contrasting these with the wealth of the Swedish people. The idea that the committee wished to promote was that Swedish development assistance could bring about a better future not only for the peoples in need, but also to a world in peace.

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1 SIRA, 2710, F1, C 27, Stenografiskt protokoll fört vid upplysningsdelegationens sammanträde 23.12.1954 & Sammanfattat stenografiskt protokoll fört vid upplysningsdelegationens sammanträde 30/12 1954.
5 SIRA, 2710,F1,C13, Protokoll 1/1954, sammanträde med upplysningsdelegationen, 9/41954.
The national fund-raising campaign included a large number of activities. The campaign started with an appeal, designed by the committee for information and propaganda, signed by the member organisations of the Central Committee and published in a large number of newspapers on February 7th. The business organisations, however, although contributing financially and through articles and other actions, refrained from signing the appeal.1

The fund secretariat had managed to get agreement with all bigger cinema distributors to show a three-minute film appeal during the eight weeks of the campaign. At the same time a collection of money was taken in the cinemas.2 Another strategy from the fund drive secretariat was to send pictures from the “less developed areas” to the press, pictures to be used for illustrating articles on the fund drive.3 Hans Haste, an editor working at ABF and with extensive contacts in the media sector, was employed specifically for the campaign.4 Another part of the campaign was addressed to schoolchildren. They were encouraged to participate in the collection of money through selling a specific pin, the “Sweden Helps Pin”, and by doing this they would at the same time be included in a competition, a sort of lottery, with many prizes, of which the first was a bicycle.5 These were only a few of the numerous activities carried out during the fund drive. Special mention may be made of two important parts of the drive, the two posters and a twenty-four page pamphlet produced and distributed all over Sweden.

Two posters were designed for the public, drawn by two different artists.6 These two posters are described in the archives as being a “picture of a Pakistani boy”, and a “woman dressed in white with a child in her arms in a desert-like landscape”.7 The only text on the posters reads “the Sweden Helps Campaign”, together with the account number to which donors could send their money. The theme for the posters had been discussed in advance, by the committee for

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1 SIRA, 2710, F2, 6, Korrespondens M-Ö. 1955, Upprop för Sverige Hjälper.
2 SIRA, 2710,F2, 5. [Förf. okänd] Utkast till cirkulärskrivelse till hel- och halvtidsanställda ombud i ABF:s, SLS’, IOGT:s och TBV:s tjänst.,
3 Ibid.; SIRA 2710, F2, 7, Korrespondens. 1955, Brev från Pressens Reportagebyrå, Stockholm 23/2 1955 till insamlingen Sverige Hjälper,
4 Protokoll nr 3/1954 upplysningsdelegationen 30/10 1954, SIRA 2710, F1, C13. In the correspondence, Haste seems to have been well acquainted with the Swedish press world. All letters to and from him are addressed to “Brother” and the receiver is referred to as “Du”, which is a sign of close contact between the author and the receiver of a letter in this period. SIRA 2710, F2, 7, Korrespondens 1955.
5 SIRA, 2710,F1, 4, Skoltävlingar,
6 The artists were Lars Bramberg and [Gunnar?] Bergenholz, SIRA, 2710, F1, C13 Protokoll nr 5/1954, upplysningsdelegationen, 1/12 1954; Bramberg/Bergenholz, ( 1955)
7 SIRA, 2710,F2, Vol. 5, [Förf. okänd] Utkast till cirkulärskrivelse till hel- och halvtidsanställda ombud i ABF:s, SLS’, IOGT:s och TBV:s tjänst,
information and propaganda, who paid two advertising agencies to present their ideas. The themes for the posters were to be “Cultivate progress – Cultivate peace”, and “Their progress – Your future”. The outcome of this was the two posters, by two different artists. The reasons for choosing these two posters are not set out in the documents from the committee. Other examples of posters are not explicitly dealt with, except for the rejected proposal of an image of “people pulling a primitive wooden plough”.

My interpretation of the two selected posters is that they represent “underdevelopment” by stressing helplessness and inability in a conventional way: using women and children. The Pakistani boy is representative of the peoples to be helped. The child represents someone that is not capable of not taking care of himself/herself, in any sense. In this case, the child needs the help of the Swedish people. The same imagery is prevalent in the poster with the “women dressed in white”. The woman is isolated, alone in a sterile environment, with no possibility of changing her own situation or that of her child. The Swedish people have to help her, meaning the “underdeveloped” peoples, by sending them money.

The posters were produced in three sizes, and distributed all over Sweden. This was ensured by enlisting representatives at community level in all Swedish municipalities. Furthermore, the state authorities dealing with communications assisted by displaying the posters in all railway stations, telecommunication stations, and post offices. In cities with tramways and buses the posters were displayed on these as well. The advertising agency “Folkreklam” was appointed to attend to distribution. A miniature of one of the posters, “the boy’s head”, was also made into a micro poster, used as a decoration for letters, all over Sweden. Thus, the images were probably quite extensively disseminated and linked to the slogan “Sweden Helps”.

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1 SIRA, 2710,F1, Vol C13, Protokoll nr 1/1954, sammanträde med upplysningsdelegationen, 9/4 1954.
2 SIRA, 2710, F1, Vol C27, Stenografiskt protokoll upplysningsdelegationen 22/11 1954.
3 Cf Donna Haraway, Cyborg Manifesto (1991), 177; Mudimbe (1988)
4 SIRA, 2710,F1, Vol C 75, Aktuellt från Centralkommittén, 6, (1955)
5 SIRA, 2710,F2, 5 [Förf. okänd] Utkast till cirkulärskrivelse till hel- och halvtidsanställda ombud i ABF:s, SLS’, IOGT:s och TBV:s tjänst; SIRA, 2710, F2, 1, 1955, Diverse korrespondens Kommunala Representanter; SIRA 2710, F1, C13, Protokoll nr 6/1954, sammanträde med upplysningsdelegationen, 22/2 1954,
Another visual part of the campaign was the production of a twenty-four-page campaign pamphlet entitled “Welfare and Destitution in the World”.\(^1\) It was produced in 40,000 copies, and passed to the member organisations of the Central Committee for distribution.\(^2\) The pamphlet is more explicit in the colonial discourse library than the two posters, in both its imagery and its text. On the front page of the pamphlet two persons, seemingly an older woman and a little girl, are squatting, passively, and they seem to be waiting for something to happen.

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\(^1\) The author’s translation of the title of the pamphlet: “Välstånd och världsnöd”, Haste (1955)
\(^2\) SIRA, 2710, F1, C 75,”Aktuellt från centralkommittén”, 6, 4/2 1955; 8, 14/2 1955; 12, 21/3 1955.
On the back of the pamphlet there is a poem by a Swedish poet, Stig Dagerman, appealing to each donor to help the less fortunate in the world:

**En Broder Mer**

Jorden kan du inte göra om.  
Stilla din häftiga själ.  
Endast en sak kan du göra: en annan människa väl.  
Men detta är redan så mycket att själva stjärnorna ler.  
En hungrande människa mindre betyder en broder mer.

**One Brother More**

You can’t change the whole wide world yourself,  
calm down, just do what you can.  
Reach out a hand to your neighbour: give aid to your fellow man.  
Doing that makes such a difference that stars seem more bright than before.  
One person no longer hungry means you have one brother more.

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1 Translated from Swedish by Laurie Thompson
Inside the pamphlet we can read about the welfare of certain parts of the world’s population, and the destitution of other parts, the greater parts. Definitions of three levels of development are given, in which Sweden is said to belong to the group of developed countries, the “first group”. The second group are said to be partly developed, and the third group, the main group, consists of the “underdeveloped”. In this group are to be found the whole of Asia, except the Soviet Union, and “some other areas”, large parts of Africa and South America.  

The term “underdeveloped” as used in the text does not deprecate the cultural life of the areas in question, it merely refers to the “economic, technological and social conditions”. These areas are described in terms of real destitution: the people there are not only hungry, they are also forced by poverty to eat the wrong kind of food, which results in malnutrition. These people are described as being ill most of the time, having dangerous diseases like malaria, and other diseases that Swedish people “have probably never even heard of”. According to the pamphlet, most of these people cannot read and population growth aggravates their suffering:

The truth is that the earth is producing too little food to provide a decent standard for everybody. The gap between supply and demand is widening each day. The number of starving people is increasing. World hunger is growing.

Solutions to the problems are presented in the pamphlet, such as devoting larger areas to cultivation, making use of the resources of the sea, producing food synthetically, and reducing population growth by information and the wider use of contraceptives. Finally the importance of the contribution from the “developed world”, the “rich west” is explained to the reader:

The poor need two things: knowledge and capital. These have to come from the developed countries of the west. The capital is needed to build hospitals, schools, roads, factories and research laboratories, to develop industry and to carry out other capital-demanding reforms. The money for this is not available in these countries. But to make use of the capital, knowledge is needed. The underdeveloped countries need to be able to rely on the greater resources of the western countries. They need help from technicians who can build bridges,

1 Haste (1955), 5.
2 Haste (1955), 5.
3 Ibid., 6.
4 Ibid., 9. Author’s translation.
design irrigation schemes, and vaccinate children against tuberculosis. They need teachers and instructors to educate them in farming and craftsmanship, hygiene and cooking, counting and writing, etc.\(^1\)

The pamphlet ends with an appeal to the Swedish people to participate in a sort of people-to-people-aid, to contribute financially, and also to show the Swedish parliament and Government that the Swedish people are prepared to make an effort for them. It is described as an “unofficial referendum” on future Swedish policy in this area, to which the campaigners hope to make a change\(^2\):

*Our effort is needed to lift the poor peoples out of their humiliating destitution and to create a safe and peaceful future for ourselves and our children. This is the hour of destiny of our generation.*\(^3\)

**The campaign of 1961: “Sweden Helps” again**

In 1956 a poll was held for the first time to ascertain the opinion of Swedish citizens on development assistance. The poll was carried out as part of a larger political poll close to the general elections, and consisted of only one question: whether Sweden should help “poor countries in Africa and Asia”.\(^4\) As there was no earlier poll to compare with, this poll did not say much about the impact of the 1955 fund-raising drive. However, one result of the national fund drive was that it gave a sort of spin-off effect to the participating NGOs. Encouraged by the Central Committee campaign, a number of different fund drives were held between 1957 and 1960.\(^5\) This means that for the second national fund drive of the Central Committee, starting in January 1961, certain groundwork had already been done. In 1955, the committee for information and propaganda had discussed how to make the people understand what the whole thing was all about. This time, their task was less complicated. The second national

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\(^{1}\) Ibid.
\(^{2}\) Ibid., 22.
\(^{3}\) Ibid., 22. Author’s translation.
\(^{4}\) Westerståhl / Särlvik (1957). See also Ekengren / Oscarsson (1998)
fund drive by the Central Committee started in January 1961, again with an appeal to the
Swedish people. This time all member organisations of the Central Committee, including the
business sector representatives, signed it. Furthermore, this time the campaign was linked to
the international campaign of the Food and Agriculture Organisation of the United Nations
entitled “Freedom from Hunger”, which was initiated in 1960. In consequence, the phrase
“Freedom from Hunger” was referred to on the collection boxes and in a poem, by Bo
Setterlind, used in the campaign:¹

Det finns en appell
Som ständigt öppnar gränser
Den får aldrig dö
Den talar på alla språk
Om en enda önskan:
Frihet från hunger

There is an appeal
Which always opens borders
It must never die
It speaks in all languages
Of one single wish
Freedom from hunger²

The “Sweden Helps” campaign of 1961 had been prepared a year before the start by the
secretariat of the Central Committee, and extra staff had been hired for the last six months
before the campaign began.³ Once again, the fund drive had received an appropriate account
number, “90 1961”, granted by the national fund-raising monitoring agency. Around twenty
radio and TV shows discussed the drive and Swedish assistance to “less developed areas”. A
number of prominent members of the Government, the royal family, the labour movement,
the political parties and the industrial sector participated in these shows.⁴ The press relations
department was very active in promoting the campaign in all the Swedish media. This part
seems to have been successful as over fifteen thousand pictures, articles and news items on

¹ Kungl. Maj:ts Proposition 1962:100, 39; Halldén (1960), 12; Centralkommittén, Årsberättelse (1961);
² Author’s translation
³ Centralkommittén, Årsberättelse, (1961)
⁴ For instance the Sweden’s King Gustav VI Adolf, Queen Louise, Prime Minister Tage Erlander, minister with
responsible for development assistance, Ms Ulla Lindström, and the president of SAF, Bertil Kugelberg, and
all the political party leaders. Centralkommittén, Årsberättelse, (1961)
the fund drive and the “problems of the underdeveloped countries” were published in Swedish papers during the campaigning period. The number of 15,000 is stated in the annual report of the Central Committee, Centralkommittén, Årsberättelse (1961), 42f. In the archive of the fund drive there are six boxes filled with media coverage. SIRA, F2, Vol 20-25 (20-36), Aktionen Sverige Hjälper.

2 Centralkommittén, Årsberättelse, (1961)


4 Centralkommittén, Årsberättelse (1961), 42f.


6 SIRA, 2710, F2, 27, Degerfors Tidning, March 24, 1961: "Ett brev från Afrika ". Other newspapers publishing the same story and a photograph of the exhibition were: Blekinge Läns Tidning, Borås Tidning, Kinda-Posten, Trollhättans Tidning and Vimmerby Tidning 24/3; Motala Tidning, Arbetet and Arvika Tidning 25/3.

The methods applied in the 1961 campaign indicate that it aimed to arouse the sympathy of the individual for the poor people of poor countries in the world. The theme of “sharing” seems to have been prominent. Money was collected, as in 1955, at work places. An amount of SEK three million was collected in this way. Again schoolchildren were also encouraged to give their weekly pocket money and SEK 230,000 was collected from this particular group.

Members of parliament and local councillors made monthly deductions from their salaries for twelve months, for the benefit of the fund drive. The sports and health organisation, Frisksportarförbundet, even proclaimed a day of fasting with the call “fasting to feed”.

One vehicle for inducing children to contribute to the fund drive, and for stressing the misery of African children, was the travelling exhibition “A Letter from Africa”, which was distributed to a great number of schools all over Sweden. Photographs from the exhibition were published in various Swedish newspapers, together with a text explaining the situation of young Africans:

*These days living conditions in Africa are taught in the Swedish schools. The pupils learn that there are no medical doctors in the villages, that the children get no milk, no fish nor egg, on their tables, not even at Easter. That is, if they even have tables, of course...*
As in 1955, two posters were produced for the fund drive. They both speak much the same language as one of the two produced in 1955. One poster shows the face of a girl with dark hair and dark eyes. The text reads “Sweden Helps” together with the account number.\(^1\) The print run of this poster was 110,000 copies.\(^2\) The second poster was the result of an artists’ competition, for which 36 entries were received. The winning poster, drawn by the artist Lars Bramberg, is not the one that was finally printed and distributed. Bramberg’s poster was more abstract, with a person running joyfully under a shining sun. Although the committee appreciated the “artistic value” of this poster, it decided to print another, more relevant,

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alternative. The poster used instead for the campaign, produced by Bo Liljedal, is an image of two hands, seemingly from one person, stretching up in the air, awaiting help or salvation from the text above, “Sweden Helps, 90 1961”. There is also a play on the words of the poster. As well as being the name of the fund drive, it is also a call to “give help”.3

The poster with the hands was produced in 30,000 copies. If the posters of 1955 did not clearly speak the language of misery and destitution, this second poster is a clear statement of people in need, of a dichotomy, with people helping. Sweden is the helper, helping the poor and destitute. As during the first fund drive, the posters were distributed with the aid of various state enterprises, the post, the telecommunications administration, and the state railways. Four political parties, although not the communist party, distributed the poster, and it was sent to labour organisations and employers.4

Sixten Heppling recalled some of the challenges to the fund drives. One major setback that he recalled occurred when the Ethiopian emperor, during a visit in Sweden, distributed money to the Royal Guard. The Ethiopian emperor also caused a reaction when it was made public that he was seeking quotations for a new throne. Another incident was when it was made public that the Ethiopian emperor was requesting bids for the construction of a new throne. Such incidents were not welcomed, they caused people to question the need to send Swedish money to so called underdeveloped countries, as apparently the need was not as acute as the promoters suggested.5 I have not gone further into this aspect of the fund drive, although it is certainly of interest to find out how these setbacks were handled by the development assistance promoters.

The two fund drives of 1955 and 1961 were clear manifestations of how the proponents of a state-funded development assistance promoted an imagery of a world divided in two: the helper, the rich, the active, the modern as opposed to – and having a higher position in a theoretical scale of development than – the helped, the poor, the passive, the primitive. Sweden belonged to the “helpers”, already stated in the title of the fund drives, along with the images, methods, and rhetoric used. Sweden, a country with a high level of

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1 SIRA, 2710, F1, C 31. Protokoll insamlingutskottet ”Sverige Hjälper” den 27/12 1960. A version of the winning, but not printed, poster in the artistic competition is published in Lars Bramberg, Brambergs bilder (Södertälje, 1987), 36.


3 “Sverige Hjälper”. The name of the poster proposal was “cross words”. SIRA, 2710, F1, C 31 Protokoll insamlingutskottet 27/12 1960; Bo Liljedal, Telephone communication, Feb. 16, 2004, (Stockholm-Örebro)

4 SIRA, 2709:2, C110, 1, Sixten Heppling, PM angående insamlingen Sverige Hjälper, 12 June, 1961,

5 Heppling, Pers. interview, 16th Feb., 2000
technology and science, should and would help poor people in misery, who could not take care of themselves.

[To the left: Fig. 18. Svea Örnstedt and the manager of the fund drive campaign, Gunnar Dahlman, presenting the final ”Sweden Helps” poster in 1961, by Bo Liljedal. On the right, Fig. 19, the photo of a girl used as a poster in the same campaign, Photo:Lennart Olsson.\(^1\)
Source: Frisksport, 2, SIRA, 2710, Aktionen Sverige Hjälper, Vol. 20.]

[Fig. 20. The rejected poster by Lars Bramberg, although the winner of the artist competition preceding the fund drive.
Source: Lars Bramberg DB archive.]

\(^1\) SIRA, 2710,F1, C31, Protokoll insamlingsutskottet, 10/1 1961.
Using women and children in the imagery to stress this helplessness was another important part of the strategy. The messages diffused by the development assistance proponents were very successful. The national fund drives were considered by the campaigners to be “referendums” on Swedish public opinion regarding a state-funded development assistance, a view that was propounded within the campaign brochures.\footnote{Centralkommittén, \\textit{Sverige Hjälper}, (1959), 7; \textit{Promoting Sweden as a nation without a colonial past}} If the “referendum” of 1955 had been slightly hesitant, this was not so in the case of the fund drive of 1961, which stated a clear “yes”, with the participation of all sectors – business sector, NGOs, the government, the political parties and the people in general.

\begin{center}
\textit{Promoting Sweden as a nation without a colonial past}
\end{center}

When discussing the Swedish business actors and their part in the promotion of a specific Swedish development assistance, I have briefly touched upon the argument that Sweden lacked a colonial past, i.e. had not participated in any colonial ventures and thus had a better position in the newly independent countries. In this section I will discuss a possible interpretation on why this view was constructed and how it was put forward.

Sweden had been a colonial power, although not very successful overseas. Sweden participated as a nation in the Berlin Conference of 1884-1885, when the European nations discussed how to divide Africa between themselves. Swedish citizens also participated in the Belgian colonisation of the Congo, and Swedish enterprises co-operated with enterprises of the colonial empires in numerous settings, of which hydropower was but one. However, as a state, as a nation, Sweden had not been a coloniser in Africa, Latin America and Asia in the 19th century, except for the little island of St. Barthelemy. Instead of colonising Africa, efforts in Sweden had been concentrated on the internal colonisation of the north and the natural resources available there. But although the Swedish state was not technically involved in colonisation in Africa, colonialism was highly present in Swedish media and literature, amongst other through the activities of Swedes in the colonization projects of European colonial powers.\footnote{See discussion in introductory chapter. Cf Granqvist (2001); Eriksson Baaz (2002)} In these circumstances it is possible to interpret the view that Sweden
lacked a colonial past as a version of history to which it was at this time correct to adhere. It was the period of decolonisation. The old colonialism was something negative, and thus any connections with colonialism would be problematic. It was therefore necessary to distinguish Sweden from the “others” the colonial empires, and present Sweden as a nation of higher moral standing.\(^1\) Lack of success in colonial undertakings could now be turned into an asset for Sweden. The 1950s was a period of renewal or reinvention of the identities of several nations, in the post-war decolonisation period – internally and externally. This was also true of Sweden. While the Swedish Institute had been established directly after the war with the aim of promoting a positive image of Sweden, in view of Sweden’s earlier relatively supportive attitude to – or compliance with - Nazi Germany, the rhetoric developed regarding Swedish international involvement during the 1950s can be seen as part of a reinvention of the Swedish national identity.\(^2\)

The argument that Sweden was morally superior to other nations was promoted by both state representatives and business sector supporters of Swedish development assistance, from the early 1950s onwards. In the General Export Association publication of 1954 it was argued that Sweden was a country without a colonial legacy and without “imperialistic ambitions”, which gave it a specific goodwill in the former colonies.\(^3\) At the 1955 conference on Swedish participation in United Nations technical assistance activities, organised by the National Committee for Technical Assistance together with the General Export Association, the same view was expressed by the Swedish Minister responsible for development assistance, Ulla Lindström:

\(...)Sweden is a country with a unique goodwill especially amongst the coloured peoples (...) and the Latin American population (...) They represent nations with a standard of living far below the average. Why do they wish to approach Sweden? Many have told me spontaneously that Sweden is a social role model country and also a technologically advanced nation. We don’t have any real colonies and we’ve never had any. This means that we are not compromised as exploiters of the peoples, who recently have emancipated themselves from different colonial powers. We are not part of any military alliances. We are thus not seeking

\(^1\) Eriksson Baaz (2002)
\(^2\) For a discussion on Swedish modernity and national symbols see Löfgren (1993); Frykman (1993); Ehn (1993),
\(^3\) Swedberg (1954)
*military bases, oil or anything else of military interest, when we make commercial contacts. This is a unique position, which can be of advantage to the technical assistance activities.*  

In her speech, Lindström denies any colonial legacy whatsoever, as she states that Sweden has never had any “real” colonies. At the same time she also uses the Swedish choice to stand outside the military alliance, the North Atlantic Treaty Organization, NATO, created after the experiences of the Second World War and of which the neighbour countries that had been occupied by Nazi Germany had become members, as an argument for why Sweden would be better than the others. Seen in the light of the Swedish compliance with Nazi Germany and only belated support to the allied forces of the democratic neighbours, this argument at this time might seem somewhat audacious. I interpret the statement as part of the reinvention of the Swedish identity in the post-war era, in line with such efforts as the creation of the Swedish Institute.

Another example of how this view was presented is found in the government bill 1962:100. This bill was produced by a working committee consisting of representatives of the state, the business sector and NGOs. The committee had the Social Democratic Prime Minister (Tage Erlander) as chair, but was headed by his young assistant, Olof Palme. The government bill discusses the term “development assistance”, and in this respect no contradiction between the objectives of promoting Swedish industry, on the one hand, and contributing to technological progress and economic development among poor nations, on the other, existed. According to the bill, Swedish development assistance could have many forms, from gifts to commercial investments. Sweden played an important role in the promotion of technological progress, through the export of specifically Swedish technology and know-how, especially because Sweden did not carry the burden of a colonial past:

(...) as a consequence of our neutrality policy and lack of colonial embarrassment, Sweden is likely to enjoy a confidence among the underdeveloped countries, which both increases our responsibility and our opportunities to assist.

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1 Lindström, “Inledningstal” (1955), 4.  
2 The name of the committee was “Beredningen för internationella biståndsfrågor”. SOU 1961:22, (1961), 24.  
3 Stokke (1978), 2-4.  
The colonial powers were “othered“, Sweden as a nation was promoted as being better than the others by the advocates of Swedish state-funded development assistance.¹ In line with this, the export of Swedish technology and technological competence was promoted as being altruistic, having no ulterior motives, its only wish being to promote progress, welfare and happiness amongst the world’s poor.

Conclusion

In an attempt to explain how Swedish state-funded development assistance could embark upon a large-scale hydropower project in Tanzania in the 1960s, this chapter discusses how Sweden entered the development assistance era in the post-war period. The focus has been on the identification of the actors involved in promoting state-funded development assistance and the activities and imagery used for this objective. Academic conflict lines regarding the nature of Swedish development assistance have long concerned whether these activities are mainly driven by commercial interests, i.e. something “bad”, or, on the other hand, by altruism, i.e. something “good”. I have opted to disregard this division. Instead, my main argument is that during the 1950s a specific Swedish development assistance pattern of thought, a paradigm, was created with strong connotations of the colonial discourse library. While Swedish colonial enterprises overseas officially ended with the sale of St. Barthelemy in the late 19th century, and the participation of Swedish individuals in the Belgian colonisation of Congo did not place Sweden amongst the colonial powers, the development assistance era opened new possibilities for entering the global scene.

Through state-funded campaigns, the Swedes, of all ages starting from schoolchildren, were to be educated to understand what Sweden was, and what poor peoples in “underdeveloped” countries were, according to a dichotomous and hierarchical view: the helper, the rich, the active, the modern – represented by male-dominated technology sectors - versus the helped, the poor, the passive, the primitive – represented in images of children and

¹ Cf Eriksson Baaz (2001) and (2002)
women. This was the image presented to the “man in the street”. On the other hand, within the business sector context, where opposition to state intervention existed, state intervention in international exchanges through development assistance was promoted as an opportunity to support Swedish business exports. On both sides, one common argument was used to emphasise why Swedish technology and know-how had to be used in bilateral projects, as opposed to multilateral projects through the United Nations and other international organisations: Sweden was presented as having no colonial past, and thus having a higher moral standing than many of the other Western countries competing on the global market.

Judging by the social networks, the individuals taking part as well as the institutional settings, the representation of actors with close links to the Swedish business sector within Swedish development assistance seems as strong as, or even stronger than, any popular NGO representation, from its early beginnings in the post-war period. The representatives of the business sector taking part in the construction and establishment of the Swedish development assistance paradigm in the 1950s were among the elite of the Swedish business sector. Over the years, the propaganda used to turn the Swedes in favour of state-funded development assistance gradually became a reality, a paradigm. Swedish state-funded development assistance venturing into the construction of a large-scale hydropower project in the 1960s is founded on a development assistance tradition promoted in the early post-war period. The idea of a Swedish technological and scientific supremacy over the “underdeveloped” countries, the wish to support the export of Swedish technology, together with a dichotomous world view in which poor peoples should be helped to better lives through the introduction of the Swedish, “non-colonial technological know-how” was of extreme importance in the setting of the development assistance paradigm.

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1 The reader familiar with the history of Swedish development assistance knows that the “family planning”, or the reproduction sector was an important part, with strong support from women’s organisations and female doctors. No historical analysis has been made of this part of the history, and I have opted to leave out this part in my analysis as it demands a separate effort, especially when making a feminist postcolonial interpretation. A main theme in early feminist criticism of development planning was the exclusion of women, as the development assistance programs were designed for men only, while the only focus women would receive was under the heading of controlling female sexuality – women’s reproduction. Cf Harding (1998), 148.
Part Two:
The Great Ruaha Power Project in Tanzania

[Fig. 21. Plan of the Kidatu hydropower plant, the underground station. Source: Tanesco, *The Kidatu Hydroelectric Power Plant* (Stockholm, 1975).]

[Fig. 22. The Great Ruaha power project as presented in the ecological impact study by SWECO in Johansson (1997).]
After the inauguration ceremony a short viewing of the control room and the dam wall was followed by lunch. Inside the tunnel Nyerere approached me, shook my hand and thanked me for the Swedish contribution to the establishment of the power station. With a mischievous smile he asked whether I had understood what the school children had sung in Swahili at a moment when the audience had broken out in a hearty laugh. As I had to confess that I had not understood, he said ‘Well, they sang that this power plant will spread so much light over Tanzania that all opponents of the socialism will be visible!’

On November 14th, 1975, the Tanzanian president Julius Nyerere inaugurated the Kidatu hydropower station. Besides representatives of the Tanzanian political elite, and the power company, Tanesco, the presidents of the boards of the engineering consultants (SWECO) and one of main constructors (Skanska) were present, alongside the other European companies who had taken part in the constructions. The donor nation’s official representatives had seats on the president’s reviewing stand. Sweden, however, had the most prominent place, as the Swedish flag had been placed in the place of honour – closest to the Tanzanian one. The report back to Sweden, with the anecdote about what the Tanzanian president said, came from the Swedish ambassador, Knut Granstedt, working in Tanzania since the early 1960s.

The Kidatu hydropower station is located 280 kilometres south west of Dar es Salaam, Tanzania. It uses the water of the River Great Ruaha, which here at Kidatu passes through the mountains before entering the plains of Kilombero. Being an underground station, Kidatu leaves to the viewer only a reservoir in the shape of a lake and the dam wall. In November 2000, 25 years after its inauguration, I am visiting Kidatu on a field study, and at this very moment conversing with Edgar Mshindo, who has worked here since the late 1960s. Initially Mshindo was hired to take measurements for the planning of the reservoir. Since the construction was finalised he has been working as a dam attendant. Where I stand,

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2 Ibid.
overlooking the dam, the air is filled with mosquitoes. My own experience of mosquitoes from another malaria-infested country tells me that this is probably not very healthy. Below the dam wall, a dry river bed shows us where the Great Ruaha used to pass until the early 1970s. Now there is only a small stream of water, due to a leakage in the gates since the disastrous El Nino storm passed in 1997-98. The river itself disappears underground, falling 175 metres, giving its energy to the turbines before reappearing again almost 10 kilometres downstream near the village of Kidatu, from which the hydropower station takes its name. At the mouth of the underground tunnel, in technical terms called the “tailrace tunnel”, people from the village use the surging water to wash themselves and their clothes. The Great Ruaha River also donates a small portion of its water to the sugar plantation and factory nearby, before resuming its journey towards the confluence with the Rufiji River and their joint passage all the way to the Indian Ocean. Not far away from the resurging river a small forest of metal trees, the switchyard, is the physical symbol of the power derived from the falling water. From there the electricity leaves Kidatu on a 300 km long 220 kV transmission line, to Dar es Salaam and the Ubungo control centre for further distribution into the national grid.

[Fig. 23. Edgar Mshindo, Dam attendant at the “intake plug”, Kidatu. In the background a part of the reservoir can be seen. Photo: The author, Nov. 2000.]
Joseph Lyaruu, the head of maintenance at Kidatu, drives the car, taking us down the six-hundred-metre-long access tunnel to the underground power station. In the control room there is a team of four Tanzanian men, supervising the station during their shift. Another group of four men, white men from Norway, are having coffee in an adjacent room. The Norwegians have been sent here by the Kvaerner engineering company to repair one of the four units which is currently out of order. Joseph Mwihawa, senior operations engineer at Kidatu, who is an electrical engineer trained at the University of Dar es Salaam and also the computer expert of the power station, tells us about the new computer system. During 2001 all four units, four turbines with generators and transformers, are to be connected to a computerized system. Inside the machine hall it is really hot. I can see only the upper part of the generators. To see the rest, I need to go down some stairs. It is dirty and dark. Water on the floor, cables everywhere. The Kidatu power station suffers from a construction problem which causes an influx of coal dust, and just before our visit an incident with a valve has caused a water leak.1 I take a closer look at the machine equipment. It all comes from European suppliers: VAG, Total, Alsthom, Siemens, ABB Kraft and others. Even a simple wooden desk has a note informing me that it comes from Norway.

Apart from the power station and reservoir, Kidatu consists of three different campuses and administrative houses. There is also a guest house for the visiting foreign, mostly Nordic, consultants. The nicest campus area is the “SWECO camp”. SWECO is the Swedish consulting company that had the primary responsibility for construction in the 1970s. In the “SWECO camp”, which consists of 58 villas, the Swedish engineers lived with their families. Today a number of Tanesco engineers live here with their families. “Muungano camp” was the workers’ camp during the construction period. Since the completion of the power station it has been gradually abandoned. One reason, as with most hydropower station projects after completion, is that the number of people needed has been radically reduced. As a result, some of the houses are now decaying and others have been completely removed. The “dam site camp”, where the construction workers used to reside, is even more dilapidated. The majority of the Tanesco employees of today prefer to live outside the Kidatu gates in the two villages nearby, Kidatu and Kidodi. Those who still live within the hydropower station area enjoy free water and electricity.

[Fig. 25. Entrance to the Kidatu powerplant area, entrance only for authorized staff. Photo: The author, Nov. 2000]
[Fig. 26. SWECO guesthouse at Kidatu, constructed in the early 1970s, where consultants (mostly from Norway and Sweden) live during their stays for repair works at the powerplant. Photo: the author, Nov. 2000]

[Fig. 27. Workers’ housing, dam site camp, Kidatu. Christina Nyamhanga, and her two sons, January and Rama. Photo: the author, Nov. 2000.]
Kidatu, the first phase of the Great Ruaha power project, became the first large-scale hydropower station in Tanzania. It was also the first Tanzanian hydropower plant with a regulated reservoir, entirely blocking the flow of water in the river. With this design and scale, it brought Tanzania into the big dam era. At the same time, Kidatu and the Great Ruaha power project signified the merger of Swedish development assistance and Swedish exports within the hydropower sector, which would soon place Sweden among the big hydropower-exporting nations.

The formal decision to construct the Kidatu hydropower station and thus to start the first phase of the Great Ruaha power project was taken on December 14th 1970, on the premises of the World Bank in Washington DC, USA. It was there and then that the loan agreements were signed between the Tanzanian government and electricity company on the one hand, and the Swedish government, together with the World Bank, on the other. In July 1976, again in Washington DC, the decision was taken to finance the upstream reservoir of Mtera, the second phase of the Great Ruaha power project. The path to the meetings in Washington was neither straight nor without friction. Instead it was bordered by debates on technological design, choice of engineer and contractors, sites for construction, estimates of water flows, including competition between donor nations for the opportunity to finance the Tanzanian hydropower projects. Sweden competed with the former colonial power, as well as with other donor nations, in the “arms race” of the development assistance era, with the actors of the Tanzanian government and the Tanzanian electric company, Tanesco, as mindful players.

A study of the period preceding the decisions taken in Washington in 1970 and in 1976 illuminates dimensions of politics, export and import of technology, foreign capital, and foreign influence in decision-making processes, as well as ideas about how to bring about development and progress to a people supposed to be living in “poverty and misery”. It also provides answers regarding views on nature, environment and the people inhabiting a certain territory. Part One dealt with the contexts in which Swedish hydropower was exported within the framework of development assistance, in terms of a technoscientific paradigm in regard to large-scale hydropower and a Swedish development assistance paradigm. Part Two and Part Three contain a case study of a merger between the paradigms, as a framework for the events that took place when implementing the Great Ruaha power project in Tanzania.
Developing the themes discussed in the contextualizing chapters, the ensuing chapters deal with the key actors, the individual and institutional actors – the planners and decision-makers within the settings of the Great Ruaha power project. While Part Three analyses the technoscientific basis for the decisions taken, Part Two is first and foremost an identification and analysis of the key actors involved. The emphasis is on the Swedish actors, the engineers, experts and representatives of the Swedish development assistance in direct relation to the Great Ruaha power project, and their social and professional networks. The archives and informants to whom I have had access are mainly Swedish, although the story of Kidatu and the Great Ruaha power project is probably best recorded in Swedish archives in Stockholm, while it has proved to be much more difficult to find any of these documents in Tanzania. Furthermore, although the emphasis is on the Swedish actors, following them in the archival sources also provides certain answers regarding the actors in Tanzania and within the World Bank, as there are a voluminous correspondence and also memorandums in which voices from Tanzania and the World Bank are heard.

In the analysis of the actors I have identified three major contexts that appear as explanations for their behaviour. These contexts are referred to throughout Part Two, and also appear in Part Three. The first context is the merging of colonial imagery and altruistic ideals within Swedish development assistance and support to Swedish commercial interests. Linked to this is the context of a Swedish policy of high morality. As shown in Part 1, Chapter 3, since the start of Swedish development assistance and continuing through the 1960s, there has existed a double-edged policy regarding the projects concerned: they were supposed to contribute to progress and development, and at the same time provide opportunities for the use and export of Swedish technology. However, in official policy declarations, Sweden had presented itself as being a country of higher morality than the colonial powers. A practical outcome of this was the policy of untied aid, a policy that changed after 1972.¹ This double-edged policy together with the official declarations, I argue, complicated life for those working in Swedish development assistance.

The second context is the transition from colonial period to development assistance era. This means that from receiving financing and technology mainly from a single country, Great Britain, the independent Tanzania now had a choice of donors. Moreover, as earlier described by Mukandala, Tanzanian policy during the 1960s was not one of passive receipt of aid:

¹ Stokke (1978), 289.
instead the Tanzanian government tried hard to get the best from the smorgasbord of interested donors from both East and West available after independence.\footnote{Mukandala (1999)} As my focus has been on following the Swedish actors, mainly investigating Swedish sources from SIDA and SWECO, the Tanzanian internal setting has not been easy to identify. However, in order to discuss African Tanzanian agency, I have chosen to illuminate the traces of the African Tanzanian actors that has turned up in the Swedish sources, complemented with literature discussing the transition period.\footnote{Bienen (1967); Havnevik (1993); Hoag (2003); Mukandala (1999)} On the other hand, I also discuss how this transition was of importance also for the Swedish actors involved.

The third context concerns the design of the Great Ruaha hydropower scheme, with the major emphasis being the question of single-purpose versus multipurpose schemes. As discussed in Part 1, Chapter 2, hydropower schemes depend on their social context, meaning that there is a question of power structures regarding the use of water for different purposes. There are always conflicts, whether they are visibilised or not. The conflicts concern the use of water as well as the land to be inundated. Although I consider the conflicts mainly social, there is an ecological context of great importance as well, depending on the water flows and climatic contexts. Hydropower schemes may involve a combination of uses of water. In Sweden hydropower schemes are single-purpose – power production only - for both political and ecological reasons. However, in Tanzania there is another climatic context that makes access to water more problematic. As Sweden entered the Tanzanian hydropower sector, it brought with it the dominant views and experiences of use of water within the Swedish hydropower sector, expressed in the technological design of the hydropower plant and reservoir. The time period in focus in this chapter is 1965-1970. I also briefly discuss the periods 1962-1965 – in regard to the establishment of Swedish development assistance in Tanzania, as well as specific events in the period 1970-1998, in relation to the importance of Swedish involvement in the Tanzanian hydropower sector.

Earlier historical research on Tanzania in regard to hydropower development has concerned the Stiegler’s Gorge project, which so far has not been constructed. The Stiegler’s Gorge site is on the Rufiji River, which the Great Ruaha River joins. The Stiegler’s Gorge project was contemporary with the Great Ruaha power project. Kjell Havnevik analyses the large-scale
project at Stiegler’s Gorge, discussed since the 1950s but so far unbuilt. According to Havnevik, the Tanzanian elite wished for a grand project, something which coincided with the Norwegian development assistance search for hydropower projects to finance and in which to invest Norwegian technology. Havnevik considers Stiegler’s Gorge one of many expressions of a topdown development approach by the Tanzanian government, enforced with the support of foreign donor nations and the World Bank. Heather Hoag has made a historical analysis of the Stiegler’s Gorge project, tracing it back into the 1950s and the introduction of modern scientific methods, as opposed to the colonial close contact appraisal of the possibilities of development in the region.

Tanzania, having a socialist leadership in the decolonization period, and holding a position as leader of the recently decolonized countries, as well as attracting most of the world’s donor nations, has evoked numerous academic studies in regard to the policies it has pursued as well as its charismatic leader, Julius Nyerere. In regard to the African Tanzanian elite and the political situation after independence, studies made have included those by Bienen (1967) and Mukandala (1999). Several studies have been made regarding the forced villagization program of the *Ujamaa* period in Tanzania, following the Arusha declaration by President Nyerere in February 1967. While the first attempts were made shortly after the Arusha declaration, the main period of *Ujamaa* took place between 1973 and 1976.

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1 Havnevik (1993)
3 Hoag (2003)
4 Bienen (1967); Mukandala (1999)
5 Boesen/Storgaard Madsen/Moody (1977); Huizer (1971); Freyhold (1979) See also Julius Nyerere’s own discussions on the *Ujamaa* concept, Nyerere (1969)
4. Swedish development assistance enters Tanzania

In this chapter I analyse how Swedish state-funded development assistance entered Tanzania in the early 1960s, a process paralleling the decolonization of the territory, but at the same time representing a continuation of missionary activities. Tanzania became the favourite recipient of Swedish development assistance in the 1970s, and has remained so ever since. Conversely, Sweden has been Tanzania’s major donor country. In consequence there have been numerous evaluations of the assistance and studies of the relationship between the two countries. However, none of these authors have explained why the Swedish development assistance sector chose Tanzania. In 1978 Olav Stokke discussed how countries were selected for Swedish development assistance in the 1960s. In general terms, Stokke concluded that official discussion of criteria for selection was probably less important than personal contacts and specific opportunities. In my study of the Tanzanian case, I have been mindful of this possibility, putting questions to the archival sources and my informants.

Swedish state-funded development-assistance engagement in Tanzania started out in cooperation with the other Nordic countries. Even a few months before Tanzanian independence in 1961, the Nordic Committee of Ministers for the co-ordination of development assistance activities had travelled around the United Nations offices in Europe to collect information on the candidate African countries for assistance. Their choice fell on Tanzania (then still called Tanganyika), and the decision was taken to approach the independent Tanzanian government to see whether it wished to receive aid. It is important to stress that there seems never to have been a formal request from the independent Tanzania: the initiative came from the Nordic countries in seeking to expand in the development assistance era. Officially the main reason for selecting Tanzania was that none of the Nordic countries had any commercial interests in the country that could be mixed up with a Nordic development assistance project.

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1 To mention only a few of them: Hannan-Andersson (1984); Riksrevisionsverket (1974); Trulsson (1993); Falek (1997); Widstrand (1992); Therbildsen (1988); Bergenhielm (1995); SASDA (1994); Björklöf (1992); Dahlström/Cuellar/Peterson (1997) Smet (1997); Hyden/ Mukandala (eds) (1999); Kees van Donge/White (1999); Katila (2003); Eriksson-Baaz (2002)
2 Stokke (1978) 58 ff.
Double-edged policy for Swedish development assistance

For an understanding of the Swedish actors in development assistance in the 1960s, in Tanzania, the context of the Swedish development assistance paradigm provides a guideline. The issue of commercial interests in Swedish development assistance was an important matter, rhetorically, throughout the 1960s. During the campaigns of the 1950s and early 1960s the proponents of increased Swedish development assistance had appealed to feelings of sympathy for poor and sick people. At the same time there had been a parallel campaign directed towards the business sector within which the issues discussed were how Swedish enterprises should promote their interests in the new markets, the colonies turning into independent countries – the “developing countries”. There was a political consensus on the participation of commercial interests; the differences concerned only how this participation should take place. Yet, the Social Democratic government had certain troubles with the rhetoric and linking Swedish commercial interests to state-funded development assistance posed a presentational problem. For instance, in 1962, when the first government bill for a state-funded development assistance was presented, it was argued that Sweden, having no colonial past, and mainly being altruistic, had a specific mission to provide development to the former colonies. According to the bill, the colonial powers had neglected the construction of important “infrastructure”.\(^1\) Accordingly, the government argued in the bill, it was the task of Sweden, as a country ”free from a colonial past”, to contribute to such investments.\(^2\) This meant that Sweden should provide such services, preferably by offering Swedish capital, technology and know-how. This would happen with the participation of the Swedish business sector. Consequently, the government bill contained a proposal for a large appropriation for bilateral financial development assistance with the focus on infrastructural development: electrification, roads, railways etc. Another instrument to make it easier for Swedish enterprises to invest in “developing countries” was provided by the proposal for specific

\(^1\) The term “infrastruktur” (infrastructure) was used in the government bill 1962:100 as a designation of a safe judicial system efficient public administration, transports, basic health care, education system etc” while “larger power plants and alike” was put under the category ”investments for production of certain public goods”, which according to the bill had a middle position between ”infrastructure” and ”common” investments. Kungl. Maj:ts Proposition 1962:100, 90.

\(^2\) Kungl. Maj:ts Proposition 1962:100, 86, 90, 131
export credit guarantees, financial credit guarantees, protection for investments, and double-taxation agreements as well as trade policy assistance.¹

Following the rhetoric of higher morality and altruism, the bill contained the guiding principle that the development assistance should have no strings attached. The receiver was not to be forced to buy services and technology from Swedish companies. However, to ensure that Swedish funds would actually mainly support Swedish enterprises, the government bill opened the way to an untied aid together with the promotion of Swedish products and services:

The inconvenience of this [the untied aid] is, however, reduced when the recipient country requests products that Swedish suppliers can offer on good and competitive conditions. In this connection it may be more suitable to tie the loan to a certain project for which such products are requested.²

Thus, although obscured by rhetorical twists and turns, a double-edged policy regarding the objectives of Swedish official development assistance was established by the Social Democratic government in the early days of Swedish state-funded aid. A rhetorical distance was kept from commercial interests taking part in development assistance activities, which was judged somewhat immoral, and hence less worthy, yet at the same time, the criteria for choosing projects and recipient countries would have to be linked to the prospects for Swedish exports. Only by 1972 conditioned aid was formally established in Sweden, allowing an abandoning of the rhetorical complications.³

Criteria versus missionary activities, personal contacts and commercial interests

If the issue of commercial interests was merely a problem of rhetoric, another issue was the criteria for choosing recipient countries. Discussions of the criteria for choosing recipients had been an important part of the inquiry report by the Central Committee in 1959 and afterwards the discussions continued during the committee work preceding the government bill, within

¹ Ibid., 12, 17.
² Ibid., 17 Translation from Swedish by the author.
³ Stokke (1978), 289.
NIB and later within SIDA. However, despite the continuous discussion of the criteria for selecting worthy recipient countries, the criteria seem to have been secondary to other things. The actual selection was in many cases based on personal contacts, earlier missionary activities and the existence of opportunities, often through decolonization.

In the case of Tanzania, the territory had been a British colony - formally a “mandate territory” for which Great Britain was responsible after the defeat of the German colonial power in the First World War - until December 1961. Until then, the Swedish state had been represented in the territory by the Church of Sweden Mission, which settled there during the Second World War, replacing the German protestant missions, expelled in 1941. The presence of one Swedish missionary in particular, Barbro Johansson, opened up the Tanzanian development assistance market for Sweden. Johansson had settled in Tanganyika as a missionary for the Church of Sweden Mission in 1946. In the mid-1950s she met and became close friends with the future Tanzanian President Julius Nyerere, head of the Tanganyika African National Union (TANU) Party. Johansson also entered the political debates, promoting Tanzanian independence, and by 1958 she entered the Tanganyikan parliament as representative of the TANU party, a position she held until 1988. At the same time, Johansson was also in close contact with the Social Democratic government in Stockholm, being personal friends with the Swedish Prime Minister Tage Erlander, as well as the Swedish minister with responsibility for development assistance in the first part of the 1960s, Ulla Lindström.

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3 See for instance Chidzero (1961)
4 Cf. Bernander (1968); Sundkler (1948); Dahlquist (ed.) (1944), 6f.
While the Nordic Committee of Ministers had initiated the first Nordic assistance project, resulting in the Kibaha agricultural training centre, the NIB was involved in it through being charged with responsibility for the Swedish part of the project. The NIB also took the first step towards introducing a Swedish bilateral contact immediately after Tanzanian independence. The NIB intervention consisted of a gift, which was at the same time a sort of a project. The gift was a mobile x-ray unit, accompanied by a Swedish x-ray engineer and a Swedish x-ray nurse, Mr and Mrs Dahlqvist, touring the Tanzanian countryside in 1963-1964. The archival traces of the mobile unit experience disclose the importance of Johansson and her social networks, as she was asked on several occasions to intervene in the negotiations.

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between the Tanzanian and the Swedish authorities. The troubles reported in the correspondence arose mainly in dealing with English people holding positions in the Tanzanian authorities and ministries and being reluctant to accept the intervention of other countries. The X-ray unit and the work with the Nordic project led to more contacts, facilitated by Johansson, and the members of the NIB board visited Tanzania on various occasions during 1962 and 1963.

The Swedish business sector also paid visits to the country at this point. Early in 1963, a delegation of representatives from Swedish enterprises, banks, and consultancies and the General Export Association visited the East African region, headed by a head of division at the Department for Foreign Affairs. In the foreword to the report on the visit, the potentials for Swedish commercial engagement in cooperation with development assistance are described as being promising:

*Concerning the Swedish export the delegation wishes to emphasise the role that consulting enterprises and contractors should play. East Africa has only limited knowledge of its natural resources and lacks primary information sources such as maps. (...) the area has large white spots; the countries may hide mineral fortunes that it might be beneficial to exploit. A lot remains to be done regarding the expansion of communications and dams, buildings for industry, administration and housing etc. (...) Within all these activities Swedish consulting companies and contractors should also be able to participate, especially when the projects are a part of development plans and based on Swedish development assistance activities or on credits from the World Bank or other international institutions. The possibilities for direct Swedish export as for Swedish investments in different areas are many.*

In January 1964, the NIB board took the decision to declare that in any further expansion of bilateral development assistance projects, East Africa should be the top priority.

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3 Exportföreningens förlag (1964)
4 Ibid., II.
The Swedish water sector enters Tanzania

The Kibaha training centre was a multilateral project, involving the Nordic countries, and the X-ray unit was a smaller project, albeit bilateral – directly from Sweden to Tanzania – in the early 1960s. With the passing of government bill of 1962:100 by the Swedish parliament, further expansion of bilateral assistance had become possible. As the amount of money for development assistance increased, so did the preference for bilateral exchanges. In 1965, the share of bilateral aid in Sweden was 45%, by 1968 it had gone up to 58%. By the time for the completion of the first phase of the Great Ruaha power project in 1975, the share of bilateral aid had increased to 66%. For Tanzania, the main field of Swedish development assistance turned out to be projects within the water sector. The water sector soon became the most important part of Swedish development assistance in Tanzania and until 1977 the major part of the Swedish engagement in Tanzania. As the water sector also became the door to the hydropower sector, in this section I analyse why and how it entered Tanzania.

In the 1959 proposal by the Swedish Central Committee (for development assistance), it had been stated that technologies that were of use in Sweden should be the ones to be used in bilateral development assistance. Swedish modern technological knowledge and expertise were to be the basis for Swedish development assistance, and the same trend was seen in the government bills and plans in the early 1960s. Another issue was to find the technologies which would fit in with development assistance projects. Swedish commercial interests and links to technology within Tanganyika/Tanzania were limited to a specific sector, the water sector. Up to the early 1960s, there were only a few Swedish enterprises working in Tanganyika/Tanzania, these being a small number of coffee cultivators in the northeast corner of the territory. However, within the East African region a few Swedish enterprises were drilling for water. Among these was the company Craelius E.A Drilling Co Ltd, owned by Atlas Copco/Craelius. The enterprise had been established in Nairobi in 1933, with the

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1 See Rudebeck (1982), 143-176, 158.
2 Stokke (1978) 140f.
intention of drilling for gold.\(^1\) Eventually the activities became concentrated on drilling for water. The drilling machines used were produced in Sweden, by the Uddeholm company.\(^2\)

The early Swedish bilateral development assistance efforts in Tanzania concentrated on projects for water resources, primarily drinking water, involving the drilling of wells. The drilling of wells was considered a proper task for Swedish development assistance, as it combined the two important criteria, support to Swedish enterprises and Swedish technological competence, with the idea of the need of pure water for drinking. According to Karl Henrik Willén, technical adviser on development assistance – at this period called financial assistance - at the Swedish Ministry for Finance in 1963-65, the initiative came directly from Sweden. It was thus not based upon any demand from Tanzania in the first place.\(^3\) Willén, a water resources engineer with experience from both Sweden and Africa describes how in this period there were many discussions regarding which areas to invest in the development assistance not being obvious to Swedish taxpayers, nor even to all members of the Swedish government. Thus using state funds would have proved efficient and acceptable. Pure drinking water seemed to be economically defensible, a reasonable investment, and something to which all Swedes could relate.\(^4\)

On the other hand, Lars Kalderén, another key actor within Swedish development assistance in the 1960s, describes the investment in drinking water as a direct result of the existing Swedish-owned commercial water-drilling operations in East Africa.\(^5\) Another indication of the commercial interest links was the business sector delegation visit to East Africa in 1963.\(^6\) Guided on their visit to Tanzania by the Swedish consul, Frederick Hills, the Swedish business sector representatives spent two days meeting with the Tanzanian president, Julius Nyerere, and cabinet ministers with responsibility for industrial and agricultural sectors. Within the water sector, the delegation was informed by the minister for agriculture, D.N.M. Bryceson, that several dams were to be built and studies were to be undertaken for irrigation

\(^1\) Craelius (Diamanbghormingsbolaget), a Swedish company established in 1886, became in 1960 part of the Atlas Copco group. Gårdlund(1974), 187-188.
\(^3\) The Swedish Ministry of Finance had at this point the responsibility for the assistance to specific projects named "financial assistance".
\(^5\) Lars Kalderén, Pers. interview, Apr. 12, 2002.
\(^6\) Exportföreningens förlag (1964)
and hydropower.\textsuperscript{1} In September 1963, the Tanzanian president visited Sweden and personally promised to facilitate contacts between Swedish and Tanzanian enterprises.\textsuperscript{2}

While Swedish financial development assistance, i.e. credits for infrastructural constructions, was still organised by the Swedish Ministry of Finance, Willén was in 1964 sent for a first reconnaissance trip to Tanzania to discuss a Swedish development assistance engagement in the water sector, to provide drinking water.\textsuperscript{3} While visiting Tanzania, Willén found that the Swedish proposal would be accepted, although it was not on the list of priorities of the Tanzanian government:

\textit{We met with Nyerere, the embassy’s commercial counsellor Granstedt and Karl Henrik Willén who had never before been involved in such official functions. And I talked as well as I could, having my duty from Stockholm. Nyerere did not appear very entertained but he thought that it seemed good enough: The nice Swedes could go ahead, he had nothing against providing the countryside with drinking water, although I suspect he would rather have seen something else.}\textsuperscript{4}

Willén speaks of his encounter with the Tanzanian president anecdotally, and whether Willén’s perception of Nyerere as hesitant about drinking water projects is correct or not, other sources from the period reveal the same thing. Swedish representatives of state-funded development assistance had already visited Tanzania in 1962 to discuss Swedish/Nordic assistance. They reported back that the priority list was: agriculture, education, health care and finally vocational training.\textsuperscript{5} Pure drinking water from wells was not a priority for Tanzania. Instead in the first development plans the big issue was the development of irrigation system for agriculture.\textsuperscript{6} Tanzania has a long history of discussions of how to develop the territory, with extensive plans for irrigation and irrigated cultivation, as a means for development, and several studies in this sector had been made. The only, big remaining problem was to find a financier for such investments. Tanzania had not asked for any help in developing the drinking water, and had not turned directly to Sweden for help in the water

\begin{itemize}
\item \textsuperscript{1} Ibid., 83.
\item \textsuperscript{2} Ibid.,86.
\item \textsuperscript{3} Karl Henrik Willén, Pers. interview, Mar. 20, 2002.
\item \textsuperscript{4} Ibid.
\item \textsuperscript{5} NIB A I: Styrelseprotokoll 1962-30.6.1965, Diskussionsprotokoll 22.5.1962, Konfidentiellt, 6.
\item \textsuperscript{6} The United Republic of Tanganyika and Zanzibar [\textit{Tanganyika Five-Year Plan 1964}] (1964) 3,19.
\end{itemize}
sector. But although the drinking water projects were not considered a priority by the Tanzanian counterpart, the visit by Willén led to a formal request for credits for water provision, drinking water, from Tanzania to the Swedish government in the same year (1964).1

Enlisting SWECO and promoting the participation of Swedish companies

Back in Sweden, Willén had the task of finding a Swedish company who would take on the project. For this, he did not have to go far. Willén had his social and professional network within the small community of Swedish civil engineers.2 Most of them had been trained at the Royal Institute of Technology in Stockholm or at Chalmers in Gothenburg. They had formal networks within the enterprises of the sector, working together since the late 19th century on different construction projects in Sweden, the hydropower exploitations being one very important common ground for cooperation between companies and getting to know each other, and establishing social networks including wives and children.3 Sweden being a small country, the number of Swedish enterprises with extensive experience on the international scene was at that time small.4 Willén opted to turn to the Swedish engineering consultancy SWECO.5 SWECO was at this time a small company, a subsidiary of the Swedish enterprise within the water sector, Vattenbyggnadsbyrån, VBB. VBB, a company with history dating back to end of the 19th century, had had international assignments all along and was the biggest Swedish company within the sector. SWECO had been launched on the initiative of a prominent engineer at VBB, with experience of international assignments, Arvid Hardmark, to make it easier for Swedish enterprises to win international contracts. SWECO was 50%

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2 "Väg- och vattenbyggarö"  
owned by VBB, the other half belonging to other Swedish companies with activities in construction, electricity, management and engineering.\(^1\)

At SWECO/VBB the recommendation was made to contract Victor Jansa, civil engineer at VBB, and also a lecturer in water supply and sewer system technology at the Royal Institute of Technology, Stockholm.\(^2\) Accordingly, Jansa accompanied Willén on a two-week visit in December 1964 to plan the preparatory study. During their visit they met with S.L. Paterson, a British citizen and still the director of the Tanzanian water authority, the WD&ID, and his assistant director, the African Tanzanian Fred W. Lwegarulila. The visit resulted in a report proposing that Sweden go ahead with a credit for water provision, and consequently a three-year contract, worth ten million Swedish crowns, signed in September 1965. The credit was mainly to be used for a “rural water development program”, 1964/65-1965/66. This program consisted mainly of the drilling of wells, construction of pipelines for water and the construction of small dams to serve as reservoirs for household water provided for the engagement of the Swedish enterprises in the sector.\(^3\) For the drilling activities within the rural water supply program, the Swedish official policy of bidding had to be followed, the Swedish site representative having to invite tenders for contracts from a number of firms. The firms approached were one Swedish company, Craelius/Diamantbergbormningsbolaget, and a few American ones. It seems however that asking the American enterprises for tenders was merely an extra complication resulting from the official policy of untied aid. The evaluation of the tenders favoured the Swedish company, with the argument that it offered a training

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programme along with the equipment, something that was not offered by the American enterprises. This setting, however, had already been arranged for as the Craelius Kenyan division had been visited by a representative from SIDA and asked to present a tender including a training programme. What the training program consisted of is also of interest. In the initial discussions the proposal was to have African Tanzanians assisting at the borings, thus gaining experience.\(^1\) Consequently, for the drilling activities, the Craelius /Svenska Diamantbergsbörningsbolaget won the contract. At the same time both the official policy of untied aid and the informal policy of supporting Swedish enterprises was followed, albeit an extra twist had to be made in order to achieve this.\(^2\)

\[\text{Fig. 29. Photo from Erik Bergs report back from Tanzania to SIDA in Stockholm, titled “Water drilling at Kibiti Coast Region, September 1966”. Source: SRA, F1AB 1387} \]

\[^1\text{Whether this involved extra financing or if the financing for the extra training programme came from Swedish development assistance I have been unable to discover, but it is likely that if funds were needed, these would have come from Sweden.}\]

Conclusion

In this chapter I have analysed how Swedish development assistance entered Tanzania in the early 1960s. While there were continuous discussions within the Swedish development-assistance sector regarding the establishing of criteria for selecting recipients of the funds, in reality, the Swedish entrance depended in many ways on personal contacts, decolonization and potentials for export of Swedish technology and know-how.

The advent of Swedish development assistance in Tanzania was the result of the earlier presence of the Swedish (state church) mission and the presence and work of one specific person, Barbro Johansson, with close personal relations with the African Tanzanian leadership as well as the Swedish government. Furthermore, the entrance of Swedish development assistance was obviously connected to the decolonization of the territory. During the British colonial period, access to the Tanzanian market had been difficult. Tanzanian independence, in combination with the importance of Johansson, gave the opportunity for Swedish participation.

Secondly, I have shown that the main route into the Tanzanian development assistance arena for Sweden was at this time the water sector. In principle, the technical know-how promoted on the Swedish side at this period concerned the drilling of boreholes for drinking water. While Tanzanian authorities welcomed Swedish investments, the water sector area that Swedish representatives were promoting at this time was not of any great interest to Tanzania. Instead the Tanzanian government was more interested in the development of irrigation schemes. However, given the opportunity through decolonization, facilitated through the presence of Barbro Johansson, of a new arena for development assistance and support to Swedish enterprises, the Swedish development assistance representatives moved to seize these opportunities. Swedish aid was represented by a water resources engineer, having personal and professional contacts within the Swedish water sector, who consequently enlisted a company specialised in the area, SWECO. These efforts led to the first major bilateral agreement between Sweden and Tanzania, worth 10 million Swedish crowns and signed in September 1965, for a rural water supply program, which led to contracts for several Swedish enterprises active in the water sector.
Finally I have discussed the issue of the rhetoric and practices regarding commercial interests within Swedish development assistance. I have shown that while veiled in rhetoric, the Swedish official development assistance policy was double-edged. The Swedish assistance was supposed to be untied, i.e. not tied to buying Swedish goods and services. This official policy was promoted as consistent with the higher moral standing of Sweden, presented as having no colonial past, and now helping former colonized countries to develop. However, in practice, the agenda also included support for Swedish companies. Entering the Tanzanian market, offering drinking water supply, although the main interest from the Tanzanian government at this time was for irrigation, was one way to promote Swedish enterprises already active in the region. Furthermore, when establishing the first water sector programme in Tanzania, taking in bids from non-Swedish companies was more of a gesture towards the official principle of untied aid, while still ensuring that the Swedish company be selected by using informal contacts to provide information on what was going to be asked for.
5. The Wami River – the door to the Tanzanian hydropower sector

In the preceding chapter I have shown how Swedish development assistance, enlisting actors from the Swedish business sector, entered the independent Tanzania in search of projects. With water the prominent sector, possible opportunities soon became apparent. While not particularly interested in providing for drinking water in rural areas, the Tanzanian government at this period had grand visions for large-scale irrigation, flood control and hydropower projects. In this chapter I will continue to illuminate the close links between Swedish development assistance and commercial interests, and also introduce the theme of African Tanzanian responses in regard to the donors: The Great Ruaha power project was not a project readily presented to the Swedish development assistance for financing and bringing
in Swedish industry. Arriving at this point, at a time of transition from colonial period to independence and the development assistance era, was a highly complex process. On the Swedish side, it was about finding a way into the hydropower sector – bringing along the Swedish enterprises - for the Tanzanian part it was about getting away from the former colonial power and its legacy, the people and companies left behind.

[Fig. 31. The SWECO-planned combined irrigation and hydropower project on the Wami River. Source: SRA, F1AB 1387; SWECO (1966)]
Tanzanian visions of large-scale hydropower

When the Swedes came to Tanzania with development assistance funds, they met an African Tanzanian power elite that already had plans for major hydropower development in combination with major irrigation projects. In January 1965, at the commissioning ceremony of Hale, at that time the largest hydropower plant in the country, President Nyerere stated that such plants were the basis for the economic development:

*Schemes such as this one [Hale Hydroelectric Plant] are in fact the bricks and mortar evidence of the revolution which our country is deliberately and purposefully undergoing. It represents the application of science to the needs of the people. And it does this in such a way that our whole country takes further steps out of the poverty which now imprisons it. For this hydro-electric station is an example of the combination of brains, scientific knowledge, sweat and discipline which will in practice transform our nation.*

In January 1966 Tanzanian newspapers described the commissioning of the great Akosombo Dam on the Volta River in Ghana as a symbol of the dream of prosperity. A few months later, Iddi Simba (the then senior planning officer at the Tanzanian Ministry of Economics and Development Planning – DEVPLAN) and Jerry Sam Kasambala (former president of the Tanzanian power company, at this time chairman of the Tanzanian Development Finance Corporation) visited the United States with the intention of taking a closer look at the grand American river basin planning projects – the Tennessee Valley Authority in the West, the Central Valley project in California and the Columbia Basin project in Washington with the gigantic Grand Coulee Dam. The men returned to Tanzania impressed by the American achievements and hoping for financing from the American development agency, USAID.

When the Swedish development assistance representatives came to Tanzania, the Tanzanian hydropower sector was thus on the threshold of the big dam era. The first hydropower plant in the Tanzanian territory had been established during the German colonial period. During the British colonial period a few small-scale hydropower plants were

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4 This was the “Hale falls” in the Pangani river, see Richards (1947), 22.
constructed in the 1930s and 1950s. Surveys of the water resources of the territory in the 1950s and early 1960s included the FAO Rufiji Basin Survey which resulted in 1961 in a report on irrigational development, indicating a number of potential large hydropower sites in the Rufiji Basin. A World Bank mission had visited the country before independence, invited by the colonial government who hoped for support for the investment considered needed in different development projects. The World Bank mission, consisting of experts from different countries, spent three months in Tanzania, finishing their report in 1961. Although acknowledging the potentials of the Rufiji River, they stated that investment in hydropower production should be concentrated on the Pangani River, as the electricity was needed in that specific region. However, the independent Tanzanian government had bigger dreams. One of the hydropower sites on the Rufiji River identified by the FAO – Stiegler’s Gorge – had the potential to become a symbol of progress in Tanzania - measuring up to the world’s large dams. However, other, smaller projects such as the Wami River development were also under way, and the Tanzanian government was looking for financers for this project as well.

The Wami River project

The Wami River rises north of the city Dodoma and flows into the Indian Ocean a hundred kilometres north of Dar es Salaam and it was here that the first Swedish hydropower adventures started. The gigantic Stiegler’s Gorge project was already being supported by USAID, and the Tanzanian government was dreaming of its completion. The Wami River project would turn out to be the door admitting Swedish development assistance to the Tanzanian hydropower sector. The institutional actor to take advantage of the opportunity was SIDA, and the person in charge Petter Narfström. In Stockholm, an organizational change had taken place in the organization of development assistance. SIDA, the Swedish development assistance authority, had been established in 1965, replacing the NIB and taking over the

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1 1934-35 two hydropower plants in the Pangani River, Kikuletwa and Pangani Falls. During the 1950s Tosamanga was constructed in the Iringa Region (1951) and Mbalizi in the Mbeya Region (1958); Kjellström et al. (1992); Jones (1983), 24ff.; Egerton, (1954)
The Wami project had already been investigated, and it was part of the Tanzanian five-year development plan. The Wami project was to consist of flood control, power production and irrigation. The irrigation part of the project was intended to attract people for agricultural development and also industry, especially in the coastal area. The power part of the project consisted of a power plant with an installed capacity of between 32 and 48 MW, depending on

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4 SRA, F1AB 1405, SIDA. Dept. II. PN, Ant fr samtal m Dir of WD&ID, Oct. 22, 1965.
5 Stevenson et al. (1961); Tanganyika Five-Year Plan 1964, x, 46-48
how it was designed and how large the reservoir was to be, and to provide between 80 and 100 million kWh annually to the Pangani-Dar es Salaam-Central Line grid.\footnote{SRA, F1AB 1405 SIDA. Dept. II. PN, Ant fr samtal m Dir of WD&ID, Oct. 22, 1965.; Stevenson et al. (1961); Tanganyika Five-Year Plan 1964, x, 46-48.}

The existing installed capacity in Tanzania at the time was 55 MW, and the need for electricity had been estimated at 52 MW for 1968 in a study carried out by the British consultants Merz & McLellan.\footnote{SRA, F1AB 1405, SIDA. Dept. II. PN Ant fr samtal m Dir of WD&ID, Oct. 22, 1965.} The Wami project would thus cover an expected increased need for electricity over the coming years. Narfström learnt that the feasibility of the Wami project was being studied and that when this had been done, a foreign consultancy company would be contracted for detailed planning. The estimated cost was about 9-10 million pounds sterling, of which half would be for the power station and half for irrigation constructions. Narfström saw the opportunity to invest – in his notes he concluded that the project fitted very well within the framework of the double-edged Swedish development-assistance policy: the Wami project would both be “excellent for Swedish technology” and also “have a great effect on development”.\footnote{SRA, F1AB 1405, SIDA. Dept. II. PN, GvB, 22/10 1965, Tanzania. Anteckningar från samtal med Director of Water Development and Irrigation Division (WD&ID) Mr. Lwegarulila and assistant directors Mr. Holloway and Mr. Little. [Ant fr samtal m Dir of WD&ID, Oct. 22, 1965]} The opportunity existed for Swedish involvement, as Tanzania already had received credits from the UN special fund (later to become United Nations Development Fund, UNDP) and Great Britain for projects in the river valley, while there was still need for financing of the hydropower constructions.\footnote{Ibid.}

A few months later, in March 1966, Narfström went to Tanzania to discuss the water sector projects for possible future loans and support.\footnote{SRA, F1AB 1405Narfström, PM angående biståndsansökningar avseende vattenförsörjnings- och vattenkraftprojekt, SIDA, 26/5 1966; F1AB 1405, Anteckningar från sammantänke i DSM den2/4 1966, Tanzania vattenförsörjningsprojekt.} There is no evidence in the archives of discussions regarding the Wami scheme at this point. However, it is likely that Swedish assistance for the Wami project was offered to the Tanzanian government. Only two weeks after Narfström’s departure from Dar es Salaam, a formal request for the financing of further studies of the Wami project from the Tanzanian Ministry of Finance reached Sweden. The request concerned assistance in providing a “bankable report”, a report that could serve as a basis for a credit request to the World Bank or some other financing institution.\footnote{SRA, F1AB 1405, Narfström, PM angående biståndsansökningar avseende vattenförsörjnings- och vattenkraftprojekt, SIDA, 26/5 1966;
report would mean carrying out a number of scientific studies: economic, hydrological, geological and topographical. Narfström was quick in preparing for decisions to be made, as he contacted the SWECO General Manager, Arvid Hardmark, asking him to quote for the cost of such studies. The reply from SWECO returned within a couple of weeks, with a proposal for investigation up to a “bankable report” at a cost of 3.5 million Swedish crowns, and the proposal that a smaller and cheaper introductory study be launched as a first step.¹

Transferring experience from the colonial period to the development assistance era

In the bill on development assistance of 1962, the Swedish government had distanced itself from the former colonial powers, and stated that they had neglected to develop their colonies. Furthermore, the Swedish government pursued the line that Swedish development assistance had a high moral standing, higher than that of the former colonial powers. The main argument was that Swedish assistance had no colonial past, and as such it was free from specific interests. However, as I will show in this section, in the provision of Swedish credits for the Tanzanian water sector, the identification with the former colonial powers formed an inherent part, and the Swedish representatives also used the colonial experience when creating settings that would facilitate the transfer of Swedish technology and know-how.

Three examples show that the Swedish development assistance representatives relied on information from the former colonial power for designing the Swedish involvement. First of all, when Willén and Jansa visited Tanzania in late 1964, they met S.L. Paterson, British and at this point the director of the water authority (later the WD&ID). The authority was about to be “Africanised”, a policy propounded by the Tanzanian independent government. (For WD&ID, this happened during 1965, and Paterson was then replaced by Fred Lwegarulila.) At the meeting the Swedes learnt of the complications of doing development assistance projects in Tanzania. Paterson told them that they would have to consider projects in all regions with political representation, and not focus on any specific ones – even if they were considered of higher importance - in order to avoid protests and political debate. Furthermore, Willén and Jansa discussed with Paterson the issue of how to bring in Swedish control of

Swedish funds, to ensure that the money would be properly used. According to their own report, their proposal of having a Swedish engineer on site, working within the Tanzanian organisation, was welcomed by Paterson.  

1. Having received the blessing of Paterson, the Willén and Jansa also managed to have him endorse this solution in a proposal to the Swedish Ministry of Finance - a Swedish engineer should be tied to the credit, an engineer with the task of “checking progress”.  

2. Apparently, the discussions had also touched upon the issue of hydropower sector in Tanzania, as in this proposal Paterson recommends that the person in question be “experienced in all aspects of hydro-electric studies, and also able to assist in designs of some of the schemes.”

A second example of the interaction with representatives of the former colonial power is the report by Willén who when later visiting the United Nations Food and Agriculture Programme met a British person with negative experiences of the transition to independence in Tanzania, the former Deputy Director of the Water Development Division, J.C. Raay. Willén reports that Raay had been working in Tanzania for fifteen years, but had left the country due to a “pinprick policy” against the British by the Tanzanian government.  

3. To Willén, Raay explained the problem that would beset any development project, namely that the Swedes would only be able to count on using seventy per cent of the funds for the projects in specific areas, while they would “probably have to waste the rest of it in not developed areas due to political conditions”.  

4. In Raay, Willén found further support for the idea of placing a Swedish engineer in Tanzania to supervise the Swedish funds, although Raay’s recommendation was far more radical as he proposed the Swedes to take over the planning, projecting and implementation of the projects completely in order to be sure that the funds were not misused. Only if this was impossible, Raay thought the alternative could be to have a Swedish person located in Tanzania to supervise the projects.  

5. The third example is provided in a letter from Knut Granstedt, Swedish ambassador in Tanzania, to the Ministry of Finance in Stockholm, regarding the Swedish funds. Granstedt writes: “I want to draw your attention to the fact that a British employee at the Ministry of Lands, Assistant Director J.M. Holloway,
in a conversation at the Embassy, on May 10, (...) touched upon the investigation of the necessity to get rid of the local staff from the management of the projects”.1

Thus, lessons on how to behave in Tanzania, what to look out for and the importance of supervising the money they brought in for any development project were learned from representatives of the former colonial power. The knowledge transferred from the colonial power representatives was consistent with a view of the “Africans” as less developed, less competent, and unable to manage the funds properly themselves. The solution presented also fitted the colonial discourse library - and the best thing was to bring in a Swede – the white man - to make sure that things would be well managed.

Support to Swedish industry overshadowing altruist ideals

In the preceding section I have shown how the Swedish development assistance staff collected information from the former colonial power, despite the Swedish official stance of moral superiority to the colonial powers. The information collected from the representatives of colonial power was coloured by a colonial discourse that placed the colonized on a lower level of development in most respects and presented African Tanzanians as incapable of managing the projects themselves. However, as I will show in this section, whereas the proposal to bring in a person from Sweden might be interpreted as a response to this perceived problem, it turned out in practice to serve also as a part of a Swedish strategy of ensuring that any equipment and services bought with Swedish money would be bought from Swedish companies.

When Narfström visited Tanzania in March 1966, he brought along the person sent from Sweden to “check progress” of the water supply programme, Erik Berg. Berg was a water resources engineer who had earlier worked for VBB/SWECO in Sweden, and for the United Nations in Burma.2 In Dar es Salaam, Berg was installed as a “special adviser”, next to Lwegarulila, director at the WD&ID, at this point a department of the Ministry of Lands,  

2 VBB Byrånytt, Nov. 1960, 2:..
Settlement and Water Development. At the same time, Berg was required to report back to SIDA in Stockholm. Thus, Berg’s role became double, surveying the proper use of the Swedish credit and advising the Tanzanian water authority on its work, a position from which he became well informed on the debates and issues that were topical in Tanzania.

For his stay in Tanzania, which lasted for a year and a half before he was replaced by another Swedish engineer, Berg brought along his whole family. From Dar es Salaam, he sent monthly reports back to SIDA in Stockholm, reporting on his contacts with Swedish enterprises, work at the WD&ID, and his own attempts to push for the progress on the provision of water in the countryside. Berg also functioned as a host for the SIDA representatives and SWECO consultants visiting Tanzania for studies in the water sector, as well as for the preliminary surveys of the Wami hydropower project.

Regarding the supervision of the Swedish funds, the experience of Berg provides an interesting insight into his actual task. Berg soon found that the problem involved in his task of monitoring the proper use of the funds did not come mainly from the African Tanzanians, but from the management of the development assistance funds at SIDA in Stockholm. Berg repeatedly criticised the SIDA management – using expressions such as “chaos” and “farce”, “in need of control” calling upon his experience as a SWECO engineer and stating that SWECO engineers had managed for a long time abroad without SIDA. When he left his position in Tanzania, he considered the management of the Swedish funds by SIDA so bad that he wrote a letter to the SIDA General Manager, Ernst Michanek, and also met him in person to emphasise his view of the problem.

Although the Swedish government declared that it represented a break with the colonial era, and proposed something new, the Swedish engagement in the Tanzanian water sector appears very quickly to have formed direct links with the projects of the colonial period, both in the

transfer of experience, and in the expedient of stationing a Swedish person in Tanzania to supervise and control the Swedish funds, his actual tasks being more the safeguarding of Swedish interests than the supervision of the proper use of the funds.

Tanzanian independence quest meets Swedish export drive

While Sweden’s aid authority was eager to be involved in aid projects in the newly independent Tanzania, this interest was not unwelcome. Although the initiative for drinking water projects in Tanzania had come from Sweden, the response from the Tanzanian government was positive and soon led to initiatives from the Tanzanian side. At this time, the Tanzanian government was turning to as many different donor nations as possible, on both sides of the cold war divide. The offers from Sweden were interesting, and the Tanzanian government not only took up the proposals, but also, as I will show in this section, tried to make things happen. The Tanzanian attempts to find the best offers from different donors were quite compatible with the Swedish development authority’s wish to deal with a partner who realized the delicacy of the task of maintaining the Swedish official policy of untied aid while supporting Swedish exports.

In 1966, Tanzania was implementing its first five-year development program, in which agricultural development through irrigation played an important part. Parallel with the discussions on the Wami River project, discussions were held on future credits for water supply programmes for other parts of Tanzania. The request for support for the Wami project had come in April, and in May the Tanzanian government had sent a request to Sweden regarding financing of a three-year programme for water resource development, seen as a continuation of the first rural water supply programme. The Tanzanian minister with responsibility for the water sector was apparently keen to know how large the credit would be, as decisions regarding the implementation of the programmes were to be taken in the Tanzanian parliament. The answer from SIDA was that decisions must wait for technical and economic studies, as well as decisions by the Swedish government. However, the Tanzanian

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1 Cf Mukandala (1999)
2 SRA, F1AB 1405, framställning om svenskt finansiellt bistånd avseende treårig vattenförsörjningsplan, Knut Granstedt May 21, 1966, to Utrikesdepartementet, StHlm/ SIDA/StHlm.
minister did not wish to wait. Instead he decided to send a delegation to Sweden to urge
greater haste. Berg reported to SIDA that a visit by Lwegarulila and Gabriel Mawalla,
Secretary of State for Finance, to Stockholm was planned. They expected Berg to act as their
adviser. If necessary, that is, if SIDA did not agree, Berg wrote that he would have to take
leave in order to be able to come. At SIDA, Narfström finally conceded to Tanzanian
insistence and arranged for meetings in Stockholm, also agreeing to treat Berg’s participation
as a part of his duties. ¹

Once in Sweden, Lwegarulila got the opportunity to study Swedish expertise in hydropower
construction and to establish better contacts with SWECO. The visit ended with a study trip to
the plants of the Uddeholm company in Värmland, to the Tåsan, Letten and Höljes dams, the
Swedish Meteorological and Hydrological Institute, and to the state-owned salmon-breeding
institute and water laboratory at Älvkarleby on the regulated River Dal. ² The Stockholm
headquarters of Craelius/Atlas Copco, a company involved in the drillings for water-supply
projects, was also included. ³

SIDA took the opportunity offered by the meeting with Lwegarulila and Mawalla to discuss
the export of Swedish technology in the water sector, and especially in the hydroelectric
sector, and the message was understood by the Tanzanian part:

_Tanesco – To SIDA:s discreetly stated scepticism – too much money, British supplies –
Mawalla replied that he would see to the matter on his return home._ ⁴

Another example of the Swedish way of broaching the subject of Swedish technology in the
projects, although official Swedish policy was still not to tie aid to Swedish technology export
may be found in the brief minutes from the discussions:

¹ SRA, F1AB 1405, , Nationalist Jun., 6,1966; SRA, F1AB 1405, Telegram fr. Granstedt, Sw. Emb. DSM, t.
DSM; SRA, F1AB 1405 Telegram fr. E. Berg, DSM, May 25, 1966, to Narfström, SIDA, Sthlm; SRA, F1AB
1405 Telex, Water development and irrigation division, DSM, May 27, 1966, to Narfström, SIDA; SRA, F1AB
1405 Telex fr E. Berg, DSM, t SIDA, Narfström, May 26, 1966; SRA, F1AB 1405 Telegram från SIDA,
1966.
⁴ SRA, F1AB 1405SIDA Dept. II, Bd P. Hegardt/gVb. 16.6.66. Anteckningar från samtal med Mawalla,
Lwegarulila och Berg vid dessas besök i Stockholm 1-3 juni 1966. [Ant. Fr samtal m Mawalla, 1-3 juni 1966 …]

M [Mawalla] General understanding outside the agreement on considering Swedish suppliers?

LK: Would be useful.

Lw [Lwegarulila]. Berg could channel info.¹

In these minutes Kalderén asks how the Tanzanians will react to the Swedish policy of untied aid, meaning that the policy is not to be followed. The reply from Mawalla was that general understandings could be applied and that Swedish suppliers would be favoured in the bidding procedures. Kalderén agrees, and Lwegarulila states that the best channel would be Berg, the Swedish adviser at the WD&ID. I interpret this discussion as a consequence of the Swedish double-edged policy on development assistance. As the aid was still untied, the only way to ensure that Swedish companies would be involved was by dealing with this informally.

The Tanzanian visit to Sweden, although first resisted by Narfström at SIDA, as he claimed it would not make any difference to the time required for decisions to be taken, obviously accelerated the decision-making process in Sweden. SIDA made a “declaration of intent” to be presented in the Tanzanian parliament. Within a couple of weeks, SIDA financed the visit of two SWECO engineers to Tanzania. SIDA, wanting to know more about the Wami project before contracting SWECO for a “bankable report” at a cost of 3.5 million Swedish crowns, opted to pay for a smaller study, costing 155,000 Swedish crowns.²

The SWECO team consisted of Ingvar Jernelius and Lennart Samuelsson. Jernelius, who had met the Tanzanian delegation in Sweden, was a civil engineer trained at the Royal Institute of Technology and had worked for 20 years at VBB. He had worked on the construction of a hydroelectric plant on a river in Sapmi, and gained international experience from the construction of the Aswan High Dam in Egypt.³ Samuelsson was a civil engineer with soil mechanics and geology as his speciality. Together with Erik Berg, they made an aerial

¹ SRA, F1AB 1405, SIDA Dept. II, Bd P. Hegardt/gVb, 16.6.66., Bil.1, Diskussioner 1.6.66. Messrs Muro, Mawalla (M) Lwegarulila (Lw), Berg, LK, PN, PH, 3.
reconnaissance of the Wami River and visited a number of potential sites for a regulating
dam.1

The SWECO team, together with Berg, was also invited to meet with the Tanzanian president,
Nyerere. Apparently the SWECO team was informed during this meeting of the situation
regarding hydropower constructions in Tanzania, and learnt about the discussions on a rival
project to the Wami. The Tanzanian electrical company, Tanesco, although nationalised in
1964 still very much controlled by British interests, recommended harnessing the Great
Ruaha, and Berg reported back to Stockholm:

Regarding the Wami project the president mentioned that representatives of Tanesco had
proposed development of the Great Ruaha, but that the government had decided to
concentrate all efforts on the Wami. From the UK Tanzania had inherited a stable
administrative system, which was a great advantage, but otherwise the UK had nothing to

1066.
According to the president, British lethargy had been a problem to many African states.¹

These brief extracts from Berg’s report on his meeting with President Nyerere shed light on some of the important issues of the Tanzanian postcolonial period. First of all, the view of the British colonial power as something belonging to the past, and something the independent state wished to get rid of. Secondly, how the presence of the British was still part of the system in Tanzania, in this case in the form of the electrical company, as Tanesco was to a large extent British-controlled. Thirdly, the way the business of hydropower/irrigation projects also became a part of the struggle to extend independence, as the government rejected the Tanesco project on the Great Ruaha and focused on the Wami instead. The Wami project was favoured by the Tanzanian government, as well as the Water Authority, WD&ID, whose general manager since 1965 had been an African Tanzanian (Fred Lwegarulila).² Wami was not only a hydropower/irrigation project, but also a project for independence from the British.³

Swedish hydropower design as part of the competition with the former colonial power

Although the Tanzanian government was in favour of a Swedish involvement in the Wami project, there was other competition. The Great Ruaha River was already being surveyed by the Tanzanian power company, still much controlled by British, as well as by its in-house consultants – the British-based Balfour, Beatty & Co, Ltd. Knowing this, the Swedes first responded by trying to compete with the Great Ruaha power project. In this section I will show how this was done by upgrading the Wami project, using both the design experience from Swedish large-scale hydropower construction in Sapmi as well as the inherent view of territory as belonging to the state, and consequently free for the state to exploit.

² SRA, F1AB 1405, SIDA. Dept. II. PN Ant fr samtal m Dir of WD&ID, Oct. 22, 1965.
³ This impression of the project was shared also by Ingvar Jernelius, Pers. interview, Oct.13, 2000.
Coming to Tanzania, the SWECO team had already been instructed to look at other options, besides the Wami scheme. Consequently its report in October 1966 to SIDA also discussed the existing Great Ruaha alternative as proposed by BB&Co. However, in their report, the SWECO team concluded that the Wami alternative seemed more appropriate to the estimated demands for power in Tanzania. According to the studies on the Great Ruaha to which the SWECO team had had access, the Great Ruaha project would only be cheaper per kWh if the demand for all the power that the project would provide really existed, making it possible to cover costs by charging the users. This meant that if the Great Ruaha power project were implemented, with the proposed 150-160 MW of installed capacity, all of the electricity would have to be used, and paid for; otherwise the cost per actual kWh produced and consumed would be much higher than for the Wami project.

Another difference noted by the SWECO team was that the Wami project was considered a “multi-purpose-project” using water for both power and irrigation. The Great Ruaha, on the other hand, was mainly a power production project, a “single-purpose project”. The conclusion drawn by the SWECO team was that if the Tanzanian government wished to invest in irrigation, the Wami project would be the choice.

However, the competition with the Great Ruaha power project, led SWECO to upgrade the Wami project. SWECO had arrived in Tanzania in June 1966 with a proposal of a Wami hydropower project of 50 MW. By October, the proposal by SWECO was for two hydropower stations with an installed capacity of 160 MW and a regulating dam of 1 billion cubic metres. The total cost for the whole project was estimated at 29 million pounds sterling. The Wami project had become three times as big in terms of both costs and installed capacity, the design proposed by SWECO drawing upon Swedish experience of large-scale hydropower constructions.

An explanation of how this upgrading of the Wami scheme could be accomplished is the design made by SWECO, based on its experience of Swedish hydropower constructions. The proposal by WD&ID was for one reservoir – the Pongwe dam – followed

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1 SRA, FIAB 1405. Ant. Fr samtal m Mawalla, 1-3 juni 1966 …
3 SWECOARC, 11576, SWECO study of Wami River, Oct. 1966, III – IV.
4 Ibid., IV.
by two power stations. The first power station would have an installed capacity of 32 MW and the second 36 MW. However, installed capacity is not the same as the output at any given moment. The production of electricity depends on the available water in the reservoir and also the demand from the consumers. In the WD&ID proposal the “continuous power”, the power produced related to the water level in the dam, was estimated to be between 9 and 16 MW at the first station and 17.9 MW at the second. The WD&ID design proposal envisaged two tailrace tunnels, with a length of 1, 4 and 9, kilometres. The “head” is the technical term for the fall of the water of the river, relaying its energy to the turbines and thus translated into electricity. The higher the fall, the more energy can be drawn from the falling water. In this estimate the head was assumed to be 76 metres.¹ There had also been a BB&Co proposal for the Wami River project. The BB&Co proposal was for a reservoir further downstream on the Wami River (at the Mandera Bridge) providing for a 98 metre head and a power station with an installed capacity of 48 MW.² In the SWECO design, allowing for an installed capacity of 160 MW, the head would be as high as 250 metres. This entailed the construction of two tailrace tunnels between the two power stations (each with the capacity of 40x2 MW), at 13 and 19 kilometres.³ When I interviewed Jernelius regarding the Wami scheme design, he recalled the question of the tunnels. He stated that the practice of using long tunnels was already established in Sweden and a design that was familiar to SWECO and Swedish enterprises in the sector:

In Sweden we are used to tunnels. The English usually build a high dam – and the power station around the dam. Sweden is in the forefront regarding blasting operations for tunnels. I guess we find tunnels better and cheaper to build. In Sweden tunnels are much more economic.⁴

The very first Swedish underground stations were constructed in 1910, but the real breakthrough for the long tunnel method came with the construction of the Krängede power plant on the River Indal, in 1931-36. From the 1930s the method became predominant in Swedish hydropower construction with heads over 30 metres.⁵ An explanation for this technological development is partly to be found in the Swedish topography, where the lack of

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¹ SRA, F1AB 1387, Holloway, Wami River Investigation, Preliminary Assessment of Pongwe Dam Sites.
² Ibid.
³ SWECOARC, 11576, SWECO study of Wami River, Oct.1966, I.II.
⁵ The development of underground power stations in Sweden has been described by Åberg (1962)
natural heads has been compensated by tunnel construction, this competence also building on the Swedish history of mining explorations.1

Yet the technical design with long tunnels also implies removing water and thus a great reshaping of the landscape. As described in the Part 1, Chapter 2, this is what has been done with the Lule River in the north of Sweden, in Sapmi, turning the river into a staircase with several kilometres of dry river bed. Constructing a hydroelectric plant with long tunnels thus also requires the agreement of the people living around the river, or presupposes that the people using the river have no say about the reshaping of the landscape, which also was the case in the north of Sweden.

Regarding the size of the reservoir, which also influences the capacity of a hydropower plant and implies major changes to the landscape, the SWECO design did not differ much from the WD&ID proposal. In the WD&ID proposal, the reservoir was to have a storage capacity of 818,000 acre feet (1,010,000 cubic metres), with a dam wall 61 metres high. The Balfour & Beatty proposal included a dam 159 metres in height, and storage capacity of 550,000 acre feet (679,250 cubic metres). The SWECO proposal included a reservoir of one million acre feet (1,235 million cubic metres), allowing for regulation over several years. This means that during years with a large inflow of water, the reservoir could be filled up and the water stored for use in years with low inflow. SWECO had considered the use of a larger reservoir, of 2 million acre feet/ 2.47 million cubic metres. However, it was argued that a large dam would suffer from evaporation, meaning that it would lose a lot of the water it was supposed to hold. SWECO also maintained that a reservoir of that size would be much too expensive to construct. Instead, to compensate for a smaller reservoir, the SWECO proposal also included a thermal power station of 40 MW to be built in Dar es Salaam, as a complement to the hydropower during years of water shortage.2 This apparently neutral technical solution has an economic and political side. While the water use may be considered free by a state company in charge of a power station, this is rarely the case for diesel for a thermal power plant. Diesel must be paid for, unless the state in question itself has direct access to oil. This was not the case in Tanzania, where discussions had long since revolved around the problem of dependence on diesel for power generation and the insecurity that this implied.3 This means

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3 Hill/Moffett (1955), 712.
that even if a complementary station was built to provide for power generation during shortage of water, giving the image that the hydropower plant would have a capacity to provide for 160 MW, in reality this might not be possible.

When the SWECO report on the Wami had been finalized, the project continued its way through the social network of hydropower and water resource engineers in Sweden as Narfström sent it to John Fletcher, general manager of the Uddeholm power company. Uddeholm was the company that had been visited by the Tanzanian delegation a few months earlier and Fletcher was a senior member of the Swedish hydropower sector community, and had close contact with Narfström.

Initially, Fletcher was somewhat critical of the proposed Wami project, raising objections to the money that would be involved:

*The cost is stated to £180 = 2700 SEK per kW. High figure. In Sweden hardly worth exploitation.*

Fletcher discusses thermal (diesel) power as an alternative seemingly worthwhile in Tanzania, and he ends by asking why there is such a wish to invest in hydropower, despite the high costs:

*Are there trade policy reasons or employment reasons or such like for especially promoting hydropower? Realistic irrigation plans? Flood control plans? Who pays how much?*

Fletcher’s comments are of great interest as they reveal that hydropower for Tanzania was not an easy option. Hydropower in Tanzania would be very expensive. Although the Wami was a domestic river and there would be no costs for negotiating with a neighbour state, there was no industrial plant as potential recipient and purchaser of the electricity produced. The only information on consumption of the power produced was an estimate of the future

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2 In the letter exchange between Mr Narfström and Mr Fletcher, they both address each others as “Brother”, which according to Petter Narfström, Pers. Interview, Oct. 20, 2000, signifies that the contact is close.
4 Ibid.
increased demand for electricity, based on the prospects of potential economic development. Fletcher’s commentaries reveal the business perspective on which he based his analysis at this point. However, within a short time, Fletcher became a proponent of hydropower constructions in Tanzania, as he realized that Swedish development assistance could also mean opportunities for the export of Swedish technology. In November and December 1966, Fletcher was sent by SIDA to participate in a World Bank mission whose purpose was to analyse the future for the East African power sector.\(^1\) While in Tanzania, Fletcher, too, became aware of the competition between Swedish development assistance and the British, or in other words between the Wami and the Great Ruaha power projects, with their respective Tanzanian proponents. At this point, seeing it from the Swedish development assistance perspective, Fletcher reported back to SIDA that his conclusion was that the Wami was the best alternative. To go ahead with the Wami would be “to follow the line of least resistance, politically and generally”.\(^2\) By then he also recommended that SWECO should be the company responsible for implementing the project and that SIDA should waste no time in commissioning the necessary studies so as to enable SWECO to keep up with the competition.\(^3\)

Conclusion

In this chapter I have delved further into the close links between Swedish development assistance and commercial interests, and also discussed the African Tanzanian viewpoint. The Great Ruaha power project did not fall into the hands of the Swedish aid authority ready for financing and implementation by Swedish industry. The hydroelectric sector in Tanzania was at this time still in the hands of interests from Britain, the former colonial power. To gain a foothold in the Tanzanian hydropower sector was for the Swedish actors a highly complex process. For the Swedish development authority and Swedish business interests the way in was via the Wami River project. The context was in part shaped by the independent


\(^{3}\) Ibid.
Tanzanian government’s efforts to disentangle itself from the British influence in the water and power sector.

Hence, by the end of 1966 the exploitation of the Wami River was receiving support from SIDA, with the blessing of the Tanzanian government. The Wami River project was to be a “multi-purpose” one – irrigation, flood control and power production - but it had become three times bigger than when first planned from the Tanzanian side. This resulted in the importation of the Swedish technological tradition in hydropower construction. The Wami River had become the gateway to Swedish involvement in the development of the Tanzanian hydropower sector. Maintaining the focus on the links between Swedish development assistance and commercial interests, in this chapter I have shown how Sweden managed to establish itself in the Tanzanian development assistance market. On the other hand, this was not a one-way process; it also depended strongly on the Tanzanian interest in distancing itself from the former colonial power. Swedish initiatives were warmly received and the independent Tanzanian government visited Sweden to encourage and ensure Swedish support.

At the same time I have shown how the Swedish aid agency, despite official declarations of a Swedish higher morality – presenting Sweden as being better than the colonial powers – actually approached the representatives of the former colonial power to learn more about managing its development assistance projects in Tanzania. The Swedes learnt directly from the British who had worked for the colonial government, and introduced ways of controlling the Swedish funds, based directly on colonial experience. On the other hand, the experiences from the colonial power representatives were used as means to safeguard Swedish exports within the framework of development assistance in a time when the Swedish official policy was to promote untied aid.
[Below: Fig. 33. The dry river bed of the Great Ruaha at Kidatu powerplant. Above, Fig. 34. the Great Ruaha continues its flow after resurging from the tailrace tunnel, following its way towards the coast and the Indian Ocean. Photo: The author, Nov. 2000.]
6. Wami vs. Great Ruaha/ Sweden vs. Great Britain/Irrigation vs. Power

Wami-project. No progress has been recorded. It can now be estimated that with the existing pace for investment; about 100,000 SEK, it will take about 3000 years to complete this project.¹

This ironic remark was made by Erik Berg expressing his frustration in his monthly report in September 1967, shortly before leaving his post and returning to Sweden. The SIDA department in charge of the project in Stockholm had by then decided to investigate the possibility of exploiting the Great Ruaha and abandoning the Wami project.² Berg no longer had the main responsibility for the Swedish hydropower plans in Tanzania as John Fletcher had been commissioned by SIDA to take on the matter.³ In the preceding chapters I have shown how the Swedish development authority found itself competing with the former colonial power for hydropower construction contracts in Tanzania, in the form of the Wami project. Although the potential of the Great Ruaha River for exploitation had been identified by the Swedes involved, it seemed unlikely to provide an opening for Swedish technology. If Sweden wanted to get into the Tanzanian hydropower sector it would have to be through the Wami project, and it was important to act quickly.

However, the scene was about to change. In this chapter I analyse the actors involved and the reasons for diverting Swedish attention away from the Wami scheme, and towards the Great Ruaha power project. For a short while the two schemes were considered as competing. However, as the World Bank entered the scene, a new situation was created. The hydropower plans in Tanzania had been divided between two teams of institutional actors with an interest in water. On the one hand the Tanzanian government and the water authority, WD&ID, supported by the president Nyerere, whose primary concern was water for irrigation for agricultural purposes, and, on the other hand the power company, Tanesco, with its in-

house consultants BB&Co, who were more interested in pure power production. With the entrance of the World Bank, power production gained the upper hand. This view was supported by the representatives of SIDA. SIDA thus gained entry into the Tanzanian hydropower sector with the cooperation of the World Bank.

Enter the World Bank

The World Bank “East African power sector mission”, within which the SIDA consultant Fletcher participated, visited Tanzania in November 1966. Its aim was to assess the whole electrical power situation in East Africa, and regarding Tanzania it was to review a request for credit from the Tanesco. The objective for the mission was thus to examine the Tanzanian economy in general, and the production of electricity in particular. The World Bank mission was also made aware of the difference of opinion between Tanesco on the one hand and the government and the WD&ID on the other regarding which project to support. However, the World Bank mission favoured the Tanesco option as the report concludes:

Preliminary indications are that the source of power which would provide the lowest cost energy in the early 1970’s is a hydro-electric station at Kidatu on the Great Ruaha River. Possible alternatives are another hydro electric station at Pangwe on the Wami River and a steam station in Dar es Salaam.

When the World Bank mission had left, a letter from the World Bank’s Africa department and Norman Horsley was sent to SIDA Department II director, Lars Kalderén. The letter was not out of nowhere. Before coming to SIDA, Kalderén had spent two years at the World Bank and had established a professional and social network, including wives and children, with several

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3 SRA, F1AB 1387, IBRD Tanzania Power Sector Report, Jan. 1967, Summary and conclusions.
persons within the Bank.\footnote{SRA, F1AG1: 224; SRA, F1AB 1409 letters to and from N. Horsley, O Hursit Calika, Mahmud Burney, Munir Benjenk and Noel McIvor; SRA, F1AG1: 224, Copy of letter, Sept. 19, 1966 fr L. Kalderén, t R.J.M Swynnerton, Esq, Agricultural Adviser, Commonwealth Development Corporation, London, England.} Earlier in the same year Kalderén had already been behind the participation of John Fletcher in the World Bank mission to the East African power sector, with SIDA paying the cost of his participation.\footnote{SRA, F1AG1: 224, Copy of letter, fr L. Kalderén, SIDA Dept. II, Sept.8, 1966, t J. Williams, Ass. Dir, Africa Dept, IBRD, Washington.} In his letter, Horsley stated that the World Bank did not consider Tanzanian governmental plans for irrigation as important as electric power production. As Horsley was already aware that SIDA had offered 4 million Swedish crowns for the investigations of the Wami project, he wondered whether SIDA would instead be willing to support the Kidatu project in the Great Ruaha River:

\begin{quote}
I understand that SIDA had offered Kr. 4 million for studies at Wami and I was wondering whether SIDA would have an open mind about allocating these funds to studies on Kidatu should the decision be taken to give Kidatu priority. It is a matter of some interest to us since we may well be involved in further lending for power in Tanzania after the interim Tanesco program that we have under consideration now. \footnote{SRA, F1AB 1387, Letter fr Horsley, Africa Department IBRD, t L. Kalderén, SIDA, Sthlm, 22 december 1966.}
\end{quote}

The letter from Horsley arrived at SIDA after Christmas 1966, and led to a meeting between SIDA, SWECO and Fletcher in which comparative studies between the Wami and the Great Ruaha were discussed. It was agreed that SWECO would perform these studies.\footnote{SRA, F1AB 1388, Letter fr Fletcher, Sthlm t Narfström, SIDA , Jan. 19, 1967; SRA, F1AB 1388, Letter fr SWECO, Arvid Hardmark, Jan. 20, 1967; t. Narfström,SIDA,} About a month later, the answer was sent from SIDA to the World Bank confirming that a similar study of Kidatu could be made and financed by SIDA, indicating that SIDA would contribute if the task was given to SWECO:

\begin{quote}
Dear Norman (--) In considering your proposal about allocating Swedish funds for detailed work on the Kidatu project we, like you, are up against the difficulty of comparing that project with Wami. Our conclusion is that a firm of consultants should do the same job on both. For our part we would be prepared to accept as a model the study that SWECO has
made on Wami, with suitable additions as proposed by Fletcher, and would then be agreeable to finance such a study.1

Having the opportunity to enter the Great Ruaha power project, Fletcher’s recommendation to accelerate the Wami project became irrelevant, and SIDA Department II took a new course. In April 1967 a delegation from SIDA, including Kalderén, visited Tanzania to discuss the financing of the projected hydropower exploitation. The SIDA delegation made it clear to the Tanzanian government that collaboration with the World Bank would be necessary, whether Wami or Great Ruaha was chosen, as SIDA could not possibly finance it alone.2 What had happened to the projected funds from the United Nations and Great Britain for the Wami is not documented in the sources of the investigated archives. However, it is reasonable to assume that the financing from Great Britain had been stopped as all development assistance from Great Britain had been frozen when diplomatic relations were broken at the end of 1965, to be resumed only in 1968.3 This might also explain why the World Bank turned to SIDA to ask for financing of a study of the Great Ruaha project.

**Tanzanian obstruction**

Although the SIDA had turned its interest towards the Great Ruaha project, the Tanzanian government was not doing the same thing. While SIDA entered negotiations with the World Bank for a study of the Kidatu/Great Ruaha scheme, the Tanzanian government was still planning for the Wami project. Only a few weeks after the SIDA delegation had left, the Tanzanian government took the decision to go ahead with the latter. The Wami project was to be the next step in the expansion of the Tanzanian power system, to be followed by Stiegler’s Gorge.4 The Stiegler’s Gorge project was a considerably bigger hydropower and irrigation project, a gigantic "multipurpose project", suggested back in 1961 by the FAO-administered

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2 SRA, F1AB 1388, Letter fr L. Kalderén, SIDA, July 4, 1967, t Knut Granstedt, Sw. Emb. DSM; SRA, F1AB 1406, PM ang. förhandlingar med Tanzania rörande en utvecklingskredit om 30 miljoner kronor för finansiering av ett projekt för landsbygdens vattenförsörjning (undated)
3 Keesing’s Record of World Events, July 1968.
Rufiji Basin Survey. During 1966-1967, the American development assistance agency, USAID, had studied the potentials and was involved in discussions on financing. Thus financing for this grand scheme seemed to be within reach for the Tanzanian government.

The Tanzanian government decision was followed by a formal request to SIDA in May 1967 for credits for a “Wami Multi-Purpose Hydro-Electric Scheme at Pongwe”. The Tanzanian government’s obstruction of the procedure planned by SIDA caused perplexity at SIDA headquarters in Stockholm. The authority’s general manager, Michanek, had to write to the Tanzanian Minister of Finance to stress that Sweden would not finance the Wami project before a study had been made of Kidatu/Great Ruaha – a study that SIDA stipulated should be made by SWECO. At the same time, at SIDA the contacts with the World Bank continued, in order to ensure that the Swedish project would get World Bank support.

The Stiegler’s Gorge project, although at the top of the Tanzanian government’s wish list, was at this time put on hold by the World Bank. A letter from Howard E. Tolley, of the World Bank Africa Department, in July 1967, to SIDA, and Kalderén, clarified that the comparison was to be made between Wami and Kidatu, and that Tanzania had agreed not to engage in other agreements for production of electricity without the consent of the World Bank. When interviewed in 2002, Kalderén recalled that one of the explanations was that the projected market for the electricity from the Stiegler’s Gorge included the neighbouring countries, but that the World Bank considered the political situation in the region far too insecure to ensure sale of the electricity produced. The Tanzanian government, still wanting a large-scale hydropower project, and probably realizing that financing for Stiegler’s Gorge was out of question for the moment, agreed to go ahead with the studies of Kidatu/Great Ruaha. In August 1967, the reply came to SIDA from the Tanzanian Minister of Finance. It stated that

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8 Lars Kalderén, Pers. interview, Apr. 12, 2002.
the Tanzanian government would make a comparative study of the Wami and the Great Ruaha.¹

The joint comparative study Wami-Great Ruaha

The Tanzanian government acceded to the demands from SIDA, and soon started a comparative study of the Wami and the Great Ruaha projects. Although SIDA had wished to make sure the SWECO alone to be responsible for the study, on this issue they had to give way. The World Bank had even been promoting the involvement of a third party; a consultant from another country, and Tanzania had initiated discussions with a French consultancy.² To ensure Swedish participation, hard work was done at SIDA by Kalderén using his personal and professional contacts. In the end the compromise was that the study would be made jointly by SWECO and the Tanesco in-house consultants, BB&Co Ltd.³ However, as the financer of the comparative study, Sweden was able to ensure some major influence in that the coordinator of the study was the SIDA consultant Fletcher. The terms of reference for the work were settled at a meeting in October 1967 in Stockholm, attended by representatives of the Tanzanian government, Tanesco, BB&Co, SIDA and SWECO. The World Bank was present too, in a way, as Kalderén was negotiating in Washington and relayed the World Bank requests directly to the meeting in Stockholm by telegram.⁴

The Tanzanian government had been wishing to develop irrigation for agriculture. Both the Wami and the Stiegler’s Gorge projects were multipurpose projects, whereas the Great Ruaha project could not be combined with irrigation projects. One result of the meeting, and the

direct contact with the World Bank via Kalderén, was that in the comparative study of the Wami/Great Ruaha the irrigation aspect was much reduced. The comparative study would not include any field study regarding irrigation at all, as the report back to Kalderén confirmed:

*The explicit wishes for irrigation etc by the Tanzanian delegation have been met though after certain pressure reduced to according to our estimation a realistic level and limited to paper work.*

The studies by SWECO and BB&Co resulted in a joint report in July 1968. It discussed three alternatives, Kidatu, Wami and a diesel power plant of 210 MW in Dar es Salaam. Kidatu/Great Ruaha was the project that received the joint support, being described as the best alternative for power production within the “Coastal and Central Line Area.” Although the Wami and the diesel power plant were considered good alternatives, they were eliminated by the use of a specific form of economic calculation, the “discounted cash flow”, stipulated by the World Bank. The method implied that maintenance, operating expenses and fuel price were first calculated for each operating year. Costs for interest and repayments were not included. The yearly costs then were converted into a “present value”, that is, the sum of money that had to be invested at a given time, at a certain rate of interest, to be used for each year. This method for calculation was said to be necessary in order to compare the low running costs but high construction costs of a hydropower plant with the reversed price cost picture of a diesel power plant; low construction cost but high running costs. In accordance with the discussions in Stockholm on reducing the irrigation issues significantly, all possible revenues from irrigation and flood control were excluded from the calculations. This procedure led to the Wami project’s irrigation value being ignored, and consequently the Wami alternative was ruled out.

The conclusion drawn from this specific calculation method was that Kidatu/Great Ruaha and the diesel power plant were on the same price level – the same “present value”. However, as

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4 SWECOARC, 13889, Comparative study Wami Great Ruaha 36.
both the consultants were in favour of a hydropower project, another basis for calculation was
thrown into the picture, the perspective of foreign credits – the development assistance. In the
joint report the recommendation was that the choice should be based on the expected rate of
interest on the credit for the investment. Thus, if the credit could be obtained at an interest
lower than 12 per cent, hydropower – Great Ruaha/Kidatu – would be the best alternative,
while a higher rate of interest would make the diesel power plant the best alternative.1

Both the method of calculation and the condition of credit at a specific interest rate smoothed
the way for the construction of a hydropower plant on the Great Ruha River. The expected
credit was assumed to come from Sweden, which in turn had an obvious interest in this
specific construction. There were opportunities for the export of technology, which was in
line with the guiding principles for Swedish development assistance. The lion’s share of the
responsibility for the comparative study had been in the hands of the Swedish consultants,
supported by the World Bank. During the comparative study itself, Swedish companies had
been invited to participate as well as giving preliminary tenders for the coming project, which
gave them an advantage once the official invitations to tender for electrical and mechanical
equipment were issued.2 However, with the Swedish official policy at the time being not to tie
the credits to Swedish supplies, I interpret this as an informal way of binding the credit to
export of Swedish technology. Furthermore it was well understood that SWECO would also
be engaged as consultant, the relations with the World Bank being well maintained by
Kalderén through his social and professional network.3

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1 SWECOARC, 13889, Comparative study Wami Great Ruaha, 37.
2 SRA, F1AB 1389, Letter fr SWECO, Carla Andersson, t. SIDA, Karl Henrik Willén, Tanzania power, Notes
3 SRA, F1AB 1388, Letter fr IBRD, H. E. Tolley, Africa Department, Oct. 13,1967, t L. Kalderén, SIDA.
7. Irrigation vs. power/Development assistance and exports – the actors involved

The preceding chapter showed how the Wami multipurpose project was abandoned in favour of the Great Ruaha, a single-purpose power production project. This shift is of interest as first of all the issue of irrigation had long been of great importance in Tanzania. Since German colonization, through the period of British colonial rule, projects for irrigation had been promoted, and at the time of transition to independence irrigation had been of top priority to the independent Tanzanian government. In 1961, a World Bank mission to Tanzania had suggested placing an emphasis on agricultural development through irrigation projects. Thus, taking the step of accepting a single-purpose power project was not insignificant. In this chapter I analyse the key actors involved in this shift and probable explanations for their positions, considering both their views on the Tanzanian environment and their influence on the decision-making process. I highlight the need for a closer look at the actors on an individual level, as many of them worked across the institutional borders, and also because it see as if the institutions acted differently at different times, depending on who represented them. Finally, I discuss the subject of decolonization and its implications for the choice of technology as well as for the choice of development assistance donors.

The Swedish actors

A precondition for the Swedish involvement in Tanzania within the water sector had been the potential for export of Swedish technology, alongside the assumed development aspect for the recipient country. When the SIDA representatives initially investigated the prospects of an engagement in the Tanzanian hydropower sector, the Great Ruaha/Kidatu was propounded by Tanesco and BB&Co, at the time still the Tanesco in-house consultants. The entry of Swedish development assistance in the Kidatu/Great Ruaha project was to a large extent due to two Swedish individuals, Lars Kalderén and John Fletcher. One important context was that they were both from Sweden, whose climate is such that irrigation has never been an important
issue, although conflicts over water use have been part of the hydropower story.\(^1\) The other important context was the double-edged nature of Swedish development assistance - support for development and support for Swedish commercial interests. This context was pronounced in the close links between the SIDA and the consulting company SWECO. To establish why the Swedish representatives transferred their support from the Wami to the Great Ruaha power project, this section will first analyse the work and standpoints of Fletcher and Kalderén, before looking at the institutional actors SIDA and SWECO.

Fletcher and Kalderén

John Fletcher was himself the head of a hydroelectric power company. His own position was that water for irrigation was not important in Sweden, as he explained in the report to SIDA in 1966.\(^2\) However, he did acknowledge that the situation in Tanzania was somewhat different, and that irrigation might be of a certain importance. Yet, given the information that he had received from the representatives of the World Bank power sector mission and the United Nations he argued that any economic calculations should be based on fixed calculable values:

Money should be made to talk: each one of the parties should be made to weigh the money value of their wishes against the costs to be covered. – In this respect power see to be superior. Opinions are divided as to the relative benefits in the future, but one thing is absolutely certain: plans for power are much more definite and much more accessible to assessments of costs and benefits, in a word much more tangible, than plans for flood control and irrigation; however important the latter may be in the future, they are at present, to say the least of it, slightly vague. – The important thing is that money should be permitted to talk and to dictate decisions, and so it does: it talks to Tanesco the way it always talks to power enterprises, and in the course of the procedure outlined WDID will also have to convert their wishes into terms of money if they want them to materialize.\(^3\)

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\(^1\) Cf Jakobsson (1996)

\(^2\) SRA, F1AB 1387, Fletcher, Report on Study of power problems in Uganda, Kenya and Tanzania, 1966, 30f.

\(^3\) Ibid.
Within the same report Fletcher maintained that the emphasis on irrigation, in combination with flood control, seemed somewhat exaggerated by the Tanzanian government, and that its importance could be considered more than a dogma than a reality. This perspective proved important as he had the key position as coordinator for the comparative study between Wami and Great Ruaha/Kidatu being paid by SIDA, contributing to take out the irrigational aspects of the study, and in the end favouring the Great Ruha alternative. However, an interesting part about Fletcher was his change of position during the period as SIDA consultant. On the first occasion when he was asked to make a statement on hydropower development in Tanzania, before becoming a SIDA consultant, he had spoken as a power company director – questioning the wisdom of investing in hydropower in Tanzania, as it seemed very costly and the output and cost coverage for the electricity produced seemed insecure. Once Fletcher was engaged by SIDA, seeing the competition between Wami and Great Ruha, he seems to have taken a different position, urging SIDA to press ahead with the Wami hydropower project in order to ensure that SWECO would be the consultants involved. Thus, Fletcher’s change of institutional framework seems to have had an effect on his view of hydropower in Tanzania. From reasoning as a hydropower company director, he now took on a role of promoting Swedish technological export as development assistance, whether it was economically justified or not. This change of role was illustrated by the fact that Fletcher first supported the Wami project, but then switched to the Great Ruha/Kidatu project, once the possibility of SWECO’s involvement arose. The importance of Fletcher in steering matters towards a single-purpose project at Kidatu/Great Ruha should not be underestimated, and I interpret his reason as being the wish to support Swedish exports.

The importance of Kalderén rests to a large extent on his contacts within the World Bank. Kalderén had had experience of Swedish development assistance since the late 1950s as he had represented the Ministry of Finance on the board for international programs for experts and scholarships. During 1963-64 Kalderén had been seconded from the Ministry of Finance to work at the World Bank, dealing amongst other things with loans for projects in East Africa. By July 1965, Kalderén was contracted as Director of Financial Assistance at SIDA, being in charge of Department II. During his time at the World Bank, Kaldérén had found

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1 Ibid.
valuable contacts and learnt how to promote projects. In the archives, several documents attest to both his contacts and his active work in bringing the World Bank to accept Sweden as partner in the power projects in Tanzania and Sweden as the necessary consultants. Kalderén had also arranged the participation of Fletcher in the World Bank power sector mission to East Africa in late 1966. It was to Kalderén that Norman Horsley of the World Bank first turned to ask whether Sweden would be willing to give up the Wami in favour of the Great Ruaha if it proved a better alternative. The answer from Kalderén to Horsley was that it would, provided that a Swedish consultant got the job of comparing the two projects. While the negotiations went ahead at SIDA, all preparations were being made to commission SWECO to carry out the comparative study.

In April 1967 Kalderén had visited Washington to discuss the competing power projects in Tanzania with one of the influential people in the World Bank, Simon Alderwereld. Alderwereld was a recently installed vice-president of the World Bank and former head of the department responsible for the power projects in Tanzania. Kalderén suggested to Alderwereld that the World Bank should be the executing institution for a mission to investigate the power sector and future investments, while Sweden would provide the funds. According to the minutes kept by Kalderén, his suggestion seemed reasonable to the World Bank, with the condition that the Bank take part in deciding the “terms of reference” for the study. Yet the comparative study of the Wami and Kidatu together was about to pass out of Swedish hands. The World Bank had demanded that a third consultant, (besides BB&Co and SWECO) compare the Wami and Great Ruaha projects. The Tanzanian government had even approached France to carry out this investigation. For a short while it seemed that the opportunity would be lost to Sweden. SIDA kept insisting on engaging SWECO, while at the World Bank SWECO was considered to be too small and insufficiently known. Through the efforts of Kalderén, the consultancy was nevertheless won for Sweden, the compromise with the World Bank being to let BB&Co participate fully, and not only as observers. It would have to be a “joint” study, with “joint recommendations”.

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1 Lars Kalderén, Pers. interview, Apr. 12, 2002.
When the terms of reference for the study were discussed in Stockholm, Kalderén was in Washington, passing on the views of the World Bank directly to the meeting by telegrams. Although Kalderén had done a lot of work in Washington, it did not seem enough, so he persuaded a representative of the World Bank to visit Stockholm, to ensure that the wishes of the World Bank were included in the comparative study and thus ensure that the Swedish proposal would be accepted.1

SIDA – SWECO

From a Swedish hydropower perspective, the Wami hydropower project turned up at a proper time. By the 1960s, the development of hydropower in Sweden was facing strong opposition, while there were a large amount of trained engineers in the field, and a large industrial production of hydropower-related technology had been developed.2 As the domestic market shrank, there was a need to find projects abroad. Swedish enterprises already had a foot in the international arena. However, they were small by global standards, and were very much dependent on collaboration with companies from other countries. The initiative taken by Arvid Hardmark in 1960 in establishing SWECO to facilitate the Swedish contacts on the world market in the water sector was but one example of the need to stretch out on an international level.3 As the Great Ruaha power project was proposed to SIDA, the close links between SIDA and SWECO are essential in explaining how Sweden was able to influence the project. The double-edged policy of Swedish development assistance was played out on the ground: support for development in poor countries through (Swedish) technology, linked to Swedish enterprises – SWECO. Within the water provision program, the Swedish company SWECO was contracted for the consultancy - the studies, ensuring that the technical equipment was obtained from Swedish enterprises or their subsidiaries. This was further


3 Ingvar Jernelius, Pers. interview, Feb. 7, 2002; Lg(1966),1. Cf Reinius (1967); Boman (1967); Platzer (1960); Friström (1963)
strengthened as SIDA sent out a SWECO engineer, Erik Berg, as their man in Dar es Salaam for monitoring progress.

From an institutional actor point of view, the interest in Swedish involvement in the Kidatu/Great Ruaha project was probably connected with the lack of Swedish technological competence in the irrigation sector. SWECO and the people at SIDA Department II had much more knowledge and experience of drinking-water provision and hydropower construction. The Swedish company Diamantbergbormningsbolaget, purchased by Atlas Copco in 1960 and thus under the same umbrella as the East African branch Craelius E.A. Drilling Co Ltd, could run such projects in Tanzania and other African countries. Hydropower projects would be of interest, as they required test drillings for the tunnels and dam walls. But for irrigation projects it would be more difficult. Swedish companies did not have the knowledge, and for the Wami, the Dutch enterprise ILACO had already been engaged for studies of the irrigational aspects.1

SWECO and its largest owner, VBB, had long experience of working with enterprises from other countries. To SWECO it would probably not have been a problem to cooperate with any international company. However, the question was probably of more importance to SIDA, being a Swedish state agency promoting Swedish interests. To SIDA and its director of financial assistance Kalderén, it seems that the biggest issue was Swedish participation, and the export of Swedish competence and technology. The question of multipurpose vs. single purpose was never an issue of importance. This was in line with the policy regarding Swedish development assistance, since its start in the 1950s, as well as in the first government bill on state-funded development assistance in 1962.

The World Bank and changing positions

During the 1960s the World Bank changed from supporting large-scale irrigation to supporting large-scale power production. In 1961, a World Bank mission to advise on

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Tanzanian development strategy had recommended the Tanzanian government to invest largely in agricultural development through irrigation:

*The main development task in Tanganyika is to improve the methods of peasant agriculture and cattle keeping, or to transform present methods and organization into systems making more productive use of the land*. (---) the Mission proposes that the next five years or so in irrigation and flood control work should be predominantly a period of investigation, planning and building up of staff. Thereafter a rather considerable program of investment in irrigation works should be undertaken, as soon as the necessary preparations are completed and financial considerations allow.¹

On a superficial level it may seem strange that within a few years the World Bank swung round to favour a single-purpose project like Kidatu/Great Ruaha power project. However, the explanation seems to be that World Bank was an institution depending to a great extent on its consultants involved in different missions. The persons examining the economic needs of the Tanganyika territory in 1959-1961 were to a large extent specialists in agriculture and water resources. Judging by the presentation of the members of the mission in the report, no one was a specialist in hydropower.² Furthermore, the World Bank mission had come to Tanzania at the request of the colonial government, which at this time had visions for large scale irrigation.³ The World Bank power sector mission in 1966 was a different group of people, with a different objective – to study the hydroelectric power sector, and whether the World Bank could give credit to the Tanzanian power company Tanesco and its next project, the Great Ruaha/Kidatu.⁴

As I have indicated, there is also a need to take a closer look at the individual actors, and how they worked across the borders of the institutions. Both Fletcher and Kalderén worked for SIDA, but at the same time they were influential in the decisions made by the World Bank. Fletcher being a part of the East African power sector mission in December 1966, and Kalderén using his social network at the World Bank to promote the SIDA cause.

¹ Stevenson et al. (1961), 5,7.
² Stevenson et al. (1961)
³ Cf Hoag (2003)
Within Tanzania the institutional actors fell into two main groups. On the one hand those who were pro-Wami and multipurpose projects, namely the Tanzanian government, the water authority WD&ID and President Nyerere. Taking over the views and plans for agricultural development of the colonial government, they had made irrigation an important part of the five-year plan of 1964. Within this plan the development of the Wami region was considered as an investment for the future. The Tanzanian government wished to attract people and industries to the Wami region.1 Through FAO certain funds were already available, and assistance had been promised from Great Britain. The wish of the Tanzanian government and of WD&ID for irrigational development was so strong that when the World Bank East African power sector mission visited Tanzania in 1966, the mission expressed some irritation at this insistence.2 The priorities of the Tanzanian government were again declared in April 1967, as the decision was taken to go ahead with the Wami project, to be followed later by Stiegler’s Gorge. Funds for Wami were requested from Sweden. However, after being given an ultimatum by SIDA, now interested in the Great Ruaha and at the same time having been approached by the World Bank representatives, the Tanzanian government accepted that a comparative study of the Great Ruaha and the Wami be made. As the comparative study was finalized and the Great Ruaha/Kidatu was favoured by SIDA, the Tanzanian government accepted that too, putting aside the Wami project for the time being. In this section I first analyse the actions of the Tanzanian government, and then discuss the implications of the Africanisation of Tanesco during the period.

The Tanzanian government

The interpretation of the adjustment by the Tanzanian government must be seen in the context of the different hydropower projects propounded at the same time during the period. Within Tanzania small-scale hydropower plants already existed, the first constructed during the German colonial period, and more under the British, built by the British-owned company Tanesco. Tanesco had in 1964 completed the Hale hydroelectric plant on the Pangani River.

1 The United Republic of Tanganyika and Zanzibar (1964) x.
and plans were well under way to go ahead with the next plant upstream, by the Nyumba ya Mungu dam. These were both, like all earlier hydropower plants in Tanzania, run of the river, there was constant running water which allowed for water use downstream and avoided damming up great areas. The disadvantage was the reduced capacity for power production, for instance the power plant at Nyumba ya Mungu would provide only an extra 8 MW of installed capacity, when it was finished in 1969.¹

The Tanzanian government already had visions of large-scale dams. The most striking of its visions was the Stiegler’s Gorge, which was considered by the American USAID study team to allow for an installed capacity of from 450 MW up to 2100 MW – depending on design and dam management - meaning at least the double of the capacity of the Great Ruaha project, at the same time as it would allow for irrigational development and flood control.² Representatives of the Tanzanian independent government had not only visited Swedish hydropower plants, but also American ones, especially the huge Grand Coulee Dam on the Columbia River, and seen American large-scale irrigation projects. In the Tanzanian five-year plan established in 1969, the Tanzanian government’s visions of electricity for the economic development of the country were expressed:

*Electric power is a crucial service to a number of other sectors of the economy. A high rate of expansion of capacity is a necessary prerequisite of economic development. Industrial development, for example, has heavy requirements for power expansion. The growth of commerce, and the fast expansion of urban areas also contribute to the fast growth of demand for electricity. – The hydro-electric power potential is a major natural resource, the development of which, both in the coming Plan and over the long-term, will form a key task for the economy. – Taking only those sources for which estimates have been made, it is estimated that electric power potential is as much as 1 325 megawatts. This is more than fifteen times the existing power capacity.*³

Thus the most interesting question regarding the Tanzanian government’s switch from multipurpose to single-purpose project is not whether it wanted electricity or not; the

¹ SRA, F1AB 1387-1391, and Tanesco Archive DSm, Tanesco: Reports and Accounts 1964 – 1971
² Hoag (2003),174.
Tanzanian government had long entertained visions of entering the big dam era. The question is rather why the Tanzanian government would accept a single purpose instead of a “multi-purpose project”.

My interpretation is that the answer to why the Tanzanian government complied with the SIDA/World Bank focus on the single-purpose Great Ruaha power project has two dimensions. First of all there is the desire for independence from the former colonial power. Secondly, the Tanzanian government at this time balanced between different donors in search of support for their different development projects, as argued by Hoag and Mukandala.1 Mukandala claims that in the period 1961-1978 the Tanzanian government maintained a “proud defiance” attitude to the donor nations.2 During this period the Tanzanian government had a number of clashes regarding its political behaviour and views with different donor nations resulting in the loss of aid.3 Finally, although complying, the Tanzanian government never gave up its vision of the development of irrigated agriculture.

Striving for independence and balancing between donors

The assertion of independence from the former colonial power in this context meant getting rid of Britain’s involvement in Tanesco in the shape of the British company BB&Co. This was feasible when SIDA and SWECO entered the Great Ruaha project scene with the help of the World Bank. Not much more than a year elapsed between the Tanzanian government’s reaffirmation of its decision to request Swedish aid for developing the Wami in April 1967 and its agreement to go ahead with the Great Ruaha power project. During this year, many things changed for the Tanzanian government. The Wami project can for a start be seen as a way to pull away from the former colonial power. At the time when SIDA started working on the Wami project, the Great Ruaha being promoted by Tanesco and its in-house British consultants, BB&Co. Several documents in the archives provide evidence of the Tanzanian government’s wish to turn to other countries. For instance, Erik Berg reported from his discussion of the water sector and hydropower with the president that President Nyerere had

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1 Hoag (2003), 183; Mukandala (1999)
2 Mukandala (1999), 40.
3 Ibid., 40ff.
said that the English had left an administrative system with many advantages, but that "for the rest they had little to offer". Ingvar Jernelius, of SWECO, recalls that the Tanzanian government wanted more control over the project, as they were displeased with the situation at Tanesco where one enterprise, BB&Co, was at the same time owner, constructor and consultant. The Stiegler’s Gorge project had involved the American USAID, as well as the Japanese development authority, Jetro. Even small-scale hydropower plants with Chinese aid were discussed.

There was also another important factor: diplomatic contacts with Great Britain were interrupted between December 1965 and July 1968, owing to differences of opinion regarding Rhodesia, and development assistance from Great Britain was therefore withheld during the same period. Thus, although being against the Great Ruaha project while it was being advocated and would probably be built by BB&Co, the Tanzanian government could easily change its mind once Swedish representatives were involved. The Great Ruaha power project could now, with Swedish support, be an alternative to British influence and British assistance.

Maintaining visions of large-scale irrigation

Regarding large-scale irrigation, the Tanzanian government did not give up its visions. The Tanzanian government’s attempts to realize the Stiegler’s Gorge project included irrigation and flood control until the 1980s (by which time the project had met too much opposition and been shelved). Once the Tanzanian government had agreed to take a step back from the Wami project and to make a comparative study of the Wami and the Great Ruaha, government representatives still continued to stress the importance of irrigation.

However, within the setting of the comparative study, the Tanzanian government failed to get calculations of the irrigation benefit included in the terms of reference. When the comparative study was finalized, no space was devoted to irrigation,

4 Keesing’s Record of World Events, July 1968,”Tanzania, Relations resumed with Britain, Ending of British Aid to Tanzania”, Hemsida http://keesings.gvpi.net, 2002-10-29.
giving advantage to the Great Ruaha alternative. Besides the fact that BB&Co, SWECO and the World Bank were uninterested in irrigation, which contributed to its omission from the study, another factor played a part. Whereas Tanesco had for many years been providing financial calculations regarding electricity production and the market, there were no such cost-benefit calculations regarding irrigational development provided. The annual reports of Tanesco from 1963-1970 provide a continuous flow of information about production and the market – both industrial and domestic. In 1964 the British company Merz & McLellan had at Tanesco’s request made a long-term estimate of the future market, anticipating a total demand of 310 MW by 1983. The calculations could certainly be questioned and were sometimes revised. However, although the basis for calculations could be questioned, the fact remained that there were figures and calculations on paper, whilst for irrigation and water supply no such calculations existed. Although grand plans for irrigational development had existed for a long time, reinforced by a FAO study in the 1950s, there existed no relation between a company and consumers providing a basis for estimates in the way that there did for electricity. There were no fees for water, while electricity came by cable and was charged by use. Thus, in the situation when concrete figures were demanded, economic estimates of production and sales, consumption and revenues, the visions of development through irrigation lacked substance.

Africanisation of Tanesco

During the latter part of the 1960s, the decolonization period, the Africanisation of Tanesco facilitated the Swedish involvement in the Great Ruaha power project, as did the Tanzanian government’s willingness to go ahead with this formerly British venture. Tanesco, like most other Tanzanian authorities and nationalised companies, was being "Africanised” during the period of the battle for influence over hydropower development in Tanzania. Tanesco had been nationalized by the independent government in 1964. Although an African Tanzanian

1 SRA, F1AB 1405, May 6, 1966 Letter fr A. Hardmark, SWECO, t. Narfström, SIDA.
immediately replaced the British chairman of the board of Tanesco, it took several years to replace all the British executives with African Tanzanians. For instance the position of general manager continued to be held by an Englishman, Batty, as the result of a credit agreement with Great Britain and the World Bank in 1965.\textsuperscript{1} As the World Bank requested no changes in the post as a condition for the credit to GRPP, Batty remained in post until the end of 1971, when he was discharged abruptly by the government-controlled Tanesco board, and replaced by a Tanzanian member of the TANU party.\textsuperscript{2} The chairmen of Tanesco after 1964 were all African Tanzanians with close relations to the TANU party, and thus the Tanzanian government and other African Tanzanians within the board had the same background.\textsuperscript{3} After nationalisation, the Tanzanian government strove to bring nationalities other than the British into Tanesco. Between 1965 and 1968, Åke Rusck, former general manager of the Swedish state power board, was a member of the Tanesco board.\textsuperscript{4} While Tanesco had agreements with BB&Co, and its subsidiary Engineering & Power Consultants Ltd, the “Africanisation” of Tanesco along with the World Bank demands for international bidding, enabled the Tanzanian government to turn away from the British companies.\textsuperscript{5}

Thus, the events may be interpreted in terms of decolonisation and the Tanzanian government’s wish to loosen the British influence in the country, this being facilitated by an increased influence from Swedish development assistance and representation on site.

\textsuperscript{1} SRA, F1AB 1387, Fletcher: Report on Study of power problems in Uganda, Kenya and Tanzania, December 1966.


\textsuperscript{3} The first African Tanzanian to be chairman of the Tanesco board after nationalisation in 1964 was A.J. Nsekela. Nsekela remained in the Tanesco board until 1967. The second Tanzanian chairman of the board, J.S. Kasambala, from March 1965, was member of Parliament, and Minister with responsibility for industry, mineral resources and energy. He was replaced in October the same year, by Nsilo Swai. Swai belonged to the inner circle of the government party Tanu, where he earlier had been ”National Treasurer”. When Swai resigned from the chairmanship in April 1967, he was succeeded by his vice chairman, K.H. Ameir. Fred Lwegaruilla was also a member of the Tanesco board, from March 1968 until December 1970. SRA, F1AB 1388, Letter fr Tennander/UR t Kalderén, SIDA, May 11, 1967. Samtal Sandberg SIDA- Nsekela, finansministriket Apr.14, 1967; SRA, F1AB 1387-1391 and Tanesco archive, DSM - Tanesco Reports and Accounts 1964 – 1971; SRA, F1AB 1388, Telegram fr SIDA t permanent mission of Sweden to the United Nations, Oct.14, 1967.

\textsuperscript{4} SRA, F1AB 1387-1391 and Tanesco archive, DSM; Tanesco: Reports and Accounts 1964 – 1971; Jakobsson (2000)

The Tanzanian domestic energy situation in the 1960s

There is probably more to be said regarding the Tanzanian actors, their internal relations and their relations to donor countries. In this section I will briefly contextualise the hydropower by briefly discussing describe another important issue - other potential power sources. Hydropower was not the only possible domestic energy source, although since the 1950s thermal power had been considered very insecure with regard to both price and the supply of the imported diesel needed.¹ For instance coal reserves in the territory had been investigated since the end of the 19th century, and continued to a certain extent to be discussed with regard to electric power production in the 1960s. During most of the 1950s there had been extensive investigations and it had been concluded that great reserves existed. Nevertheless, no major investments were made. A small private mine was sunk in Ilima, which is a part of the Songwe-Kiwira coalfield, in 1953, to supply coal to limestone and brick factories.² The World Bank economic mission of 1961 had taken into account the coal reserves, but wrote off investments in coal mines as economically unfeasible due to lack of communications and also the lack of a larger market outside Tanganyika.³ In the 1960s China showed interest in coal mining, but this did not result in any investments either.⁴ According to an informant in Tanzania, active within the Tanzanian power sector since the 1960s, the World Bank’s resistance to investing in a proposed mining project was based on the fact that it was a Chinese project, the World Bank being unwilling to finance a project involving a communist country during the Cold War.⁵

The existence of oil had been investigated since early 1950s. A preliminary study was made in 1951 by the Shell Overseas Exploration Co. Ltd, and D’Arcy Exploration Co. Ltd. The colonial government of the Tanganyika territory issued a licence for prospecting in 1952, and more detailed oil-prospecting activities began.⁶ A decade later B.P Shell, now an enterprise based in Tanganyika, had investigated the coastal belt, the islands and the coastal waters of

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¹ Hill/ Moffett (1955), 712.
³ Stevenson et al., (1961), vii, 264 f.
⁴ Tanesco archive DSM, SMC, Coal Development in Tanzania, 4.
⁶ Hill/ Moffett (1955), 694.
the territory. Large sums had been invested in mapping, geophysical investigations and test drilling without showing anything promising. However, the investigations continued until 1964, and actually indications of oil deposits did come, but at this time B.P Shell withdrew from Tanzania.

Hydropower, oil and coal were all considered as domestic energy sources. Another fuel source, both domestic and industrial, had long been, and still is, wood. Being the traditional fuel source, wood was also used as fuel for the production of electricity in Tanganyika in the 1950s. According to a statistical study in 1970 the consumption of fuel wood was six and a half million tons per year or about half a ton per capita. Most of it, 93 per cent, was used for household purposes, while the main industrial use was in producing tobacco. In the same year, consumption of charcoal was 21 000 tons, half of it in Dar es Salaam. Despite being an old fuel source and at the time still so widely used, no scientific studies of wood or charcoal were commissioned in the 1960s. The World Bank power mission of 1967 reported that fuel wood, alongside hydropower, was one of the few domestic energy sources; however no further interest was taken in its use, production or future exploitation. In the World Bank appraisal that sealed the destiny of the Great Ruaha River, fuel wood was again mentioned, but then as important mainly in the “domestic” sector, and only to a smaller degree within the industrial sector.

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1 Stevenson et al. (1961), 266. BP and Shell was at this point one company in Tanganyika/Tanzania. See BP (2003).
2 Jones (1983), 14 f.
3 Ibid., 9.
4 Hill/ Moffett (1955), 709.
5 Ibid.
6 SRA, F1AB 1387, IBRD Tanzania Power Sector Report, January 1967, 10.
7 The “Subsistence sector” was in the World Bank evaluation separated from the “commercial sector” SRA, F1AB 1391, E.Erkmen, F.Rydell, B.Russell, Tanzania: Appraisal of the Kidatu Hydroelectric Project of Tanzania Electric Supply Company Ltd, July 31, 1970 [Appraisal of Kidatu, July 31], Public Utilities Projects Department, IBRD, 2-3.
A problem in following the inter-Tanzanian relations is the lack of documented sources. One part of this problem is my own physical distance from Tanzania, and as I have had only one very short opportunity to study the Tanzanian archives. It is possible that there is more to find in Tanzania, but it is also quite possible that many of the documents have been destroyed.

When visiting Tanzania in 2000, I went through all archived documents at the Tanesco headquarters in Dar es Salaam. The documents were about 30 running metres, but none of them older than the 1980s. More documents were kept in containers, in which the temperature was exceeding 50 degrees Celsius, making investigation physically painful. I did not, due to lack of time, complete that investigation. At the hydropower stations that I visited, Kidatu and Mtera, archives were held at the time of my visit, but I did not get full access at this point.

There are other archives, for instance from the WD&ID, remaining to be investigated in Tanzania, but it is also probable that a lot of material has been thrown away, as reported by a Tanzanian informant, Vincent Gondwe. For this dissertation I have had to content myself with the material I have come across. Besides the obvious archival problems which Tanzania shares with many other countries, especially former colonies, a general difficulty in studying the history of the Tanzanian hydropower sector is connected with the transition from colony to independent state, and the fact that the advent of the development assistance era increased the number of actors involved. For Tanzania, the context of the Cold War and the Tanzanian government’s dealings with both sides further increase the number of actors. To get an overall view, investigation of several countries national archives is required.

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2 Cf Mukandala (1999), 42f.
8. Settling for the Great Ruaha Power Project and Swedish influence

In the preceding chapters I have shown how Swedish development assistance managed step by step, with the support of the Tanzanian government and also of the World Bank, to outmanoeuvre the British interest in the Tanzanian hydropower sector. At the same time, the Tanzanian government had, for the time being, to be satisfied by getting the Great Ruaha power project – a single-purpose project for power production – and hope in future to obtain finance for a combined large-scale irrigation and hydropower scheme.\(^1\) By July 1968, the final report of the joint comparative study having been delivered, the Great Ruaha power project was becoming a Swedish development assistance project. That SWECO was to be the engineering consultant was already settled. That the Great Ruaha power project would go ahead was by now merely a question of producing documents for the formal negotiations: a preinvestment study to be performed by SWECO, followed by appraisal by the World Bank.

Yet, in this chapter I set out to analyse the road to Washington – the period from July 1968 to December 1970 – as it further underlines the importance of the development assistance funds within a large-scale hydropower plant project. I discuss the different obstacles that SIDA had to overcome in order to ensure Swedish participation in the Great Ruaha power project: the preinvestment study, an ecological impact study and the economic calculations requested by the World Bank. Finally, I discuss how Swedish development assistance was involved in securing the participation of Swedish enterprises in the second phase of the Great Ruaha power project, the construction of the Mtera regulating reservoir, followed by a brief discussion on how Swedish domination of the Tanzanian hydropower sector continued up to the 1990s.

The preinvestment study

In this section I discuss how, after the comparative study gave its support to the Great Ruaha power project, SIDA worked to ensure the participation of Swedish enterprises in the coming project, starting by producing the preinvestment study. The preinvestment study, conducted

\(^1\) Cf Hoag (2003), 183.
by SWECO and financed by SIDA, preceded the decision of the Swedish government to
finance the Great Ruaha power project with Swedish tax funds. At the same time the
preinvestment study also formed the basis for the World Bank’s financing of the project.

After the completion of the joint comparative study between the Wami and the Great Ruaha,
the General Manager of SIDA, Michanek, wrote to the Tanzanian Minister of Finance,
stressing that the Swedish development assistance would support further investment studies
up to the amount of 90%, on two conditions. First of all, further studies had to be focused on
Kidatu/Great Ruaha, and secondly that SWECO would be engaged as consultant:

With reference to your Government’s request of May 20, 1967, for Swedish assistance with
the detailed investigations of the Wami Multi-purpose scheme, and further to my letter to you
of July 4, 1967, SIDA therefore believes that such assistance should be directed to the Kidatu
development scheme.

If you concur with this view, I am prepared to recommend to the Board that SIDA would
provide, as a grant, the foreign exchange costs for the services of a suitable Swedish
consultant - preferably SWECO - to undertake a preinvestment report including necessary
site investigations for the Kidatu development scheme. The total cost for such services had
been estimated in the report to 3 400 000 Tanz. Shs, of which amount SIDA would expect
about 90% to be foreign exchange costs. SIDA is further prepared to act on behalf of the
Tanzanian Government as executing agency for the study, which will be undertaken on Terms
of Reference to be agreed upon between the parties concerned. 1

In Tanzania, the comparative study was not available until a month after its completion. At
SIDA’s request both drafts and final version were delivered to SIDA, who then forwarded a
copy to those considered trustworthy. 2 SIDA also decided that the two consultants involved,
SWECO and BB&Co, would be allowed to send one representative to Tanzania, once the
final report was ready. 3

1 SRA, F1AB 1389, Copy of letter fr E. Michanek, GM, SIDA, t Jamal, Tanzanian Minister of Finances, July
29, 1968.
2 SRA, F1AB 1389 Letter fr J Fletcher Munkfors t SIDA, Willén. May, 27, 1968. Copy of telex fr Balfour B and
SWECO; SRA, F1AB 1389, Letter fr J D Namfua, Principal Secretary, The treasury, DSM, Tanzania, Aug.
21, 1968, to Michanek, SIDA; SRA, F1AB 1389, Copy of letter fr Gösta Westring, Acting Head of Division,
SIDA, t Principal secretary, Ministry of Finance, Aug, 29, 1968; SRA, F1AB 1389, Telegram, fr Sw. Emb,
DSM, t. SIDA Sthlm, Sept. 4,1968, Fridell.
After the Tanzanian government had received the report, its formal answer took another three weeks to reach Sweden. But it had already been intimated within a few days to Rolf Beijer, administrator at the branch of SIDA in Dar es Salaam, which had been established in March 1967, that there was “no objection” to the report.1 The two Swedish conditions were accepted.2 On receiving the positive answer, SIDA in Stockholm moved quickly. Contacts were made with the World Bank to ensure the future collaboration, and SWECO was invited to tender for the preinvestment study, no other consultancy company being approached. The contract was for 2.7 million Swedish crowns, to be taken from the development assistance funds devoted to bilateral aid. Negotiation of the terms of reference for the preinvestment study was scheduled for October.3 To ensure the use of Swedish technology in the preinvestment study, Kalderén wrote to the Tanzanian Ministry of Finance, asking for all equipment brought from Sweden for the study to be exempted from tax:

Furthermore, we assume that Tanzania will allow the Consultant to import into Tanzania free of duty any equipment for the purpose of the execution of the study as well as grant SIDA and the Consultant exemption from all taxes in Tanzania. 4

Work on the preinvestment study started in late 1968, and the result was presented a year later, in November 1969.5 The preinvestment study was followed by a feasibility study by the World Bank, intended to evaluate the proposed hydropower scheme. The World Bank representative visited Tanzania for two weeks in April 1970, and the study concluded with an “appraisal”, which changed colour during its finalization – from draft copies with a yellow

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1 SRA, F1AB 1389, Telegram fr Beijer, SIDA; DSM t SIDA, Kalderén, Sthlm, Aug. 30, 1968.
4 SRA, F1AB 1389 SIDA Dept of Financial Assistance, Copy of letter, Oct. 15 1968, L. Kalderén, to JD Namfua, Principal Secretary, Treasury, DSM. “Kidatu - Terms of Reference for Preinvestment Study.”
5 SRA, F1AB 1390, Letter fr. A. Hardmark, SWECO t. Willén, SIDA, Nov. 28, 1969. The preinvestment study for Great Ruaha phase 1 has not been available in the archives investigated.
cover to the final appraisal with a green cover, issued on July 31, 1970 – indicating the progress of the report from “hold” to “go ahead”.

The ecological impact study

As the preinvestment study approached its final stage, an environmental and to a certain extent social impact study was launched. The initiative had come from the World Bank. On the Tanzanian side, at Tanesco, it had not been judged important to take a closer look at such aspects of the hydropower scheme. However, at the World Bank environmental aspects had apparently become a part of the project presentations, as the Tanzanian government was required to make an ecological impact study, especially of the planned large reservoir at Mtera.

The World Bank’s demand for an environmental impact assessment was in line with a newly introduced policy. Although I have not studied the formal internal structure and practices of the World Bank organisation in detail, it is likely that the Bank was influenced by developments regarding environmental insights and policies in Western Europe and the US. For example the 1960s had been the decade of Rachel Carson’s seminal “Silent Spring”.

In 1972 the first meeting on environmental issues was held by the United Nations. In this context the first environmental adviser was installed at the World Bank in 1970, and the following year a smaller environmental unit was created to examine projects to be financed by the World Bank. The intention was to make an early assessment of all projects, these being sent to the special environmental unit at an early stage of planning. At the same time a number of


3 Carson (1962)
internal guidelines, handbooks, checklists and criteria were prepared, to be used by the World Bank staff in their reviews of planned projects.¹

However, the ecological impact study for the Great Ruaha power project was not much more than window-dressing. It was financed by SIDA, who contracted SWECO who in turn contracted an assistant professor of systematic botany at the University of Uppsala, Olov Hedberg. Hedberg spent two months, assisted by two of his PhD candidates, in Tanzania, investigating the ecological impacts. His report was completed in September 1970.² While the ecological impact study was still taking place, the World Bank and SWECO were already inviting tenders for the contracts linked to the Great Ruaha hydropower scheme.³ In the “green cover” appraisal, the ecological impacts were mentioned in two paragraphs that referred to the ongoing study:

Results of the general review are expected to be available by September 1970, and the second stage study is expected to start early in 1971. No insurmountable ecological problems are anticipated by Professor Olov Hedberg of Uppsala University’s Institute of Systematical Botany, who is an expert in African environmental problems and who is expected to undertake the general ecological review.⁴

The final report of the ecological impact study did not disappoint the promises made in the “green cover” appraisal. Although the report stated that a number of serious health and environmental problems would arise, the general conclusion was that no negative impacts were severe enough to stop the project.⁵

¹ Öhman (1993), 5.
³ SRA, F1AB 1391, SIDA, Aastrup, July 7, 1970. Great Ruaha P. Anteckningar från sammanträde 7.7.70 med F.S. Batty, Tanesco, Wretblad, Reinius, Nordström, SWECO, SÖ
⁵ SRA, F1AB 1391, Olov Hedberg, Ecological study of the Great Ruaha power project, Phase 1A, 1-9 1970, SWECO-Tanesco, 2, 6.
Economic calculations and "soft" credits

The largest electric power project ever to be undertaken in Tanzania will go forward with the equivalent of $43 million in financial assistance from Sweden and the World Bank. The project is designed to meet the rapidly growing demand for power through 1980 in Tanzania's coastal region where most of the industrial and commercial activity is concentrated.¹

On December 14th the World Bank Paris office sent out the press release that the decision had been taken to finance the Great Ruaha power project in Tanzania, the “largest electric power project ever to be undertaken” in the country. Financial support would be the equivalent of 43 million US dollars. Although expected environmental impacts and people to be displaced did not cause any severe obstacles to the agreements on financing the Kidatu power plant, there was an economic argument regarding choice of technology. The joint comparative study had concluded that there were two options, two completely different technological systems. The Kidatu power plant was the hydropower alternative, but there was the alternative of using thermal power, with imported diesel as energy source. The joint comparative study had concluded that the two alternatives were at the same aggregate cost level, the only difference being the credits provided. Due to the differing cost pictures for the alternatives (high initial cost for hydropower, lower costs for running the plant due to absence of charges for water, and low initial cost for diesel power but higher running costs due to having to pay for diesel), a credit for hydropower at a maximum cost of 12% interest, would make hydropower the better choice. This conclusion held good at the time of the preinvestment study, and the World Bank was also financing a study of a thermal power plant in Dar es Salaam, which had been carried out by SWECO’s competitor for the hydropower project, BB&Co.²

The World Bank appraisal of the Great Ruaha power project used the same method of calculating as the joint comparative study, the “discounted cash flow” method. Regarding the cost aspects, the same argument as in the joint comparative study was maintained. However, an extra aspect had been added that gave an advantage for hydropower – an estimated

² SRA, F1AB 1390, SWECO, PM den 21 januari 1970, beträffande av SIDA begärda förtydliganden och kompletteringar av Preinvestment Study
economic return from a hydropower project. First of all, costs for labour, which had earlier been calculated to be higher for the hydropower project than the thermal power plant, were discussed in terms of providing jobs in Tanzania, and thus increasing the economic advantage of the hydropower plant. Secondly, the appraisal discusses the “multiplier effect of the extra local expenditure associated with the construction of a hydropower scheme compared with a steam station”.

The World Bank green cover appraisal ends the discussion on the discounted cash flow on stating that only with an “unlikely combination of adverse factors (3% inflation in hydro costs, 10% lower thermal capital costs, 20% lower fuel oil price, no allowance for positive multiplier effects)” would the hydropower plant be more costly than the thermal alternative. These estimates are of interest as they assume a hydropower project financed with development assistance and credits adapted to the situation. Had SIDA and the World Bank not been promoting the Great Ruaha power project with credits at a low rate of interest, the thermal power plant would at this point have been the “best alternative” from a cost aspect.

With the economic calculations made, and the gloss put on matters by the ecological impact study, all was set by September 1970 for credit negotiations. The negotiations took place during a week in Washington, as representatives of the Swedish government, SIDA, Tanesco, the Tanzanian government and the World Bank met. The Swedish part of the credit consisted of 63 million SEK to the Tanzanian government on “IDA-conditions”, 50 years, 10 years of grace and a ¾ percent service charge, but no interest charged. The Tanzanian government would relend the money to Tanesco over 25 years, with 5 years’ grace and at 7.2% interest, meaning that it would be money left over in Tanzania. This implies a very favourable Swedish credit for Tanzania, on the one hand, and on the other hand, a credit also functioning as a guarantee that SIDA would be able to influence decisions regarding the project. By comparison, the World Bank credit consisted of 30 million US dollars to Tanesco, with the Tanzanian government as guarantor, over a 25-year loan period with 5 years of grace and

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1 SRA, F1AB 1391, Erkmen et al., Appraisal of Kidatu, July 31, Annex 9, 1. In the appraisal it does not say what this local expenditure would consist of.
2 SRA, F1AB 1391, Erkmen et al., Appraisal of Kidatu, July 31, Annex 9, 3.
7.25% interest. Both credits, however, ensured the construction of a hydropower plant, as the interest could not exceed 12 per cent, or the thermal alternative would have been the cheaper.

Maintaining Swedish influence in the Great Ruaha power project

From the Swedish side, the credit given for the Great Ruaha power project was the biggest single undertaking since the start of the development assistance era. The financing agreement having been signed, work started on finding the contractors for the different construction parts. Advertising of the project had, with the consent of the World Bank, already started six months earlier.

Earlier work by SIDA had ensured that SWECO would be the engineering consultant, and thus responsible both for advertising the project and evaluating incoming tenders. It was a significant position, ensuring Swedish influence in the Great Ruaha power project. The example that shows the importance of SWECO’s position is the largest contract - the “main civil works” – which was for the construction of the power plant, including the reservoir and access roads. For this contract, there were two competing tenders – one from the joint venture Philip Holzmann, and one from a Swedish consortium headed by Skanska. The lowest price was offered by the German consortium, yet after evaluation SWECO recommended that the contract go to the Swedish consortium. This was not appreciated at the World Bank, who favoured Holzmann. However, after further discussions, also involving the Tanzanian government, the Swedish consortium won the contract. Study of the documents in the SIDA archive and interviews with one of the Swedish persons involved at the time shed some light on this procedure. There were two main reasons for accepting the SWECO proposal. First, the bid of the Swedish consortium was accompanied by a Swedish

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2 SRA, FIAB 1391, Aastrup, Great Ruaha P. Anteckningar från sammanträde 7.7.70 med F.S. Batty, Tanesco, Wretblad, Reinius, Nordström, SWECO, Öhlund, Aastrup, 8/7 1970.
3 Skanska had at this time the name ”Skånska Cementgjuteriet” and the consortium used for the bid the name “Joint venture AB Skånska Cementgjuteriet”. SRA, FIAB 1392 SWECO, Great Ruaha Power Project, Tender Documents, Report on evaluation for main civil works for the Kidatu Hydroelectric Power Plant. 23/3 1971. After having won the contract the consortium changed name to Kicon, the Kidatu Consortium, and consisted of Skanska, Stockholm; Stirling-Astaldi Ltd, Rome; Royal Netherlands Harbour Works Co. Ltd, Amsterdam; Sentab, Svenska Entreprenad AB, Stockholm, Mecco, Mwananchi Engineering and Contracting Co. Ltd, DSM. Tanesco (1975)
development assistance credit, giving the opportunity of training for Tanzanians in how to run the hydropower plant. This credit was provided by SIDA and gave an advantage to the Swedish-headed consortium’s bid for the contract. Secondly, the Tanzanian government was promoting the Swedish consortium, as the collaboration between the two countries had been developed over several years and there were good contacts between the governments of the two countries.¹

The transmission line from Kidatu to Dar es Salaam was initially planned for financing at a later stage, but in Tanzania concern was expressed over the fact that the whole project was not fully financed. The Canadian development authority, Cida, was present in Tanzania, and the Tanzanian government turned to them for assistance. Canadian companies and development assistance had been active in the Tanzanian power transmission sector since 1966, when the Canadian government granted a credit of 2 million Canadian dollars for the construction of the transmission lines Chalinze-Morogoro and Nyumba ya Mungu-Arusha.² Cida now offered a credit with the condition that a Canadian enterprise would do the work and provide the technological equipment. After some discussion, this was approved by SIDA and the World Bank.³

Work on the hydropower plant and reservoir at Kidatu started during 1971, and involved only European and Canadian companies. Despite all the efforts at Africanisation made by the Tanzanian government during the 1960s, there was no Tanzanian enterprise, or at least no African-led Tanzanian enterprise, involved in the construction.⁴ From a Swedish perspective, the Kidatu hydropower plant, and the Great Ruaha power project, would become a success.

¹ Ingvar Jernelius, Pers. Interview, Oct. 13, 2000, F1AD 895, Minutes of the general manager’s meeting with the IBRD investigation team on the Great Ruaha Power Project on the 25th October 1973 2.30-4.00 PM in the board room; SRA, F1AB 1392, Contract 3, Kidatu Main Civil Works, fr SWECO, I Jernelius, P Å Nordström, t IBRD, Gavin E. Wyatt, June 29, 1971; SRA, F1AB 1392, Letter fr SIDA DSM, Rolf H Lickfett, Acting Head of Mission, t SIDA; Dept. II, angående Kidatu - Training scheme.
² SRA, F1AB 1387 Tanesco: Reports and Accounts 1966, 5.
⁴ Besides Kicon the companies involved in Kidatu phase 1 were: Cotock Ltd, Montreal (transmission lines, substations), Ingra-MetaIna, Zagreb-Maribor (gates, penstock steel linings), Ingra-Litostroj, Zagreb-Ljubljana (turbines, crane), Ingra-ade Koncar, Zagreb (generators), Ferranti-Packard Ltd, and Federal-Pioneer Ltd, Toronto (main and station transformers), Liljeholmens Kabel, Stockholm (220 kV Cables), Cogelex, Paris (switchgear, control equipment etc.), Balfour Kilpatrick International Ltd, London (cooling water etc.), ETCO (T) Ltd., DSM (air conditioning), J.W. Ladwa, DSM (bush clearing, fencing) Robertson Construction Co. Ltd., Nairobi (water supply, sanitation), Maula Dad and Rose (T), Ltd., DSM (access road), Nedco, DSM (staff houses) Tanesco (1975)
The project provided Swedish firms with work for several years. But the Swedish role in the next stage of the Great Ruaha project, in 1976, could not yet be taken for granted. To start with, SWECO’s position as consultant was challenged as severe problems arose with the tunnel-building, raising the costs and eventually requiring extra financing. For the SWECO engineers, the Great Ruaha power project was a completely new experience – outside Sweden for the first time, having overall responsibility, and dealing with entirely new partners. In December 1973, the World Bank supervision mission – two people sent out to supervise the whole project at six-month intervals – reported back to Washington:

*There is a rather serious strain in the relationship between Tanesco and Sweco, which has in part arisen from difference of opinion over the handling of the various claims by the main civil works contractors and the fact that the civil works contract tends to favor contractors in making and getting favorable settlement of claims.*

The problems had started as the construction of the headrace tunnel encountered complications, resulting in claims for extra cost coverage from the contractor. Initially, the response to these problems was to call in Nordic expertise. However, as the claims quickly rose, the World Bank added an extra person to the supervision mission. The result of this was that the World Bank called for the assistance of an international tunnel expert group to solve the technical design problems and to manage the extra claims. According to the Swedish informants, some of the contractors had won their contracts with very low tenders but with a strategy of making numerous claims for extra costs once work began. The SWECO consultants, trained as engineers and not experienced in managing international projects of

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1 Lööf (1981)
5 SRA, F1AD 895, Minutes of the general manager’s meeting with the IBRS investigation team on the Great Ruaha Power Project on the 25th October 1973 2.30-4.00 PM in the board room; SRA, F1AD 895, Report by the Tunnelling Expert Committee on the Kidatu Hydroelectric power plant Tanzania. (1972); SRA, F1AD 895 Letter fr IBRD, Ch. Morse, Chief Public Utilities Projects Division Eastern Africa Regional Office, t. J.S. Kasambala, GM, TANESCO, DSM, Tanzania, Jan. 24, 1974; SRA, F1AD 896, Letter fr Tanesco, t Charles Morse, IBRD, June 19, 1974, regarding engagement of Messr. A.A. Mathews, inc, of California and Maryland, consultants to review Tunneling and claims at Kidatu.
this kind, had great difficulty in handling these negotiations and time-consuming claims. However, that is one side of the story – another story appearing in the archival sources concerns relations between SWECO and the contractor, Kicon – main sponsor – Skanska. There were close personal relations between SWECO project manager and the persons mainly responsible at Skanska, which led to SWECO accepting extra costs that were not approved by Tanesco. Jernelius, the SWECO project manager at the time, recalls the problems of the tunnel and the stress of the conflicts, and tells how the strains, maybe also in combination with the managing of a family of six children - the eldest going to boarding schools in Sweden - forced him to take sick leave for six months.

A consequence of all this was that SWECO’s participation in the second phase of the Great Ruaha power project, the construction of the Mtera reservoir, began to look doubtful. However, at SIDA in Stockholm, Narfström and others fought to keep SWECO in the project. SIDA had already started discussing the extra costs for Kidatu, and in 1974 extra financing of 20 million Swedish crowns was approved. Added to this there was extra financing from the World Bank, to the amount of 5 million US dollars.

Having secured this extra financing, SIDA also ensured the participation of SWECO in the second phase of the Great Ruaha power project, starting with the second preinvestment study. For this preinvestment study, as requested by the World Bank, the Tanzanian government and Tanesco followed a bidding procedure. However, once evaluations finished Tanesco declared

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2 SRA, F1AD 895, Minutes of meeting held on 27th August, 1973, at Tanesco office, DSM.
that SWECO would be reappointed.1 SIDA also financed the ecological impact study, and contracted SWECO, who again contracted Hedberg.2

In 1976, as the preinvestment study was completed and an ecological impact study presented, the second stage of the project - the construction of the Mtera reservoir and the extension of the Kidatu power plant to 200 MW - was decided. For the second phase Sweden contributed a credit of 80 million Swedish crowns, the World Bank brought in 30 million US dollars and the West German development assistance agency, Kreditanstalt für Wiederaufbau, gave its support with 60 million German marks.3 I have not gone into the bidding procedure for the contracts for the construction of the second phase. However, these went to companies from the donor countries. SWECO was again the consulting engineer. The contract for main engineering works for the Mtera reservoir was not given to Skanska, but to an Italian enterprise. But Skanska, through its Danish subsidiary C G Jensen, was linked to the contract for the engineering works at the extension of the Kidatu power plant.4 Furthermore the Swedish company ASEA won the contracts for both transformers and cabling at Kidatu. The German contribution was secured through the participation of German companies in the contracts for Kidatu turbines and pipe work, J M Voith, and in the contract for generators, switchers, control equipment and local power and lighting by BBC.5 Within a few years, in 1983, the decision was made to construct an 80 MW power plant at Mtera. The project was financed to a total of 245 million US dollars, the main financing coming from the World Bank fund International Development Association, IDA. On this occasion SIDA participated with a credit of 135.3 million Swedish crowns, along with a number of other development agencies from West Germany, Norway, Kuwait and Italy.6 The preinvestment study, as well as the

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2 Johansson/Hedberg (1977)


5 Petter Narfrström archive, “The Great Ruaha Power Project, Tanzania, Phase II Development.

contract as engineering consultant for the whole project, was again assigned to SWECO, and again enterprises linked to the development agencies involved were contracted. Again ecological impact studies were made, financed with Swedish development assistance funds, and carried out by SWECO.

[Fig. 34. The control room at the Mtera Powerplant. From the left is (unknown), Mr Simba and Mr Ngonyani. Photo: the author, Nov. 2000]

*Interruption of SWECO dominance - continued Swedish presence*

The SWECO dominance within the SIDA-financed hydropower projects in Tanzania was interrupted in the 1990s, when a “rehabilitation” of the Kidatu power plant turned out to be necessary. One generator had to be replaced by a new and the excitation systems for all generators and the turbines had to be repaired, at a total cost of 23.5 million Swedish crowns, provided by SIDA. At this time Norconsult was engaged as supervisor. For the work on the system parts ABB Generation and Kvaerner Turbin were contracted. After the repairs, problems remained at Kidatu and the quest for financing for a second-phase rehabilitation was

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launched as the first phase was completed.\(^1\) In 1998, SIDA and the Norwegian development assistance agency, NORAD, agreed to finance the rehabilitation. At this time, SWECO met competition from other consultants. Both the partly state-owned Swedish consultancy Swedpower, established in 1976, and the Norwegian consultancy company, Norconsult, submitted lower bids for the work and SWECO was not engaged.\(^2\)

However, although SWECO had been replaced by a Norwegian company, from a Swedish perspective, the involvement in the Tanzanian energy sector, more specifically the hydropower sector, was not broken. When in the 1990s other hydropower schemes were planned and constructed on the rivers Pangani and Kihansi, SIDA and Swedish development assistance continued to be involved.\(^3\) In 1997 a review of Swedish development assistance involvement in the Tanzanian energy sector was carried out, showing that Swedish support for the Tanzanian hydropower projects had up to then amounted to 20\% of the total cost (of the hydropower construction). In terms of power generation Sweden had during this time supported hydropower projects resulting in an installed capacity of 346 MW out of a total of 377 MW, or 92 per cent of the total of the electricity supplied to the national grid.\(^4\)

Seen from a Tanzanian perspective, the Swedish contribution and influence had been extensive. Sweden had from the late 1960s replaced the former colonial power, and made itself a leading partner for credits and grants.\(^5\) In other words, the Swedish contribution to the energy sector had been massive, contributing to the emphasis on large-scale hydropower technology with its financial and technological support. Although other financers did take part and other companies from other countries worked on construction, providing technological components and technological competence, Sweden had become the dominant nation within the Tanzanian large-scale hydropower sector.

\(^{1}\) Sten Lööf archive, Kidatu Rehab II, Telefax from Norconsult International, Einar Sofienlund, December 20, 1994, to SIDA; Per Persson and Gösta Werner; Sten Lööf archive, Pärn Kidatu Rehab II, Fax from DSM, January 24, 1995, Tanzania Electric Supply Company Limited, Kidatu Power Plant Rehabilitation Phase II, Evaluation of Tenders for Consultancy Services,

\(^{2}\) Sten Lööf archive, Kidatu Rehab II, Sten Lööf, PM, Utvärdering av anbud för upprustning av Kidatu-kraftverket, Tanzania, Feb. 6, 1998.

\(^{3}\) Sten Lööf archive, Promemoria 19950621, Stöd till energiprogrammet Power 6 in Tanzania; Dahlström/Cuellar/Peterson(1997)

\(^{4}\) Dahlström/Cuellar/Peterson(1997), i.8.

\(^{5}\) Cf. Mukandala (1999)
[Fig. 35. Plate at the Lower Kihansi Hydropower plant, showing that it was constructed with the support of development assistance from Norway, Sweden and Germany, The European Investment Bank and the World Bank. Engineering consultant was Norplan, Norway. The Swedish enterprise links were present through ABB delivering the electrical system. Photo: the author, Nov. 2000.]

[Fig. 36. The dam wall of Lower Kihansi hydropower plant, commissioned in 1999. A water release of 1.8m³ was allowed, due to pressure on the World Bank by environmental NGOs, in order to save the habitat for the so called “spray toad” in the Kihansi River gorge. By 2005 the toad was reported as extinct in the gorge.¹ Photo: the author, Nov. 2000.]

¹ Krajick (2006)
Conclusion

This chapter has focused on the road to Washington, from July 1968 to December 1970. While the fate of the Great Ruaha River seemed more or less settled by the delivery of the comparative study in July 1968, there were still a few obstacles to face before the final decision could be made to go ahead with the Great Ruaha power project. The obstacles consisted in providing a preinvestment study, an ecological impact study, (both financed by SIDA and performed by SWECO) and economic calculations to establish which alternative – thermal or hydropower – would be the “best” from an economic perspective.

While I have argued that to a large extent it was already settled in July 1968 that the Great Ruaha would be the project that would receive support, the main objective of this chapter has been to show the importance of development assistance as a driving force in settling for large-scale hydropower (at Kidatu) and out ruling a thermal alternative. The choice of hydropower was not a choice of “best technology” or even “cheapest” technology, but the result of willing donors providing beneficial credits. In short, without the credits provided by Sweden and the support of the World Bank, no large-scale hydropower plant would have been constructed in Tanzania. Furthermore, I have gone on to discuss how representatives of the Swedish development authority pursued the objective of supporting export of Swedish technology, which must be seen as part of the explanation of why Swedish development aid was given to a hydropower plant.
Part two: conclusion

The formal decision to construct the Kidatu hydropower station and thus to start the first phase of the Great Ruaha power project was taken on December 14th 1970, on the premises owned by the World Bank in Washington DC, USA. Five years and six months later, again on the same premises, the decision was taken to finance the upstream reservoir at Mtera, the second phase of the Great Ruaha power project. With these events, the recently independent Tanzania was brought into the big dam era. For Sweden, too, these events had a symbolic importance: the Great Ruaha power project was the first great meeting of Swedish development assistance and Swedish exports within the hydropower sector. In the Swedish government bill on development assistance in 1962, former colonial powers had been accused of having neglected infrastructural investments. It was argued that it was the duty of Sweden to provide for this kind of development – with the support of Swedish enterprise. Sweden, a country “free from a colonial past”, would go out into the world to help the poor nations to develop, by providing Swedish technology and know-how. In the Great Ruaha power project, not only was Sweden now providing Swedish technology and know-how, but it had also managed to outmanoeuvre the representatives of the former colonial power, Great Britain.

In Part Two, the first part of the case study on Swedish support for a hydropower project in Tanzania, I have concentrated on the key actors involved in the decision-making processes. I have focused on the Swedish actors, within SIDA and the consultant company SWECO. I have not gone into discussions within the Swedish government, or possible discussions between SIDA and the Swedish government. Instead, I have assumed the framework for the SIDA was already present when the government bill (1962:100) was passed by the Swedish parliament: it was the wish of the Swedish government, supported by the majority of the parliament, to facilitate export of Swedish technology and know-how within the framework of development assistance.

Analysing the actors I identified three major contexts that appear as explanations for their behaviour. The first context was a combination of colonial imagery and altruistic ideals expressed by the Swedish development authority and its support for Swedish commercial interests. In Part One, chapter two, I showed that during the 1950s a double-edged policy for Swedish development assistance was elaborated: the projects supported were supposed to
contribute to progress and development while also providing for export of Swedish technology and know-how. Yet, in official policy declarations Sweden had portrayed itself as a country of high moral standing. Swedish representatives wished to present Sweden as morally superior to the others, and to the colonial powers. However, in reality, this double-edged policy complicated life for those working in the field of Swedish aid. While appearing formally to be neutral in negotiations, the Swedish representatives instead had to hold informal negotiations to ensure that Swedish enterprises won the contracts. Furthermore, the distancing from the colonial power see more of a rhetorical twist, as when on site in Tanzania, the Swedish representatives did their best to get hold of knowledge from the British who had worked within the colonial context, and even based project proposals on recommendations from these persons.

The second context that I have highlighted is the Tanzanian transition from colonial territory to an independent country, as well as from colonial era to development assistance period. This implied that from depending on Great Britain for finances and technology, the Tanzanian government could now play off different donors. As Mukandala has described, during the 1960s the Tanzanian government tried hard to get the best out of interested donors from both East and West.\(^1\) While access to Tanzanian sources has been limited, traces of Tanzanian actors are found in Swedish sources. These show that the Tanzanian government representatives did its best to push ahead, taking its own initiatives. However, when it came to a specific question – the Wami River project – the Tanzanian government had to stand back as pressures came from both Sweden and the World Bank to go ahead instead with the Great Ruaha power project.

The third context that I have discussed in Part Two regards the design of the Great Ruaha hydropower scheme. The major emphasis has been the question of single-purpose versus multipurpose schemes. While the Tanzanian government was first and foremost interested in multipurpose schemes (the Wami River project being the ultimate example), it had to yield to the pressure from SIDA, supported by the World Bank. Within the Great Ruaha power project, the ideals within the Swedish hydropower sector - water and land use for power production as prevailing over other uses – were adopted, materializing in the technological design of the hydropower plant and reservoir.

\(^1\) Mukandala (1999)
Finally, what my analysis of the key actors has shown is that the institutional boundaries were transgressed. The analysis on an individual level shows that it is hard to talk about Swedish, Tanzanian or World Bank actors as institutional actors as the persons involved behaved differently within different contexts and at different times. Social and professional networks were important, as well as the individuals’ personal backgrounds, beliefs and settings. However, what stands out as the most important factor in the decision-making process and the reason for the decision to construct the Great Ruaha power project and its being designed the way it was is the massive funding available within the setting of development assistance. Hence, in a way, on a meta-level, the Great Ruaha power project can be seen as a merger between a technoscientific paradigm in regard to large-scale hydropower and a Swedish development assistance paradigm.
Part Three

TECHNOSCIENTIFICS AND “DEVELOPMENT SCIENCE”
Fig. 37. Bhole Chacha Mwita, Fishermans, at Chamusisile landing station by the Mtera Dam. Photo: the author, Nov. 2000.
With its almost complete draw-down and consequent wide muddy shoreline, Mtera reservoir will be of little or no use for fisheries, for settlement or for watering animals, stock or game. Except very occasionally when full, the dam will not even be attractive to look at. Altogether therefore Mtera dam seems justified only to justify the development of Kidatu to its full 200 MW capacity: altogether Mtera dam will be wasteful of water resources and wasteful of good fertile land, 600 km² – an area the size of Bahi swamp and just as wasteful. Large as it is Mtera dam will not even contain the largest floods which is experienced every 5-6 years. Some alternative to Mtera must be found even if it is more expensive.¹

The most extensive physical manifestation of the Great Ruaha power project is the Mtera reservoir, which, at its largest, is designed to cover 660 square kilometres of land. The storage capacity is 125 million m³. Compared to large reservoirs in the rest of the world it is a mere pond. For instance, the biggest hydropower reservoir in Sweden, Suorva in Sapmi, can hold almost fifty times as much water as the Mtera. However, while the Suorva dam with its depth of up to 130 metres covers only 242 square kilometres, the Mtera reservoir is extremely shallow.² Ranging from a mean depth of 6.2 m at its Full Supply Level (FSL) to only 3.2 m at its Minimum Supply Level (MSL), the Mtera reservoir resembles a puddle on bitumen, growing larger and stretching out over the landscape when it fills and leaving kilometres of muddy shore line when it loses water.

Taming the “exotic beauties” formed a part of the ideal of the Swedish hydraulic engineer, the vision being the possibility of controlling nature, in this case the rivers, and turning it into a producer of electricity. However, as in any other hydropower construction, “controlling” the Great Ruaha River, turning its flows into electricity, implied knowing about water flows in the whole Great Ruaha catchment area, and their size and regularity for at least half a century ahead. Another important thing that “control” implied was knowing and planning for the sediment transports, which in tropical areas is often a rapid process. The silt carried by the

¹ SRA, F1AB 1393, Copy of confidential letter from Buchanan to Devplan/ Letter from Stig Regnell, SIDA, DSM, t SIDA, Sthlm, Feb. 23, 1972.
² The largest dam on the African continent by reservoir capacity is the Kariba dam on the Zambesi river (Zambia/Zimbabwe) with a storage capacity of 180 billion cubic meters. The artificial Lake Volta in Ghana, constructed for hydroelectric power generation and completed in 1966 can store up to 148 billion cubic meters and covers an area of 8,502 square kilometres. World Commission on Dams; Volta River Authority, l (April 12, 2007); Hammar and Ljungqvist (2000)
river and deposited in the reservoir severely diminishes the capacity to hold water and can ruin a hydropower scheme within a few decades.¹

The initial quotation is from a letter by Buchanan, a British senior executive engineer at the water resources division of the Tanzanian Ministry of Water Development and Power in 1972, during the planning process for the Mtera reservoir. In this letter Buchanan discusses the problem of controlling the waters of the Great Ruaha River and its tributaries. He argues that the Mtera Dam is to become an enormous waste of fertile land, while still not capable of holding the largest floods expected twice per decade. Swedish hydropower constructors may have known a lot about the rivers in their own country, and what it would take to tame them. However, while Buchanan represented Britain’s colonial experience, science and close links with the Tanzanian territory dating back to the early 1920s (and before), the Swedish development assistance development engineers and decision-makers had very little experience and knowledge of the Tanzanian waterscapes.² One could imagine that the knowledge gathered within the colonial period would have been transmitted to the newcomers, and in this case to the Great Ruaha power project. But, in the optimisms of the development assistance era and the period of distancing from the former colonial power, the warnings and alerts of Buchanan were ignored by all the decision-making counterparts involved - the Swedish development assistance agency, the World Bank and the Tanzanian government.

² Using the term “waterscape” instead of “landscape” implies an emphasis on the importance of water in the African context. Cf Hoag (2003), 3: “Where bodies of water dominate a geographic region and are the foundation for its agricultural, social, and economic systems using the term landscape makes little sense for what one seeks to understand is not the relationship between people and land, but between people and water. In such regions, the term waterscape more aptly captures the processes of environmental change induced by the prevailing hydrological cycle. Whereas landscape evokes stationary images of expanses of dry land, waterscape implies fluidity, motion, and change. By shifting the focus of research in these areas from the terrain to the water that shapes it, historians are able to illuminate the subtle differences between landscapes and waterscapes.”
Above, Fig. 38. the Mtera reservoir at its lowest, MSL; the water is visible on the horizon from the village of Chibwegere. In 1997, the water of the Mtera reservoir came all the way up to the village, destroying houses. Fig. 39. Elias Nicklas Helile, village chairman, (below) marks the spot reached by the water. Photo: the author, Nov. 2000.
A hydropower scheme is a complex technoscientific artefact, with numerous aspects tied in, and to state whether a specific scheme has been a failure or not is tricky (as with any technoscientific artefact) and highly dependent on who is the judge and how long has elapsed since commissioning. Two decades after finalizing the Mtera reservoir, it is possible to establish to a certain extent if Buchanan was right or wrong. Regarding the fishery prediction, it seems that Buchanan’s warnings proved wrong. At the time of my visit, the Mtera was at its lowest. This was the prime time for the local fisher people, I was told. The fish were easily accessible. However, in other respects, Buchanan’s warnings seem to have been proven right. For the state power company, Tanesco, and for consumers of electricity, the low water levels cherished by the fishermen and women signal bad times. A few days after I left, the outlet was closed and load shedding began in Dar es Salaam and other cities connected to the national electricity grid. In 1997 conditions were the opposite. It was the time of El Niño, when the water would not stop flowing. The dam’s manager had to open the sluice gates in order to avoid a flood disaster. An amount of water equal to the contents of two Mtera dams had to be spilled. In the village of Chibwegere, the flood water rushed up to the houses and destroyed some of them.

Besides the problem of not being able to contain large floods, Buchanan argued that the Mtera reservoir would also suffer problems due to the extreme evaporation in the area. Finally, he maintained that for the reservoir to be able to receive the water needed for the designed electricity production, all use of water upstream would have to be restricted, causing difficulties for the inhabitants and the state farms. In these respects, the warnings of Buchanan seem to have been correct. Since the early 1990s, less than a decade after completion, the Mtera Dam has regularly been short of water. For long periods of the year there has not been enough to match the installed generating capacity, leading to power rationing in Dar es Salaam, inquiries into the possible reasons for the ‘lost’ water, and exhortations to the population of the catchment area of the dam to save water. Another suggested explanation of

2 The term “El Niño” is used to refer to the pronounced weather effects linked with extremely warm sea surface temperatures interacting with the air above it in the eastern and central Pacific Ocean. “El Niño” is thus a climatic phenomenon, appearing about every four years, and in extreme cases it may bring about severe flooding or droughts around the globe. See for instance US National Oceanic and Atmospheric Administration (2007)
why there is too little water in the Mtera Dam has been that it is a question of politics. The use of the main complement and alternative to hydropower, diesel power plants, is very costly to the state power company. In 1995, the first multiparty elections were held in Tanzania. After more than thirty years of unchallenged political power in the one-party state, the ruling party faced political opposition and the risk of falling out of office. In newspaper debates and cartoons, it is claimed that at times of water scarcity coinciding with election year, the government priority was to please the electorate by using all water in the reservoirs until, and only start power rationing after having secured a successful outcome at the general elections. A Swedish engineer with three decades of experience from the Great Ruaha power project claimed that the lack of water in the reservoir was due to management problems, as the government did not have enough of capital to finance the complementing the diesel power plants to save water.¹

[Fig. 40. Picture and headline from a Tanzanian newspaper, during the load shedding in November 2000. The African, Nov. 28, 2000]

Whether a question of politics, badly calculated water flows, excessive water consumption or unforeseen population growth upstream, or even a mixture of all these reasons, it is obvious that the planning of a large-scale hydropower plant is a matter of great complexity. To this, ¹ Sten Lööf, Pers. interview, Oct. 10, 2000.; Power Problems: Mkapa’s administration to blame, The African, Nov. 28, 2000.
the planning and construction of the Great Ruaha power project within the framework of development assistance has added an extra dimension.

Objective, method and structure

In the introduction to the dissertation I presented the discussion on historical studies of colonial expansion in relation to science and technology, identifying three main themes: the role of technology as instrument for expansion and domination of new territories, failed attempts of technology transfer to the colonies, and technological capacity as a measure of civilization. These themes have been present in different ways throughout the study. In Part One, chapter two, I discussed how technological capacity and specific technology, mainly male-dominated sectors in Sweden, were used as a measure of development and also as an argument for exporting Swedish technology within the framework of development assistance. In Part Two I the theme of technology as an instrument for expansion and domination of new territories was approached. I here showed that that promotion of a certain technology, large-scale hydropower, was used by the Tanzanian government partly as a means to achieve independence from the former colonial power, but that at the same time, it led to Sweden replacing the former colonial power by establishing itself within the Tanzanian hydropower sector. The theme failed attempts of technology transfer, is to be approached in Part Three. Claiming failure or success for technological projects is complicated as it depends on an agreement on the purpose of the project to begin with. However, although the Great Ruaha is an existing hydropower scheme that is actually running from several aspects, can be argued to fall into the category of failed attempts at technology transfer. First of all, the scheme suffers from continuous water shortage, there is not enough water to feed the power plants. Moreover, it is a large-scale hydropower scheme that has implied the use of vast amount of territory as well as consumption of much needed water resources for agricultural production. The construction of the Great Ruaha has led to conflicts on water resources, displacement of people as well as problems health for the people living in the area.

1 Cf Dahlström/Cuellar/Peterson (1997); Kasumuni (Feb. 21, 2006); Mosoba (2006); Kasumuni (May, 3, 2006)
With the intention of understanding why the Great Ruaha scheme has brought about all these problems and conflicts, the objective of Part Three is to discuss the question of what kind of knowledge, and whose knowledge, of the waterscapes and water resources related to the Great Ruaha River, that formed the basis for the decisions taken by the Swedish government to finance the Great Ruaha power project in 1970 and in 1974. In other words, the technoscientific basis for the Great Ruaha power project is analysed. As shown in Part Two, before the decisions were made to finance the project and go ahead with the construction process, a number of studies were made by Swedish engineers and scientists. Parallel and prior to this, other studies had been made. Tanesco and its in-house consultants, engineers and scientists employed by the British Balfour Beatty and Co Ltd, had made several studies, and in the 1950s the whole Rufiji River basin, of which the Great Ruaha River basin forms a large part, had been studied through the FAO Rufiji River basin survey. This was not the only knowledge that existed regarding the Great Ruaha River and its catchment area. Knowledge of the water flows and sedimentation in the Great Ruaha and its tributaries had been acquired even prior to that, during the pre-colonial period as well as during the German and British colonial periods. While this knowledge did exist, the problem was the locating of the results, in the context of the development assistance era. For instance, in 1969, as in Sweden, in Tanzania and at the World Bank preparations took place for the decision to proceed with the Great Ruaha power project, Robert W. Kates argued in the article “Water as a Focus for Rural Research”, published in the Canadian Journal of African studies, that there was substantial knowledge about the water resources of Tanzania. Kates argued that although “modern stream gauging” had at this time been at work for only 15 years, there were “scattered records of stream flow and flood heights from railroad bridges, mission stations, and agricultural experiment stations” which could be a complement in time and space for information gathered from the new gauging system. According to Kates, 350 recorded well logs could be analysed for information on underground water resources and data existed for over 1,350 rainfall stations, of which only a very small number had been examined, “usually in the context of East Africa as a whole and on highly generalised map scales of 1:2,000,000”. Kates points at something of great importance for many recently independent countries in the development assistance era: While knowledge about the territory existed, this knowledge was scattered. Each period had had its own way of producing knowledge, and the knowledge concerned was

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1 Kates (1969)
2 Ibid.
3 Ibid.
not always easily accessible. Nor was it always of interest to the newcomers, coming with
new ideas and proposals for “development” based on their own ideals.

To analyse the technoscientific basis of the Great Ruaha power project, I have opted to use the
term “development science”, which I argue has close connotations with the term “colonial
science”. “Colonial science” is amongst postcolonial authors considered not only as science
practised in the colonies, but as a specific kind of knowledge that was colonial in the way it
was designed, as representing a Eurocentric perspective, bringing in European domination and
also shaping the minds of the colonized peoples. Using the term “development science” calls
for a discussion regarding the nature of science, departing from the position that science is
neither neutral nor objective, and recognizing that locality and position play important roles
in the creation of science and technology. Within the discipline of history of science, David
Wade Chambers and Richard Gillespie have argued that while mainstream history of science
has accorded little interest to locality, historians of science dealing with colonial science have
found that the locality is the main important issue:

[Historians of science have, on the whole, shown little interest in the complex interactions of
science and place. Exigencies of place might have been seen to present obstacles against, or
encouragement for, doing or applying science, but so-called externalist explanations have
been effectively isolated from the central processes of knowledge construction. On the other
hand, colonial science historians very early began to realize that their stories were made
interesting primarily by parameters of locality.]

The discussion of the locality and position of the producer of science and technology is
prevalent in feminist STS. While recognizing that power positions are indeed important in the
creation of scientific realities, the discussion within feminist STS has revolved around
whether certain positions, outside the recognized institutions of Western scientific tradition,
may contain a better or fuller understanding. In the analysis of post-war development
projects in the “Third World” several authors that can be said to be working within the field
“gender, environment and development” have raised questions on what they refer to as

1 Mudimbe (1988); Adas (1989); Headrick (1981); Bonneuil (2000), 278; Tvedt (1993)
2 Chambers / Gillespie (2000), 228. For further discussion on the importance of locality within the field of
History of Science see also Fors (2006); Shirran (2006); Widmalm (2006),
3 Harding (1997); Mies/Shiva (1993); Rydhagen, (2002), 21.
“Enlightenment philosophies” and their role in the failures of policies, as well as their role within the current environmental crisis in those countries.1 Sandra Harding writes:

The Enlightenment philosophies defined the growth of scientific knowledge and the social progress this was supposed to bring in ways that devalued women, nature and “backward cultures”. The new philosophies of knowledge and power emerging from the gender, environment and sustainable development discussions and the analyses on which they draw represent the return of the Enlightenment’s others – the return of women, nature and “backward cultures” from positions of more than instrumental value (at best) in modernity’s thinking.2

Within the feminist debate on Enlightenment philosophies and their role in post-war development policies, there exists a discussion on whose knowledge is to be brought back, how, and by whom and what it should be called. Authors of postcolonial and feminist technology studies have referred to “science” in all contexts as “local knowledge systems”, thus putting knowledge produced at Western universities on a par with knowledge produced in any other context.3 For instance, the political scientist Arun Agrawal has challenged the concept of “indigenous people’s knowledge”, as different from Western scientific knowledge.4 Agrawal argues that the attempts to distinguish two different systems – categories – of knowledge, “indigenous/traditional” versus “Western/scientific” derives from the idea that the different categories have elements that can be characterized and thus separated. Agrawal does not consider this separation of characteristics possible. The attempts at distinction fail on all levels of importance to this definition of science and in many cases, the two categories have similarities. According to Agrawal, to separate them makes no sense. Instead, Agrawal argues that it “makes much more sense to talk about multiple domains and types of knowledge, with differing logics and epistemologies”.5 Furthermore, according to Agrawal, the distinction is more of a political instrument than anything else, used to enforce certain values. Introducing “indigenous knowledge” is used to support disadvantaged peoples in development processes. In this sense, Agrawal suggests that a basic view of knowledge be

1 Harding (1998)
2 Harding (1998), 147.
3 Harding (1998)
4 Agrawal (1995)
5 Ibid.
introduced – knowledge as being useful in all cases, and used for different purposes: “It is only when we move away from the sterile dichotomy between indigenous and Western, or traditional and scientific knowledge, that a productive dialogue can ensue which focuses on safeguarding the interests of those who are disadvantaged”. Christophe Bonneuil argues that during the late colonial and early postcolonial period in Africa repression of indigenous – local knowledge – was not caused by “ignorance, blindness caused by scientist faith, the colonial bias, or the professional ethos of experts” – he argues that disregarding the competence and knowledge of African farmers formed a part of the affirmation of the state with its agents and institutions – whether European or African.

Hoag, studying the context of the FAO Rufiji River Basin study, has taken up the discussion of “local knowledges”, within the production of knowledge on the water flows of the Rufiji River from colonial period to development assistance era. Hoag argues that “local knowledge” can, besides the knowledge provided by “indigenous people”, also be discussed

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1 Ibid.
2 Bonneuil (2000), 278.
in the sense of knowledge produced by colonial district officers and scientists familiar with a
specific place. In this sense, Hoag approaches the discussion on “locality” in regard to
knowledge, maintaining that representatives of the British colonial government were closer to
the micro environments through long periods of living in the area and meeting the local
inhabitants. While colonial science was paternalistic in its nature, its representatives
considered values important to the subjects of the colony, and could accordingly provide a
fuller understanding. Hoag uses the term “development science” in contrast, and argues that it
was detached in its nature as it depended on time-limited interventions, bringing in foreign
experts with no personal experience of the area, and the methods of application taught at
Western universities and aspiring to bring about “development”. The result, according to
Hoag, was misconceptions of the micro environment and a false sense of being able to predict
and control the Rufiji River.¹

In the introduction to the dissertation I introduced the feminist STS scholar Haraway and her
proposal of “situated knowledge” and “partial perspectives” as a way to strike a balance
between constructivism and complete relativism. In my use of the term “development
science” I signal a certain distance from “colonial science” while at the same time
maintaining that some of the ingredients of colonial science remain. I argue that
“development science”, while using the status and power provided by Western scientific
training and positioning at Western universities, carries aspirations and the vision of
“development” or “progress”. As colonial science, it has a specific political context. The
development science is performed within the context of development assistance projects,
involving scientific institutions and scientists linked to the donor countries involved. Thus,
within “development science”, certain partial perspectives are given priority over others.
“Development science” has a specific power position gained by virtue of the persons involved
having been trained at Western universities, the massive funding involved in the projects, but
is also a product of its specific development assistance context. This implies that for instance
Swedish “development science” may differ quite greatly from the “development science”
produced within another country’s development projects.

Secondly, in my case study I highlight the importance of the individual actors involved, the
scientists and experts and their space for manoeuvre within the context of “development

¹ Hoag (2003), 111.
science”. I use the term “scientific alibi” meaning that the position and status attached to a person on the grounds of his/her scientific training may lend more weight to the final reports produced than the scientist has actually justified with what he/she has written – and this may apply to the scientific studies made in relation to the Mtera reservoir. An example of a “scientific alibi” is expressed in the words of Claude Mung’ongo, describing his experiences as researcher in the 1990s in a hydropower project in Tanzania, the Pangani Falls Redevelopment, where the engineering consultant was the Norwegian enterprise Norplan:

_We never saw the final report that Norplan compiled. (...) We were taken in as “rubber stamping” local researchers who might be referred to at a later date - the company could say they had several local scientists who agreed that this project was safe._

While Mung’ongo claims he was used as a “rubber stamping local researcher” – or as I prefer to name it, a “scientific alibi”, being a local scientist, the nature of the Swedish scientists involved in the Great Ruaha power project, was different, as they were part of the engineering consultant company and had a different power position. Yet, the fact that they were individuals with different visions on how science should be performed, on the one hand, and part of a development assistance project, on the other hand, makes the position more complex. Although individual scientists, engineers and experts may see discrepancies and problems within the grand project, they may be treated as little more than minor irritants, and unable to provide enough resistance to overthrow a whole development assistance project, driven by a massive funding and decision making structures on governmental and international financing institution level.

Part Three is divided into two major sections. The first section contains a discussion of the existing studies and observations of the catchment area of the Great Ruaha River, from the pre-colonial period up to the 1960s, with the objective of analysing the knowledge produced about the region as well as the settings for this knowledge: who produced the knowledge, in which contexts, and for what purposes. In this section I also set out to identify the knowledge existed at the time when the Swedish development assistance representative entered the scene. The sources used for this purpose are the reports made by the precolonial and colonial travellers, as published in journals and in books, accessible in Sweden, Great Britain, in

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1 Mung’ongo (1994)
2 See also Usher (1997)
Tanzania and at the FAO library in Rome. With this as a backdrop, in the second section I analyse the work done by the Swedish contractors in order to go ahead with the Great Ruaha power project and the role of the development assistance context within this setting. For this purpose, the SIDA and the SWECO archive in Stockholm are the major base for analysis, as the Great Ruaha power project is closely followed on project level. Finally, there is a chapter on the invisibilised peoples of the Great Ruaha power project, based on project studies and discussions and interviews that I made during my visit to the Mtera powerplant and reservoir in 2000.

[Fig. 42. Map of the Usangu plains, the Southern Highlands of Tanzania, part of the Great Ruaha River catchment area. This map, from 2006, shows the location of rice farms, competitors for the water flowing into the Mtera reservoir. The inset is a location map of the Great Ruaha River, and how it flows into the Mtera—here called “Lake Mtera”. Source: Mtahiko et al.]
9. Earlier knowledge and contexts

The documented historical knowledge about the region, the catchment area of the Great Ruaha River, derives from pre-colonial and colonial travellers and researchers as well as colonial district officers, from the late 19th century. A rapid archaeological assessment of the Mtera region before inundation indicated the evidence of societies dating back 40-50 000 years. Local history is transmitted via oral traditions, in which the waterscapes play an important role. The water flows have been highly unpredictable, the rivers sometimes flooding and destroying crops, at other times drying up.

The area through which the Great Ruaha River flows and drains is located within the Southern Highlands. The peoples living in the area of exploitation in the 1960s were mainly Masai, Hehe, Gogo, Sangu and Bena, although this division of the population into specific clans can be contested due to the complex history of migrations and absorptions. The Tanzanian mainland has for thousands of years been a point of encounter between many different ethnicities, and in the Southern Highlands, the ethnic situation has never been static. The geography of the Southern Highlands and the whole Great Ruaha catchment area is diversified, containing both well watered land as well as land of more difficult features. Yet another important feature is the shift between highlands and plains.

In this chapter I discuss pre-colonial and colonial descriptions of the waterscapes of the Southern Highlands. I refer mainly to the published British sources which were presented at and published by the Royal Geographical Society in London. The majority of the sources regarding pre-colonial and early colonial Africa are largely the product of the vision of white men financed by the state or private companies going on something often described as dangerous adventures, “opening up” the African continent. Although the European white male dominated, there were a few European women travelling about during the pre-colonial and early colonial period, either following their husbands or travelling alone at their own expense.

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1 Tanesco Archive, DSM, F.T. Masao, Great Ruaha power project, Archaeological survey and salvage work at Mtera, Final report, August 1982.
2 Hoag (2003), 31-32, 155-156; Tagseth (2000)
3 Wilson (1958)
4 On the Royal Geographical Society, see for instance Barnett (1998); Cumming, (1977)
as they were not entrusted with investigative or exploratory assignments by the state or private companies on their own.¹

Another important context in the travel and research depictions of Africa is the dependence on local inhabitants. While often described as undertaking dangerous and heroic projects, sometimes with fatal outcomes as an inevitable part of the (male) heroic adventure, the travellers were not actually discovering anything new. They were travelling in other peoples’ territory and backyards.² During the pre-colonial period, the colonial period and, equally, the development assistance era, outsiders have travelled and documented the region with the help of local inhabitants, without whom they would never have been able to go anywhere, much less understand what they encountered. In the pre-colonial period the travellers depended on porters and guides, often accompanied of over 100 hundred inhabitants of the region. Again, Valentin Mudimbe’s term “colonial library”, as a framework for the production of knowledge on Africa and Africans, makes sense. It is very easy to adapt to this library, and adjust to the “scientific” reports as “unmarked gaze” from nowhere, when providing historical backgrounds.³ Having to rely on this “marked gaze” being a product of the “colonial library”, in my narrative I attempt at visibilising this part of the history.

Messieurs Burton, Elton, Thomson, Giraud and Beardall “discovering” the Great Ruaha

After the Portuguese attempts to establish themselves on the Tanzanian coast in the 16th century were blocked by the Omani empire, it took several hundred years for another European power to attempt to settle in the region. The Tanzanian region had become interesting to all commercial powers in the late 18th century for trade in slaves and ivory, with Zanzibar as a centre for the commerce. While in Great Britain an act was passed to abolish the transatlantic slave trade in 1807, other commercial aspects of the African continent were still of interest. The Omani sheikh Said ibn Sultan (d.1856) established himself in Zanzibar in the

¹ Mary Hall was the first woman to cross Africa, travelling from south to north, covering 7000 miles/1100 km in three months. From the journey, she published a book: A Woman’s Trek from the Cape to Cairo (London, 1907)
² See also Domosh (1991); Wright (1971); Koponen (1988)
³ Haraway (1991) For a discussion on the pre-colonial and colonial travels and visions see for instance Barrett-Gaines (1997)
1830s and at the same time France, Great Britain and the United States signed commercial treaties with the Sultanate. Caravans travelling across the Tanzanian mainland were organised from Zanzibar, for trade in slaves, ivory, salt and copper. Following the routes of the caravans, European adventurers and explorers (mainly male) started travelling around the mainland.1

The first European traveller of whom the accounts are available is Richard Burton, who journeyed through central Tanzania in 1857, sticking to the caravan route to the north of the Great Ruaha River and meeting people he referred to as “Hehe”. On his trip, Burton brought along scientific equipment, including instruments to measure rainfall and evaporation.2 To make the journey, and carry all his equipment Burton depended on a good deal of local labour:

As domestic servants I had brought two Goanese “boys”, who received exorbitant wages for doing a little of everything and nothing well; two negro gun-carriers were also engaged at Zanzibar. Said bin Salim, the Ras Kafilah, had, as attendants, four slaves, a boy and an acting wife, whose bulky beauties engrossed his every thought. The Baloch escort numbered thirteen men till one died at Unyanyembe: sent to protect us, they soon deemed it sufficient labour to protect themselves. Twenty negro slaves and twenty-five asses formed a mass of stubborn savagery which proved a severe trial of temper; and finally thirty-six Wanyamwezi return porters, of whom two died of small-pox and two were left behind when unable to advance, carried the outfit.3

While the journey had set out with a certain number of porters and escorts, it was not the same “personnel” that returned, or as Burton describes it:

The party did not long continue compact; and the reader may derive some idea of my troubles from the fact that, during our eighteen months of travel, there was not an attendant, from Said bin Salim to the most abject slave, who did not plan, attempt, or carry out desertion.4

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1 On precolonial exploration in (East) Africa see Bridges, (1968); Bridges, (1963); Bridges(1973); Stone, (1988); Herbst (1989); Hargreaves (1960)
2 Burton (1860); Farwell(1963), 146, 147; Redmayne (1968), 38.
3 Burton(1859), 16.
4 Burton (1859), 16.
The journeys – and troubles with personnel - of Burton were experienced also by the British consul J.F Elton who entered the Southern Highlands two decades later and according to his field notes visited the catchment area of the Great Ruaha River. Along the way, at Lake Nyassa, Elton met H.B Cotterill, son of the Bishop of Edinburgh, who had set out on a journey for mainly commercial reasons.\(^1\) Together they travelled through the Konde and Usangu, to arrive at the caravan route used earlier by Burton, the purpose being to continue towards the coast. Elton never got that far, as he died of a tropical disease a few kilometres before reaching the caravan route. In the accounts of Elton and Cotterill, the landscapes of the Southern Highlands that they found are described as “the Garden of Africa”, due to the abundance of fertile lands, game and fish as well as the large population making use of this abundance:

*Cattle abound: flats, hillsides, and mountain sides are under cultivation and serrated with hedgerows, and pathways to high elevations, the main valleys being appropriated for grazing.*\(^2\)

Elton and Cotterill describe a land well used by the inhabitants, with access to water the common feature. On almost every page, the importance of water is emphasised as Elton and his co-travellers cross lakes and rivers, bathe in crystal clear or cold waters and confront heavy rains.\(^3\) As the expedition journeyed from the Konde land towards the Arab caravan trade route they travelled west of the Usangu plains, to avoid the ongoing war as the Wahehe attempted to repel the Wasangu. They were hosted by Merere, the Wasangu chief, who also provided them with carriers for their continued journey.\(^4\) When Elton died, his records and sketches were taken care of by Cotterill, who completed the notes to include the journey to Bayamogo, edited them and published them on his return to England.\(^5\)

In 1878 - 1880, another British expedition set out to explore Tanzania, from Dar es Salaam to Lake Nyasa. This was the “East African Expedition”, which was the first and last expedition sponsored by the Royal Geographical Society’s African Exploration Fund. The expedition

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\(^1\) Cotterill, (1877-1878), 233. See also Helly (1969), 207-208.
\(^2\) Elton (1968), 331.
\(^3\) Ibid.,327ff. Cotterill (1877-78), 248.
\(^4\) Elton, 345-385, 361.
\(^5\) Cotterill (1877-78), 242; Helly (1969), 208.
was headed by the renowned Scottish geographer Keith Johnston. What the African Exploration Fund had asked Johnston to do was to collect information to serve as a basis for route maps, gather scientific data on meteorology, geology and natural history, and obtain ethnological and commercial data. The plan was to make recommendations regarding the feasibility of constructing and maintaining a telegraph line in East Africa. British imperialists, with Cecil Rhodes in the forefront, had plans for a telegraph line from Britain’s colony in Egypt to the holdings in the very south of the continent – the Cape Colony.¹

The East African expedition consisted of 150 male porters, one woman and five donkeys, besides Johnston and his 20-year-old assistant Joseph Thomson, and a male doctor referred to as Dr Kirk.² Unfortunately, at the age of 35, Johnston, like his predecessor Elton, fell victim to tropical disease (in Johnston’s case a combination of malaria and dysentery). He was buried in a village near the confluence of the Great Ruaha and the Rufiji.³ The expedition was then taken over by Thomson, who continued all the way to Lake Nyasa and returned to write a two-volume account of his journey and to give a speech to the Royal Geographical Society.⁴ While Johnston never reached the Great Ruaha River to bring in a geographer’s impressions, Thomson briefly discusses the possibility of using the river for navigation. Thomson arrived on the Great Ruaha River and the Uhehe land during the dry season of 1879 (May 19th to August 29th), which gave him the impression of Great Ruaha as an extremely shallow river, having a rocky profile which he interpreted as implying great difficulty for navigation.⁵

At first sight the River Ruaha looks promising, but subsequent experience of it proves disappointing. Where we reached it, the breadth is about 150 yards, the depth, for 40 or 50 yards among rocks, 8 or 9 feet, the rest varying from 2 to 4 feet. It had yet a month before reaching its lowest, when it is reduced at its deepest to about 4 feet. It here flows about due north and south, but only for a mile, when it turns more to the east on the one hand and to the west on the other. But besides its want of depth, it has defects which will make it perfectly impassable even for canoes. About a quarter of a mile north of our crossing-place there are rapids; as much south, a rocky barrier stretches across, leaving only about 20 yards for the

¹ Cf. Strage (1973); Raphael (1936); Williams (1921),
² Thomson (1880), 102-122, 104,
⁴ Thomson (1881)
⁵ Thomson (1880), 102-122.
passage of the water in a swift current. A little further south there is still another rocky barrier, this time leaving only a number of small passages through which the water rushes. No boat or canoe would ever venture to pass through such a place.¹

While the Great Ruaha River was a disappointment to Thomson due to its low water flow, a quite opposite impression of the river was given by the French explorer Victor Giraud. Giraud, aged 23 at the time, travelled into the interior of Tanzania in 1883 with 120 men as porters, carrying a boat which was used to cross the Ruaha:

On 7th [February 1883], at the time when I least expected it, we arrived at the Ruaha, a big river running south and completely blocking the route. (---) The Ruaha has been crossed, I believe, upstream by Burton. I can’t remember what the illustrious traveller wrote about it, but after having had it described to me by the natives I did not expect a river 60 metres wide and 8 metres deep, with a strong current reinforced by rains. The water is red, “muddy”, filled with a “clayey silt” that the current tears from the two ravine sides, 3 to 4 metres high. It seems that during the two last days the level has risen 2 metres and will continue to rise. ²

Giraud describes an extremely violent river, pushing through the landscape and making crossing very difficult. Besides the description of the rising waters, Giraud describes another important phenomenon of the river; the sediment that it washes away from the banks and carries downstream.

While Thomson and Giraud had met the Great Ruha at its lowest and at its highest respectively, the great fluctuations between dry and wet season were recognized by William Beardall in 1880.³

We passed the junction of the river Ruaha. During the dry season the Ruaha brings down less water than the Uranga, and is very shallow; but I am told that during the wet season most water comes down the Ruaha.⁴

¹ Thomson(1880) 113-114.
² Giraud (1890), 102, 103, 117. (Translation from French by the author)
³ Regarding William Beardall see also Hoag (2003) and Havnevik (1993)
⁴ Beardall, (1881), 641-656, 650.
Beardall had set out to investigate the Rufiji River at the request of the Sultan of Zanzibar and learnt about the nature of the Ruaha River as the most important tributary of the Rufiji. Like his predecessors, he presented his findings in a European colonial scientific context, this being, in Britain, the Royal Geographical Society.

*German and British colonial studies of the waterscapes*

The growing knowledge of the interior of Africa spurred the European nations and individuals to seek to profit from the presumed latent fortunes. By the 1880s, European interests in the African continent had increased dramatically. With the 1884-1885 Berlin conference, intended to agree on a common European policy for managing the continent and decide which nation would control which part of Africa, the scramble for Africa was speeded up.¹ Part of the Berlin agreement consisted of a procedure for establishing possessions in Africa on territory not yet controlled by another European power. While Great Britain had gained great influence over the sultanate at Zanzibar, German commercial interests had acted faster on the mainland. A private company headed by Carl Peters travelled around the mainland and signed a number of “treaties” with local chiefs in the 1880s. With these “treaties” as a basis Britain claimed the whole region between the Indian Ocean and the Central African lakes. The “possession” was settled in a deal with Great Britain in 1886, while Zanzibar became a British protectorate. As the German private company was not capable of securing the “possessions”, the German state took over. Although determinedly resisted by the Hehe people of the Southern Highland region between the Great Ruaha and Kilombero rivers, by 1905 the area was sufficiently under German control to be known as “German East Africa”.²

The German attempts to profit from the colonised territory included amongst other an investment in a number of studies of the river basins for irrigation, navigation and hydropower. The German colonial administration had drawn up plans for irrigation schemes and consequently also surveyed areas in the Southern Highlands – including the Great Ruaha

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¹ Fourteen countries were represented at the conference in Berlin, November 15, 1884, lasting until February 26, 1885; Austria-Hungary, Belgium, Denmark, France, Germany, Great Britain, Italy, the Netherlands, Portugal, Russia, Spain, Sweden-Norway (unified from 1814-1905), Turkey, and the United States of America. See for instance Stone (1988); Herbst (1989); Hargreaves (1960)

² Iliffe (1969), 10-12, 18, 154; Redmayne (1968); Freeman-Greenville (1963)
River. Discharge surveys were carried out at the confluence of the River Kisigo and the Great Ruaha. Plans were also made for irrigation of the Pawaga plain.\textsuperscript{1} Using the river for navigation proved expensive and difficult, and initial investigations by the Germans with grand visions of large-scale irrigation in the Kilombero Valley showed it to be far too costly.\textsuperscript{2} However, certain attempts at irrigational development on the Lower Rufiji were made.\textsuperscript{3} No hydropower installations were built in the Great Ruaha region nor in the whole Rufiji river basin at this point. Outside the region a smaller hydropower plant was constructed on the Pangani River (Hale Falls) and the electricity was used for sisal industries controlled by Germans and other Europeans in that area.\textsuperscript{4}

\textit{Clement Gillman – bridging the German and British colonial periods}

After Germany was defeated in the First World War the Tanganyika territory was handed over to the British colonial power by a decision of the League of Nations. Although the Tanzanian territory was transferred to Great Britain, the knowledge assembled during the German colonial period lived on, embodied in one specific person, Clement Gillman in his different capacities over four decades. Dealing with soil erosion, water supply and population issues, Gillman brought experience from pre-war and post-war scientific communities in the territory, as well as from British and German schools of thought over the decades. The life and work of Gillman has been researched and published, to a large extent based on his diaries, in a biography by Brian Hoyle, to which I refer in this section.\textsuperscript{5}

Although of British nationality, Gillman had close ties with Germany, his mother’s native country, where he grew up. He studied engineering in Zurich, and initially spoke better German than English.\textsuperscript{6} In 1905, he was offered a position as assistant engineer with the engineering company Philipp Holzmann during the construction of the central railway in

\textsuperscript{1} Tilrem (1959), 2.
\textsuperscript{2} Gillman (1943), 97.
\textsuperscript{3} Havnevik (1993) 67ff, 263f; On hydrological surveys during the German colonial period see Tilrem(1959),)2; Sunseri (2003)For studies performed under German colonial period, see for instance Paasche (1913); Frey (1914)
\textsuperscript{4} Richards (1947), 22.
\textsuperscript{5} Hoyle (1987)
\textsuperscript{6} Ibid., 35-56.
German East Africa. Gillman’s task within this enterprise was initially to undertake the detailed survey work prior to the construction of the railway, going from the coast westwards to Lake Tanganyika. From 1905 until the start of the First World War, Gillman spent most of his time in Tanzania. For part of the time, his wife Eva lived with him on the sites, and their first son was born during this time.\textsuperscript{1} On the outbreak of the First World War, Gillman was discharged from his post with the Philipp Holzmann company. He and his family spent most of the war years at Tabora, where Gillman was held for a period as a civilian prisoner by the German colonial state. By 1917, when the allied forces had taken over the German East Africa, he was employed by the British administration to continue the work on the railway system. In 1918 he was promoted to Chief Engineer of the Military Railways of the Occupied Territory. Holding this position, Gillman’s responsibilities for the railways expanded along with his knowledge of the territory. By the end of 1919 he was proposed for and accepted the position as a railway engineer in the service of the British Government, now granted Tanganyika as a mandate by the League of Nations.\textsuperscript{2}

In the 1920s, Gillman undertook a reconnaissance survey for a possible railway from the main line at Morogoro, to the northern corner of Lake Nyasa, thus entering the Southern Highlands. The tour of reconnaissance lasted for seven months, of which 23 weeks were spent trekking through the landscape on foot. As on earlier tours, Gillman was accompanied by Eva. She acted as his assistant. 121 porters and assistants from the ethnic group Wanyamwezi, many of them having travelled with Gillman on his first journey in 1908, were hired for the trip.\textsuperscript{3} Like his pre-colonial predecessors, Gillman depended upon these porters/assistants especially on one of them, named Mataruma, who apparently organised the tour in detail:

\textit{No straggling, no disorder, clean and beautiful camps in readiness every day under the charge of Mataruma who travels a day ahead and rouses the local inhabitants.}\textsuperscript{4}

The main objective of the survey was to find out whether there were alternatives for linking the Tanganyika territory with Central Africa to the “Mporoto alternative” – going through the plains of the upper part of the Great Ruaha River, east through the Mbeya gap to the border near Tunduma, the route finally selected for the Tanzania-Zambia railway in the 1970s.

\begin{footnotes}
\item[1] Ibid., 56, 65-100.
\item[2] Ibid., 105-140, 145, 146, 149.
\item[3] Ibid, 186-196, 192, 194.
\item[4] Ibid., 188.
\end{footnotes}
During the survey, Gillman sent monthly reports back to Dar es Salaam. However, the reports discouraged the decision-makers of the colonial government, due to the difficulties of the landscape described.¹

While studying the Tanzanian landscape, Gillman developed an interest in geographical sciences. When he was on leave in England in 1926, he took the opportunity to present his experiences and observations to the Royal Geographical Society in London.² Referring to both German and British earlier studies on the Southern Highlands, he spoke of the geography of this area. He described potential for European settlement, including the use of water for agriculture and the ethnicity, density and livelihood of the population. He also pointed at the topographical features of the area surrounding the upper Great Ruaha, indicating possible use of hydropower. While optimistic about the possibility of development, Gillman ended his speech by stressing the need for further studies and arguing for continued investigation by experts. Although starting from the viewpoint of the possibility of European settlements, Gillman also discussed the conditions for the native population whom he considered in need of permanent access to water, as well as to a larger market.³

In 1928, Gillman advanced to the position of Chief Engineer of Tanganyika Railways, and continued his field experiences for the railways. In the 1930s Tanzania experienced severe flooding, destroying parts of the central railway. In consequence, Gillman gained a lot of experience of coping with flooding. His reflections on geomorphology and engineering resulted in a series of short papers. On some of the papers, he collaborated with Edmund Teale, the then director of the Geological Survey of Tanganyika Territory.⁴ Teale was just one person in the network of scientific researchers that Gillman developed during his career. Gillman had contacts, especially with geographers but also with other field-scientists, both in Europe and in Tanganyika and other African colonial territories. For instance, in 1936, he was elected honorary member of the Frankfurter Gesellschaft für Geographie und Statistik, and in 1937 he became president of the South African Geographical Society. Gillman was also involved in the establishment of a scientific journal for Tanganyika, “Tanganyika notes and records: the journal of the Tanganyika society”.⁵

¹ Hoyle (1987), 194, 195.
² The paper was published in the Geographical Journal, Gillman (1927)
³ Gillman (1927), 124. See also Hoyle (1987), 205-207.
⁴ Hoyle (1987), 172, 251-252, 263, 272;
⁵ Ibid., 315, 328.
At the end of 1937 Gillman, now aged 55, retired from his service with the Tanganyika railways and turned to geographical research. From 1938 to 1940 he was appointed consultant to the Tanganyika colonial government, a consultancy within which his extensive travelling through the territory continued, together with the writing of reports.  
During this period, Gillman also set out to compile a summary of the water resources of the territory. The work was sponsored by the Colonial Development Fund Committee, and the intention was to produce the report within three years, something only possible due to Gillman’s own field records from his earlier journeys. Due to his failing health, the work had to be prematurely abandoned and he had to deliver a report much smaller than he had intended.  

The finalized report, published in 1943, is a 136-page textbook in which Gillman presents a hydrographic description of the territory, together with a hydrologic analysis of precipitation, evaporation, condensation and run-off, as well as the interactions between water and vegetation. Gillman further discusses the impacts of the population on the water, vegetation and soils, and also the potential for water supplies for the local inhabitants, the “native communities”. Finally, he makes a number of recommendations on the use of the water resources in order to provide for future development of the territory, in these discussing both schemes worthy of support, as well as water organization and legislation. While a strong advocate of further surveying of the watercourses of the territory, in this report, Gillman quotes the experience of attempts during German colonial period as he dismisses all attempts at large-scale irrigation:

In Tanganyika Territory, as elsewhere, the layman is apt to shout for irrigation schemes without knowledge of their implications. (---) It all sounds so wonderfully simple and straightforward! To the more responsible minded, on the other hand, the whole problem of increasing the agricultural production of a country in a semi-arid climate by irrigation reveals itself as beset with a number of very grave difficulties and objections [...] Matters with regard to first cost, salinity and lack of suitable soils become even worse in those parts of the territory where, in the absence of perennial rivers, irrigation of the reservoir type would have to be resorted to. One is, therefore, forced to the conclusion that large-scale irrigation schemes should be left severely alone and that in the light of a recent fuller

1 Ibid., 334, 337.
2 Gillman (1943), 1-4.
3 Ibid., viii, 156.
understanding of the complications of climate, soils, hydrography and markets the early optimism of the Germans regarding the possibilities of such schemes can no longer be upheld.1

Clement Gillman was pessimistic about large-scale irrigation schemes. However, he was more optimistic about the use of the watercourses for hydropower, provided that the schemes were designed with caution in regard to sedimentation and the agricultural uses of the water flows. In his report Gillman devoted a chapter to the potential of hydropower, raising the issues to be dealt with before any projects are started. To start with, the differences between high and low water in the rivers were so great that power schemes would have to depend upon the “meagre volumes of the latter [low water] unless very costly and at present wholly unwarrantable projects for storing part of the high water are resorted to.”2 Gillman also discusses the impacts of human use (he writes “misuse”) of the vegetation in the highlands, which he argues results in bigger flood run-off and consequently reduces the permanent discharge.3 Finally, Gillman discusses the issue of sedimentation, as he states that the large amount of silt and sand carried by the rivers implies the need for construction of “sand traps” to avoid damage to installed turbines.4

After retiring from government service in 1940 for health reasons, Gillman continued to do water consultancies for sisal industries. In this capacity, he continued doing field research within sisal estates in the territory. He also wrote a number of scientific papers and reports on different subjects: water resources, vegetation, settlement, urban development transport history and soil erosion.5 During 1944-1945 Gillman spent a great amount of time in preparing a series of 25 maps mainly focusing on vegetation. He based the cartography on the large amount of source material available, as well as his own personal knowledge of the areas. The final map with its accompanying text was sent to the American Geographical Society in late 1946, and appeared in the Geographical Review in January 1949.6

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1 Ibid., 93-94.
2 Ibid., 97.
3 Ibid.,97-99; For a discussion on colonial science and Western views on indigenous people’s “misuse” of land as a cause of soil degradation see Conte (1999)
4 Gillman (1943), 97-98.
5 Hoyle (1987), 345, 357-360
After Gillman retired, and due also to the events of the Second World War, the hydrological investigations came to a halt. In 1941 the Hydraulic Department at the Public Works Directorate, in charge of water resources, was closed down. However, in the years after the Second World War, the British colonial government tried to find ways to exploit the natural resources of the territory. A number of scientific reports and handbooks were produced by colonial scientists, regarding the water resources for different uses: hydropower, flood control, rice cultivation and agricultural irrigation. The hydrological investigations were taken up by the “Directorate of Water Development.” In 1947 a ten-year development plan for the Tanganyika Territory at a cost of £19 million was approved by the British government. The development plan included several schemes for agricultural rehabilitation and development. One of the attempts which concerned the Rufiji basin has been investigated by Hoag, the Rufiji Mechanized Cultivation Scheme (RMCS) 1948-1956. Hoag describes how colonial administrators aimed to reorganize agricultural production on the Lower Rufiji by introducing tractors and block-farming techniques. However, the Rufiji Mechanized Cultivation Scheme failed, like the groundnut scheme before it (1947-1949), due to failure to use existing knowledge and understanding of complexities of the ecology as well as the social circumstances. The government schemes could not keep their local farmers, as these favoured their own farms and ploughing societies.

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1 Richards (1947), 3.
2 Debenham (1948); Savile (1945); Lacey / Watson, (1948); Sayers (1930); Moffett (1958) Hill/ Moffett (1955) See also Hoag (2003) and Iliffe (1979), 439-441.
3 See Richards (1947); Moffett (1958), 335.
4 J Moffett (1958), 130; Iliffe (1979), 439-441.
5 Hoag (2003), 49-54.
Conclusion

From the 1830s the European countries had established control over certain African coastal areas. Regarding the rest of the African continent, the Europeans did not have much knowledge, but there was evidence that the interior might be rich in minerals, which was of great interest to both individual entrepreneurs and European nations as well as to the Sultanate of Zanzibar. The pre-colonial travellers journeyed with the objective of finding out more about these potentials. The common feature for the European travellers, whether working for the Sultanate, on their own behalf or for their nation, was the reporting back to their respective countries by giving speeches to scientific associations and publishing articles in scientific journals. For the British male travellers, the Royal Geographical Society was the association to which their discoveries were presented to earn status and respect, and also from where their investigations received funding.

A common feature for the pre-colonial travellers was their mapping of the territory that they crossed, and their attempts to describe it in terms of potential for profit. Another common feature is their dependence upon the local population. To travel they relied upon over a hundred porters, and when lacking knowledge of local languages they depended upon guides for interpretation. For protection and shelter they depended upon local chiefs. Even the scientific information they collected depended on local informants. As for supplementary information, this also related to the documentation of the Great Ruaha River. Messrs Thomson, Giraud and Beardall all see the river at a specific moment, but they learn from others, not named in their account, or referred to as “natives” – meaning that the informants were local inhabitants of the region, or among the porters, many of them probably experienced caravan travellers – about the behaviour of the river at different times of the year.

The travels by the Europeans around the interior of Tanzania and the Southern Highlands, contributed to an assembled knowledge, published in journals and books, of the areas, the people living there and how they used the land, as well as how political contexts changed the landscapes by emptying extremely fertile areas due to fear of aggressive neighbours. The travellers also learned from the local inhabitants about the behaviour of the rivers. The Great Ruaha was known as a river that changed completely between different seasons, during the wet season rushing through the landscape, washing away sediment. This knowledge was
transmitted to and experienced by the pre-colonial travellers, who in their turn passed it on in their own time and to the future, in the form of presentations and published articles.

While the pre-colonial explorations of the Tanganyikan territory were much of a race between different European nations to discover potentials and establish control, the rationale for the colonial scientific investigations in Tanganyika was to make a profit from the territory. While there existed knowledge produced within different national contexts, at least in the case of Tanganyika, where two colonial powers, Germany and Britain, dealt with the same territory, these were linked by the work of Clement Gillman and his research network in Africa and extending to Europe. As shown by other scholars and as discussed in this chapter, within the Tanganyikan setting, a scientific arena based on Western-trained experts existed in the colonial period. They had collected extensive information on the watercourses and also had proposals for the development.
10. From colonial science to development science

The existence of scientific studies carried out during the colonial period, as well as during the pre-colonial period, does not imply that this knowledge was used in other circumstances. For instance, Hoag has argued that in the 1950s there was a break with this colonial scientific tradition as the first international development assistance science survey took place in the Rufiji catchment, the FAO Rufiji River Basin Survey report, published in 1961.¹ As this report became of major importance to the Swedish planners of Great Ruaha power project, I will analyse parts of it in this chapter. Besides giving the background of the Rufiji River Basin survey, I will go further into the survey methods based on how these are described by the authors of the FAO report themselves. Hoag has argued that the approach was “detached”, (depending on time-limited interventions, bringing in foreign experts with no personal experience of the area, using application methods taught at Western universities with the aim of bringing about “development”).² While supporting Hoag’s argument regarding “detachment” I focus on another important part, i.e. the scientists themselves and their performances as they describe them in the report. I show how the different experts in parts of the seven-volume report that became the physical manifestation of the Rufiji River Basin survey themselves stress that the study is not fully comprehensive. The scientists acknowledge that their studies are brief and in many aspects merely a first reconnaissance. They also argue that in the event of any further planning, more research is needed. The analysis indicates that the “detachment” of the foreign scientists or their Western methods might not be the actual problem, but rather the historical context and the authority that their names bring to a scientific study. The importance of the FAO RBS report lies in its appearance as a document of stated knowledge, carrying the names of Western-trained scientists of renowned institutions.

¹ Hoag (2003), 89-128.
² Hoag (2003)
The FAO Rufiji River Basin survey

Clement Gillman and other colonial scientists in Tanganyika had called for more investigations before going ahead with development projects. However, colonial administrators in Dar es Salaam and in London had been inspired by the large irrigation scheme developed under British colonial government in Sudan. By the early 1950s, the colonial government had experienced failures with its over-optimistic schemes for groundnut cultivation and mechanized cultivation, and the need for more thorough investigations before embarking on projects was recognized. With the problems of the Rufiji Mechanized Cultivation Scheme the need for scientific knowledge of the area was further highlighted.  

However, the scientific knowledge was not of the same kind as that envisioned by Gillman and his colleagues. The FAO Rufiji River Basin became the first survey in Tanganyika using modern methods, and also relying on foreign experts without specific knowledge of the environment they studied. After the Second World War, the way was open to ask for funding not only from the colonial office in London, but also from international agencies established in the aftermath of the war, namely the United Nations and its newly established specialised organisation for issues on food and agriculture, FAO. The process of introducing modern scientific methods was initiated in 1950, as E. Smith, the Director of Tanganyika’s Department of Water Development, proposed to the Minister for Natural Resources a six-month exploratory survey of the Rufiji River Basin. Smith considered the survey a first step for a basin-wide development plan. He wished to include contour-mapping, examination of potential dam and weir sites, an extensive aerial survey, and the establishment of hydrometric gauging stations throughout the basin. Realizing that his own department did not have the capacity to perform a survey of such extent, Smith suggested the recruitment of a team of outside surveyors. In 1952, the British governor Sir Twining turned to the FAO, the Food and Agriculture Organisation of the United Nations, with a request for a study of the water resources of the Rufiji River Basin. The FAO contracted Nicholas Simansky, an irrigation specialist with earlier experience at the Sudan Irrigation Department. After some preliminary investigations by Simansky, a deal was closed in 1955 between Tanganyika and FAO, and a study intended to produce a scientifically based multi-purpose project was initiated.

1 Hoag (2003), 90. Regarding the Gezira Scheme and other large colonial irrigation schemes see for instance Bernal (1997); Allen (1926); Adams/Anderson (1988)
2 Hoag (2003), 90.
3 Ibid., 102.
The Tanganyika Agricultural Corporation (TAC) acted as the administrative coordinator of the survey, while the FAO team, led by Simansky, was the lead technical agency – implying responsibility for the actual measurements and the writing of the reports. Besides the TAC, colonial governmental staff and research institutions in Tanganyika involved were the Departments of Geology, Lands and Surveys, Water, Agriculture, Forests, and the Department of Health, as well as district staff stationed throughout the basin. The survey also included the East African Meteorology Department in Nairobi as well as the Department of Overseas Surveys in England. The FAO team included members from fourteen countries; Australia, Austria, Britain, Canada, France, Holland, India, Italy, Lebanon, Norway, Poland, South Africa, and Switzerland.¹

Hoag argues that the FAO RBS was an “experiment in institutional cooperation previously untested in the territory”.² She describes how conflict arose at the very onset of the study, regarding priorities, time frame and expectations.³ While the different colonial research departments insisted that the survey should address their specific needs in terms of hydrological and agricultural data, the FAO vision was more of a whole river basin. The original proposal by Simansky, after his preliminary investigations, was a short-term survey to be conducted by a large group of experts managed by the FAO team leader – himself. At the FAO, there was growing interest in expanding technical assistance programmes to East Africa. The funds available were large in comparison to the colonial government’s own funds, and colonial administrators realized the power tied to the funds. Colonial administrators, closely in contact with the region, did not share the optimistic view of the potential for development. They did not think that the potential justified the large expenditure visualized by the FAO. Besides the costs and funds invested, a survey as proposed by Simansky would take up much of the time – and hence costs for salaries - of the Tanganyikan colonial staff. Colonial officials argued in letters to the Colonial Office in London – where the contract with FAO was to be signed – that any development of the Rufiji Basin would have to be balanced with the other regions as well as with the limited amount of financing and staff capacity available.⁴

¹ Simansky et al. (1961), I, 6.; See also Hoag (2003), 104.
² Hoag (2003), 100.
³ Ibid., 100.
⁴ Ibid., 100-101.
Initial disagreements were settled as the colonial administrators in Tanganyika managed to make some changes to the design of the survey. However, the conflicts continued throughout the survey period. Disagreements arose over the survey’s priorities and the responsibilities of the departments and agencies involved. While the colonial government representatives argued for the importance of hydrometric and agronomic data, the FAO survey team leader Simansky focused instead on topographical and geological investigations of potential dam sites. A clash
of survey cultures also arose. The colonial method had allowed the surveyors to spend long periods in the regions, and to interact with the people living there. The FAO team replaced this method with more of a fast problem-solving attitude. Hoag argues that during the FAO survey period, the colonial study method was abandoned in favour of the FAO method, and at the same time, on the administrative level - the colonial government became, in practice, the host of the FAO, instead of the partner the survey’s planners in Tanganyika had envisaged.  

Scientific insecurities, snapshots and images of control

When asked to set up a survey for the FAO, Simansky had started investigations in 1953. At this point he limited the scope to three areas: the floodplain of the Lower Rufiji, the Kilombero Valley, and the Usangu and Pawaga plains of the Great Ruaha River sub-basin. To establish potential for irrigation, the FAO team needed to obtain figures for water flows and sedimentation in the rivers, as well as to ascertain the character of the soils. To establish the figures for water flows and sedimentation transport, hydrometric stations were needed. Sixteen hydrometric stations already existed, most of them set up during the preliminary investigations by Simansky, others remaining since earlier work by the colonial government’s own hydrological investigations. During the survey period, the team set up in total sixty-five stations, and trained local inhabitants to take daily records from these. The local inhabitants, the majority of them Tanzanians – defined as “Africans” and a few missionaries, measured the water levels on a daily basis and at those stations where facilities existed, measured ground water levels and the water discharge in cubic metres per second. Daily climatic data such as temperature, evaporation and rainfall were also registered. The data collected was then put into charts and graphs by hydrologists and mainly female “computers” working in Dar es Salaam. The observations of the stations were then compiled by the Norwegian J. Otnes, and presented in the second volume of the FAO report. In the introduction to the report, Otnes brings up the problem of the reliability of the readings from the hydrometric stations:

1 Ibid.,102-104.
2 Hoag (2003), 109; Simansky et al.(1961), 7
3 Otnes (1960) part 2, 3,18; Hoag (2003), 110.
The African observers are, as a whole, found to be fairly reliable in their readings, when instructions were clearly given and duties not made too difficult.¹

Although not further elaborated in the volume, this brief statement, while formed within the colonial discourse and talking about “Africans” as a specific group of people instead of as a number of individuals with different backgrounds, education and capabilities, opens the way to two different perspectives. First of all, the local inhabitants were trained to perform certain tasks, but their readings might not be completely trusted. The instructions provided had to be specific and the tasks not too complicated. As the majority of the measurements were taken by “Africans”, the statement is of significance in this sense, as it indicates how one of the team experts partially undermines the basis for the report and its conclusions on a very important issue – the water flows. The second aspect is that while pre-colonial travellers and colonial scientists included the knowledge of water flows that they received from the local inhabitants, this was not the case in the FAO RBS report. The daily measurements made by “Africans”, being “fairly reliable”, were not complemented by any of the knowledge that probably existed among the local inhabitants about the behaviour of the river.

A similar problem appeared regarding the basis for sedimentation transport, although in this case it was not dependence on local inhabitants that was the obstacle, but rather the environment and the climate of the region in combination with the tiny budget for the investigations. Collection of data on sediment transport was the responsibility of S. Raadsma and was presented in the FAO second volume.² Raadsma, using the language of a trained scientist showing the basis for the analysis, starts his analysis by cautioning the reader that “some” investigations have been made³:

A comprehensive investigation of sediment transport is an expensive task which requires specially designed instruments and also qualified and trained observers. With the facilities that were available in Tanganyika the procedure had to be simplified to a very great extent.⁴

¹ Otnes (1960) part 2, 3.
² Raadsma (1960), part 1, 199.
³ Ibid.
⁴ Ibid.
Raadsma continues to describe the problems of recording the sediment transport, due to the
difficulty of travel during the wet season. He states that although 3000 water samples had
been collected from twenty rivers, the optimum method for the investigation was still not
accomplished as they were out of reach at certain times of the year:

A number of the stations are located far away from roads, and especially during rainy
seasons, the access was problematic and difficult.¹

Raadsma also advises caution regarding the sampling methods using bottles, the cheap
method used in the FAO survey: “This crude, but cheap and easy method of sampling may
have questionable results.”² However, the questionable results were made adequate for the
survey analysis by extra checking, which is also described in Raadsma’s introductory section
on the sediment transport analysis. The conclusion by Raadsma is that errors due to the
sampling methods are not of such great importance, as the rivers investigated have a low
sediment load: “The errors made by such a simple sampling method would most likely be
much greater in rivers with high sedimentary load”.³ Raadsma ends his introduction by calling
for further regular observations, with proper instruments and on sites not yet investigated and
in the cases of large areas being flooded, he argues that the observation should be made higher
up in order to assess the removal of sediment from the catchment.⁴

While Gillman had addressed the issue of the human activities in the landscapes along the
rivers and in the catchment areas, arguing that this resulted in negative impacts on the
permanent water flows, this aspect was not at all investigated in the FAO survey. Nor was any
attention paid to the inhabitants and their visions for development. Within the report, only a
pages including maps - addresses the issue of the inhabitants of the Rufiji River Basin. Three
pages in total are dedicated to the “Population of the Rufiji Basin”, discussing the history and
the present situation based on the population census of 1957 in the focus areas and finally
concluding that for the Bohoro flats the inhabitants are mainly involved in cattle-rearing and

¹ Ibid., 200.
² Ibid., 201.
³ Ibid., 202.
⁴ Ibid., 205.
trade, hence for development of irrigation schemes to function, people from other areas would have to be brought in.¹

In the “historical account” of the first volume of the FAO RBS report a position regarding the knowledge produced by the colonial scientists, and especially Gillman, is taken, belittling their knowledge and experience. In this historical account, Gillman is portrayed as having misunderstood the potential of the territory and also as having impeded further studies on the watercourses of the territory:

In 1940 C. Gillman [...] , in his report on the water resources of the country pointed out that nothing was then known of the flows of the main rivers including the Rufiji, but gave his opinion that these rivers did not lend themselves to major schemes of irrigation or navigation which might justify the costs of gauging their flows. This opinion, now clearly a mistaken one so far as irrigation is concerned, had the unfortunate effect of inhibiting for a considerable time the starting of systematic observations of river flows throughout Tanganyika as a whole.²

However, although the team leader Simansky had probably to reject the knowledge and arguments of Gillman in order to justify new attempts at large-scale irrigation projects, Gillman’s Water Consultant’s report was not the only local resistance. Hoag has described how the FAO RBS approach faced opposition from the local colonial administrators from the very start. Hoag describes how in 1955, Tanganyikan administrators accused Simansky of “putting the cart before the horse” when it came to beginning trial farms based on the data of stream flow from only one year.³ The local administrators maintained that it was inappropriate to formulate water policies before obtaining necessary information from hydrometric records. However, these protests did not delay the survey process, and a first full-scale trial farm was established, and soon severely damaged by flooding.⁴

Completely disregarding the warnings of Gillman and the objections of the local colonial administrators, in the FAO RBS Volume One, the introductory letter from the FAO Director General to the government to Tanganyika, begins by stating that 1.5 million acres were suited for irrigated agriculture, and estimates the cost of achieving this development at £ 140

¹ Grimes (FAO,1960), 3b.
² Simansky et al.(1961), 5.
³ Hoag (2003),112.
⁴ Ibid.
million. For the Usangu and Pawaga plains on the upper Great Ruaha River the team considered 531,000 acres potentially irrigable, while the Kilombero Valley offered 824,000 acres. ¹

Regarding the water flows, the FAO RBS report presents a scientific snapshot based on five years of inadequate studies. Between 1955 and 1960, the basin experienced what the team considered a low hydrological year (November 1958 to October 1959) as well as a high year (November 1955 to October 1956). The data from these two years were used to present a “scientific snap-shot”, providing an illusion of what the highest flow and the lowest flow might be, besides the dry and wet seasons.² In the FAO RBS summarizing volume, the rivers were portrayed as predictable and thus controllable water flows.

Hydropower estimations of the FAO RBS

While neither terms of reference for the FAO RBS preliminary inquiry nor the subsequent survey had mentioned the possibility of hydroelectric power generation, by the time of the first investigation by Simansky, the subject of hydropower development was included, as a by-product of the proposed storage dams for irrigation and flood control.³ The purpose would be to provide electricity, mainly for manufacture of fertilizers, for agriculture and for town supplies. Domestic consumption by local inhabitants is mentioned as another field of use although, as Simansky describes it:

Africans are making use of electricity at a rapidly increasing rate but of course domestic needs call for only a small fraction of what can be generated.⁴

Why the subject of electrical power was brought into the FAO RBS is not clearly explained in the investigated sources. However, attempts to identify potential hydropower sources had been made earlier, Gillman being but one speaking in favour of such a development, and the

¹ Simansky et al. (1961), 32.
² Hoag (2003), 110f.
³ Simansky (1954), 21.
⁴ Ibid.
The issue of increased production of electricity was on the Tanganyikan colonial government agenda at the time. In 1947 the British engineer E.V Richards made a study of the hydropower potentials of the British-controlled East Africa. As he explains in his report, the study was supposed initially to be a comparison between energy sources from water and from other resources. However, for “political and economic reasons”, mentioned but not specified in the report, the study was limited to hydropower only. The report stated that knowledge of the hydrological situation was limited to the Pangani River, while there was very little information about the other rivers in the territory. In a colonial government review of Tanganyikan natural resources published in 1955, it is stated that to achieve economic progress in Tanganyika it would be necessary to utilise the water resources for power generation, and that the main problem in achieving this was to obtain sufficient capital for the necessary investments. The appearance of the FAO RBS then coming in with funds and capacity for investigation was probably considered a good opportunity for those interested in hydropower development.

Within the FAO survey, a third of the available funds supported a programme of topographical surveys of potential dam sites to store water for the purpose of irrigation and flood control. In addition to investigations of the basin’s most promising dam sites, those of Mtera and Stiegler’s Gorge, which had begun during the 1953 preliminary survey, the team turned its attention to eighteen additional sites. Six of these were located on the Great Ruaha and twelve on the Upper Kilombero River. Each of the potential dam sites has a drawing of how it can be built, and in the third volume, entitled “Water Control,” and written by the project engineer M. Freimann, the aspect of energy potential is added to the sites considered feasible for this purpose:

> Although not included in the terms of reference, and therefore outside the scope of this report, the generation of hydroelectric power is complementary to the reservoir studies; as water passing from a higher to a lower elevation always represents a potential source of hydroelectrical energy.  

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1 Richards (1947)
2 Hill/Moffett (1955), 713-715.
3 The total cost of the survey was £727,000, with £520,000 from the Colonial Development and Welfare Fund and £207,000 from funds raised through the FAO. Simansky et al. (1961), 8.
Cost estimates for the construction of hydropower plants were made with support from two different enterprises within the sector, and it remains unclear whether the FAO RBS had to pay anything extra for this work. In Freimann’s volume, the basis for the Great Ruaha power project, the Kidatu and Mtera sites are discussed. The Mtera site was described as “raising interesting problems”. While having large storage possibilities, the “interesting problems” consisted of the vast area of the reservoir site, implying a large surface area and an extremely high evaporation. Hence, Freimann concluded that there was a limit to the possible full supply level, which he claimed would depend on evaporation values and on how the water in the reservoir would be managed. Freimann wrote that the consequence of this aspect was that there existed a “reservoir elevation (...) which cannot be exceeded because the total annual evaporation would equal the annual inflow”. This means that any design, as well as management, of a hydropower reservoir at Mtera would have to pay specific attention to the high incidence of evaporation losses. Despite those concerns, Freimann outlined proposals for a hydroelectric reservoir at the Mtera site. Freimann presented two alternatives, one being a low dam, with a maximum height of 15 metres and 1860-metre crest length. This reservoir, Freimann argued, would suffice to regulate the annual net discharge of the Great Ruaha River into a constant average flow of 1 725 cusecs – in an “average year”. Freimann estimated the energy potential at between 186 to 250 million kWh per year, with a least installed capacity of 21 MW. He also presents a cost estimate for the work – earth embankments and concrete for the weir section – of £ 1 000 000, giving a cost of £ 1.3 per acre-foot of storage. Freimann’s second alternative would call for a dam wall of 88 metres, as the reservoir site would be located further downstream.

The figures for the Mtera site also found a place in the volume summarizing the whole report, alongside Stiegler’s Gorge - the FAO RBS favourite hydropower site, with its estimated potential of 2.7 – 3.4 million kWh or of 150 - 400 MW of firm power. Hence the Mtera was decided as one of two major hydropower sites to be developed in the Rufiji basin.

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1 Ibid., 133.
2 Ibid., 133f.
3 Ibid.
4 Ibid., 134.
5 Ibid., 134-135.
For the Kidatu site, no details were outlined, and the site did not make it into the summarizing volume. Freimann did however refer to a drawing of a potential reservoir made by the Department of Lands and Survey. He described the site as having “some storage possibilities which may become feasible as a small buffer reservoir for regulation of the natural river flow [sic] in connection with irrigation schemes in the Ruaha-Msolwa plain or for a hydroelectric power development project.”

A geological discussion of both the Mtera and the Kidatu dam sites was presented in the additional geological survey volume by E.G Haldemann. The geological investigation by Haldemann was planned as the sixth volume of the FAO report, but as his work was so extensive, it was published as a separate report.

In the summarizing volume of the FAO report, the hydropower potential of the Rufiji basin is discussed over three pages, under the heading “power possibilities”, and the subject is introduced as a by-product of the investigations made. While maintaining that the main scope of the study had been to investigate the potentials for irrigation and flood control, which to a large extent – it is said - cannot be combined with hydropower production, the report states that there are at least two sites, Stiegler’s Gorge and the Mtera, that call for further investigations and which could be economically justifiable in view of industrialisation. For both sites calculations of costs and profits are included: regarding the Mtera the prospects are good, for Stiegler’s Gorge the annual revenue for production and selling electricity is stated to be £4.2 million, or 10% on the capital expenditure, while the Mtera would provide an annual revenue of £180,000 or 6.2% on the capital expenditure.

2 Ibid., 137.
3 Haldemann (1962), 36ff, 43ff.
4 Simansky et al. (1961), 66-67.
Concluding

The knowledge on the Tanzanian water resources gathered during pre-colonial and colonial times was extensive. Data on water resources, soil erosion, climate, population, which all are of importance for river training, infrastructure expansion and agriculture, were not assembled in one specific place, but rather scattered in different parts of the colonial administration, private companies, research stations and historical narratives by travellers in their reports and diaries. During the German period, investigations had continued, including research on the Great Ruaha River. After a halt during the First World War, the investigations were taken up again during the British colonial period. A wide approach to the issues had been embodied in the work of Clement Gillman. Yet, the existence of knowledge did not automatically imply using it. The Rufiji River Basin survey, initiated by a colonial government envisaging large-scale irrigational developments, had quickly become a survey on conditions set by the FAO survey team leader, Simansky. Hoag has discussed the work of the FAO survey team in terms of “detached approach”, as it was distanced from the waterscape and people they were describing. In this chapter I have raised another important point, showing how the foreign experts invited to work on the different areas behaved like the scientists they were trained to be by their Western scientific education. When describing their methods and the results they provided the reader with all the uncertainty they themselves had experienced when establishing their data, and also called for further and more extensive studies before investing in any projects.

However, as five years of work ended, the Rufiji River Basin survey resulted in a seven-volume report, with appendices, emphasizing hydrology, water control and an investigation of the soils of the basin. (The other volumes dealt with population, agriculture, forestry, medicine and soils.) While the uncertainties regarding methods and results by the scientists can be found only by reading the different volumes thoroughly, the survey is summarized in the first volume, “General”. In this first volume, the potential for large-scale irrigation as well as hydropower development is presented free from all scientific uncertainty, giving the reader the sense that the water flows could be controlled. The water flows are discussed in terms of potential power provided and the costs discussed are only the costs of construction, presented as economically justified as part of an industrial development of Tanzania.

Discussing the context of the FAO RBS in terms of situated knowledge and partial perspectives provides a context for understanding the purpose of the science being produced.
The science of the FAO RBS was given its status by using modern methods and relying on experts from Western universities. While questioned by colonial scientists active in Tanganyika, the FAO RBS still enjoyed the confidence of the FAO and continued to be financed throughout the study. Furthermore, even though the FAO RBS scientists themselves had expressed doubt and uncertainty regarding their own investigations and the conclusions that could be drawn from them, what mattered in the end was their authority as Western-trained scientists, and their names and scientific affiliations attached to the final report.
11. Enter Swedish development science

The previous chapters in Part Three have discussed the extensive knowledge of the Tanzanian waterscapes assembled and existing by the early 1960s. In this chapter I analyse how the knowledge from the colonial period was disregarded as Sweden entered the scene. The procedure introduced during the FAO RBS - the detached approach - followed by the presentation of documents intended to show that it was possible to control the rivers, continued as Swedish development assistance entered the independent Tanzania. In Part Two I identified the key actors in the decision-making process for the Great Ruaha power project. In this chapter I return to the Great Ruaha River for a deeper plunge into the technoscientific issues regarding water flows and sedimentation transport, discussing how the “detached approach” was maintained with the involvement of SWECO in the planning of the Great

1 Ulla Reinius, Pers. Interview, May 6, 2005.
Ruaha power project and thus how the studies performed can be described as “development science”.

Like their predecessors, when working in the field, the Swedish engineers and scientists also relied on the local population for assistance. In this chapter, the inhabitants of the area appear in certain contexts in exchanges of letters, in references to informants, and also in photographs. However, as I will show, the Swedes obtained information not only from African Tanzanians but also from British people living and/or working in Tanzania. The sources used for this chapter are mainly from the SWECO archive, Stockholm, and the SIDA archive, available at the National Archive in Stockholm. I also rely to a certain extent upon personal interviews with the wife and son of one of the experts involved, Erling Reinius.

*John Fletcher’s comparison between the Great Ruaha and his Swedish “home river”*

When Swedish development assistance entered the Rufiji Basin and became involved in the Great Ruaha power project, it was just as “detached” as the FAO investigation. The Swedish development assistance agency, SIDA, had contracted the Swedish engineering consultant SWECO to investigate the feasibility of a joint hydropower and irrigation construction on the River Wami. In July and August 1966, Ingvar Jernelius (specialist in dam and hydro-electric power design) and Lennart Samuelsson, (soil mechanics engineer), both from SWECO, visited Tanzania to find out more about this project. While they were investigating the Wami, the Swedes were made aware of surveys conducted prior to the implementation of the Great Ruaha power project. As they learned of the ongoing plans for the Great Ruaha River, they included calculations on a possible project in their first report. On this occasion, the SWECO team did not visit the Great Ruaha River. However they had access to the studies of the sites made by FAO between 1954 and 1960 and used the information from FAO for their own discussions regarding a hydropower project on the Great Ruaha River with two hydropower stations, both with capacities of over 100 MW.¹

¹ SWECO archive [SWECOARCH], Ingvar Jernelius and Lennart Samuelsson, Tanzania Wami River Power development, Study of the lower Wami for the Swedish International Development Authority, Sthlm, October 1966 (copy in the hands of the author), 7:1.
Shortly after the delivery of the SWECO report, SIDA had was asked by the World Bank whether it would be interested in financing an investigation on the Great Ruaha. At SIDA, the proposal aroused interest, despite the Tanzanian government’s strong wish to go for the Wami (to be followed by Stiegler’s Gorge). At SIDA, the head of department, Petter Narfström, enlisted the assistance of John Fletcher to give recommendations regarding which project to go ahead with. As discussed in Part two, Fletcher had already been asked to give comments on the SWECO report when presented in October, and at this point he had not yet visited Tanzania. His first opportunity to do so was when he was sent by SIDA as he to take part in a World Bank mission to investigate the East African power sectors. At this point, he spent only four weeks collecting information on the power sector in Dar es Salaam, although not visiting the river basins.

Fletcher apparently spent his four weeks in Dar es Salaam without learning about the work done during the colonial period, apart from the FAO RBS. Later, when issuing his “hydrological investigation” for SIDA, Fletcher did not visit the Great Ruaha or Wami river sites himself, but stayed in Sweden, working from his office at Uddeholm Kraft in Värmland. Recognizing that regarding water flows, the FAO RBS study had not been left much to go on, that very little was known about the hydrology of the Rufiji Basin, and that all there was to base further calculations on was twelve years of readings of a limited number of gauge stations, Fletcher opted for a creative solution. He introduced his “home river”, the Swedish River Klar flowing close by his office, and a river that he claimed his company was familiar with “within and without”. For the River Klar there existed 72 years of records, and Fletcher argued that it could serve as a basis for understanding the two East African rivers:

For the two East African rivers there are only 12-years series available (monthly means). Although they are, of course, really too short for the purpose, they must needs [sic] form the basis of the planning of the power stations: they are what we have. One way to use them would be simply to assume that history will repeat itself eternally in identical 12-year series.

1 See Part two; SRA, F1AB 1387. Letter from Norman Horsley, Africa Department IBRD, to Lars Kalderén, SIDA, Sthlm, December 11, 1966.


4 SRA, F1AB 1388, Fletcher, Klarälven, Wami and Great Ruaha – a comparative study of three rivers, Munkfors, September 1967 [Klarälven, Wami and Great Ruaha], 2.
But I have felt that it must be possible, by studying and analysing the records, to get some idea of the underlying pattern behind recorded reality; even if such an idea, in spite of apparent accuracy in the calculations, must of necessity be rather vague, it must be an improvement on the rather crude assumption of eternal repetition. I have found it interesting to see what can be done with 144 figures and shall report on results achieved in this paper.¹

The result was the 42-page report “Klarälven, Wami and Great Ruaha – a comparative study of three rivers” finalized in September 1967 and sent to SIDA to form a basis for the upcoming negotiations with SWECO and the Tanzanian delegation on a comparative study of the Wami and the Great Ruaha. For the report SIDA was charged five thousand Swedish crowns, for 94 hours of work.²

The main importance of Fletcher’s report and the methods used is not as the basis for the calculations for the design of the hydropower scheme. Fletcher’s methods were later questioned by SWECO’s consultants who preferred to do their own estimating. The importance rests instead in the position that Fletcher held in respect to SIDA and hence the decisions to be made regarding budget and further studies. The study is thus of importance as it shows first of all how this person, who held a very important position in the decision-making, viewed the problematic issues of water resources in Tanzania at the time. Secondly the report is of importance as it shows how the detached approach was acknowledged at SIDA. SIDA paid for a study made by someone who had not visited the sites, had no experience of the earlier knowledge produced on the rivers and water courses in Tanzania, and who had spent only four weeks in total in Tanzania and then contracted the same person to supervise the following joint comparative study, as well as to state his opinion of the result of the same study.

To understand and interpret the views of Fletcher expressed in the report, it is of great help that it is - according to Fletcher himself as he explains it in a letter to SIDA when sending over the finalized report- “adapted” for its specific readers. What Fletcher meant was that the report was twice as long (as if it had been for SIDA and SWECO only) with more

¹ Ibid.
explanations in the text, to the readers from the British consultants BB&Co. Fletcher thought they might not understand the “Swedish thinking”.\(^1\) Regarding the “Tanzanians”, he considered them to be in need of more explanations.\(^2\) He had also adapted the writing style to fit as an article in a Swedish magazine of the hydropower association. The style in which the report is written consists thus not only of figures and charts, but also of textual explanations of the problems Fletcher had identified, as well as how he was dealing with them.\(^3\)

While figuring out how to describe the hydropower potentials for the Great Ruaha and the Wami, Fletcher had to deal in his “hydrological investigation” with several complications discussed in the report. Besides the short period of gauge readings, which Fletcher solved by introducing the River Klar as a “pilot river” for comparison, more delicate issues arose.\(^4\) One of the complications was that Fletcher’s “home river” was actually a regulated river, with a hundred reservoirs in a complex system and hydropower plants constructed at favourable sites.\(^5\) Still, Fletcher argued that the comparison could be made on an imaginary natural River Klar. As the water flows of the River Klar were not natural - Fletcher “reconstructed and tabulated” flows – meaning that he created an image of a natural flow of the River Klar, in order to compare it with the East African rivers.\(^6\)

The greatest trouble with the Wami and the Great Ruaha was that they showed such big variations between high and low discharge figures. While the figures for the Wami River water flow were somewhat disturbing, the Great Ruaha was really complicated, leading Fletcher to refer to it as a “problem child”, due to its enormous fluctuations over the seasons and over the years.\(^7\) Fletcher had at his disposal the gauge readings (originating from the archives of the Tanzanian WD&ID) from the “water year” November-October 1954/1955 and up to the water year of 1965/1966. Besides great fluctuations, Fletcher had to deal with gauge readings from two very different sites, located several kilometres apart and showing disturbingly different water flows.

\(^1\) SRA, F1AB 1388, Letter fr. Fletcher, Munkfors, Sep. 25, 1967, tSIDA Narfström
\(^2\) Ibid.
\(^3\) Ibid.
\(^4\) SRA, F1AB 1388, Fletcher, Klarälven, Wami and Great Ruaha.
\(^5\) Ibid., 40.
\(^6\) Ibid., 4.
\(^7\) Ibid., 18.
I have opted out of displaying the figures that Fletcher uses for discussion, as the interesting thing that he points at are the enormous variations of the two Tanzanian rivers, between drought and floods. During the measured period both the Mtera and the Kidatu sites had their lowest monthly means measured in December 1954, when there was almost no flow at all. Moreover, to make it more complicated, the lowest monthly means did not coincide with the lowest yearly means, those of the hydrological year 1960-61. Furthermore, posing even more complications to Fletcher’s calculations - the highest means recorded in Great Ruaha were measured the year after the lowest yearly means.

In comparison with Fletcher’s home river, these variations were gigantic and he opted to turn the Great Ruaha into what he considered a more normal river, “smoothing” the figures:

*It will be noticed that the year 1961/62 was exceptionally rich. This fact leads to a distortion of the monthly means if calculated in the ordinary way. As such means will be used later on, some “smoothing” has been done: the total amount of water in the average year (---) has been distributed over the year in proportion to the monthly medians, which can be more accurately assessed.*

Secondly, as the gauge readings of the two sites on the Great Ruaha, the Mtera and the Kidatu sites, were so different, Fletcher opted to convert them into one single mean, providing a more simplified basis for comparison, calling it the “Great Ruaha Substitute”. He added “(i)t is perhaps not absolutely flawless, but it will serve”.

Thus, Fletcher had created an artificial River Klar for comparison, and then created an artificial Great Ruaha River as well, turning the readings from two different sites into one “substitute” and then “smoothing” the figures, eliminating the extremes, to what he considered a normality, and at the same time establishing that the drought period of twelve months that had hit the Great Ruaha in 1960/61 was so extreme that it was unlikely to ever happen again:

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1 Ibid., 5, 6.
2 Ibid., 6.
3 Ibid.
The most remarkable difference appears in the case of Great Ruaha. The records contain a 12 month drought period of such an outstanding nature, that it can hardly be expected to occur again within the degree of probability assumed.\(^1\)

Yet despite the creation of a “substitute” for the Great Ruaha, the river was not fully tamed, even on paper. The river showed evidence of an irregularity over the years and the seasons that was much too disturbing to Fletcher. To make it possible to estimate the potential of the Great Ruaha as a provider of water for a hydropower system, Fletcher turned the values to which he had access into a more “normal” river.\(^2\)

After having smoothed and eliminated what Fletcher considered the abnormal figures for the Great Ruaha, the next problem was to establish a calculable value regarding the long-term forecast for the water flows. Not having access to the information necessary to make an estimate at this point, Fletcher opted to refer to a discussion he had had during his visit to Dar es Salaam with a British meteorologist working for the United Nations in Tanzania. The meteorologist had stated that British meteorologists believed in a long-term change of climate in both hemispheres. This implied that records from the latter part of the 19th century would be more valid than recent ones. However, having no records from the late 19th century from which to calculate, Fletcher had yet another option – he said that the meteorologist had claimed that to use the records from the latest decade, would probably be to “underestimate future yields”\(^3\) – that is, the future would provide a higher flow of water than the present, and hence no problem of water shortage would appear:

*He [the British meteorologist] summed up as follows: if we use the latest 10-12 year records we are perhaps likely to underestimate the future yields to some extent, but we are not – to use his own colourful phrase – likely to make any ‘serious bloomer’ either way. We seem to have no choice but to accept his advice.*\(^4\)

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\(^1\) Ibid., 18.
\(^2\) Ibid., 18.
\(^3\) Ibid., 6, 7.
\(^4\) Ibid., 7.
With this, Fletcher formed an idea of the future flows of the Great Ruaha River, assuming that the 12-year averages in the Great Ruaha (and the Wami) would remain essentially the same in the future, and also that the variations between seasons and years would follow the same pattern.¹

Something needs to be said about the figures on which Fletcher based his calculations. In his report, he wrote that figures came from the WD&ID (Water Development and Irrigation Department). While the original discharge volumes were in cusecs – cubic feet per second - and acre-feet per month, Fletcher had turned them into cubic metres per second, as Sweden used the metric system. Whereas this conversion is no great problem, the problem lies in the original figures and how they were established. The original figures used by Fletcher are not available in the investigated sources but it seems likely that they came from the FAO RBS measurements from 1954 – 1959, as this was the occasion when gauges were installed at Kidatu and at Mtera. Looking more closely at the report on the FAO RBS hydrological investigations it is apparent that the discharge measurements were complicated to make. Reading and taking notes on water levels can be handled by unqualified but literate persons, as it involves reading from a gauge the height that the water reaches. Measuring of discharge volumes, i.e. measuring the speed at which the water flows, requires qualified staff to assure an adequate understanding and reading. The measurements can be made in different ways and special equipment is needed. The commonest way, also used by the FAO RBS, to measure discharge volumes is for a trained person, from a specific gauging station, to observe the width and depth of the water, and use a current meter to measure the velocity.² For achieving comparable data, it is of importance that the observer knows where in the river to measure the velocity, as the speed of the water differs between the current and the edges. Regular measuring is also of importance, to establish how the river changes over the different seasons. The FAO RBS had had trained staff to do these observations, but the observations were not made regularly due to the inaccessibility of the stations. When heavy rains set in and flooding occurred, measurements could not always be made.³ Fletcher never discussed this problem in his report, and at the time he wrote it appears that he had not seen the two FAO RBS volumes on hydrological investigations, as he did not make any reference at all to these and their discussions on the uncertainties in the measurements. Apparently, Fletcher was completely

¹ Ibid.
³ Otnes (1960), part 1,8 part 2, 4-5, 362,367.
satisfied with the discharge figures provided from the WD&ID, and saw no reason to question their adequacy.

While his report provided a basis for the decision-making at SIDA on whether to proceed with the joint comparative study, and included a large reservoir at either Mtera or Kidatu on the Great Ruaha River as possibilities, Fletcher did recognize, both here and on later occasions, the need for more information than the 12 years of gauge readings, and consequently discussed the option of starting with a small reservoir to learn more about the water flows before going on with a large one, indicating that he favoured an approach based more on trial and error than on scientific calculations.¹

Despite the uncertainties in the figures provided for calculations, and his own proposal for a trial on a smaller scale, Fletcher still felt safe enough to conclude that the present information on the rivers, and data collected in the “near future” would be “sufficient for the choice of scheme, as well as for the choice of installed capacity in this scheme”.² Whether Fletcher did not know about, or did not consider, the earlier observations made during the colonial period is difficult to establish and requires further investigation of his personal career and background, which I have not undertaken. However, from his writings, and also judging from his position at Uddeholm power company, it is seems fair to assume that he acted within the framework of a Swedish hydropower setting, and that not being linked directly to SWECO, he probably did not have experience of work in the hydropower sector within any colonial empire. This conclusion is also strengthened by the questioning of his methods by the SWECO staff with experience from abroad. Hence, it is likely that he did not have sufficient knowledge of the British colonial system in Tanzania to know or to guess that much information already existed.

On the other hand, knowing about existing information does not imply accepting it and making use of it. The FAO RBS report – the summarizing volume - discussed earlier produced knowledge, and then belittled it as well as its producer, Gillman. A “detached approach” may hence be the result of a choice made, or of lack of information, in combination with distance from the physical setting investigated. Either way, the work of Fletcher fits well within the framework of what can be defined as “development science”, financed by development assistance funds, adopting a detached approach, distant from the area studied, (to

¹ SRA, F1AB 1388, Fletcher, Klarälven, Wami and Great Ruaha, 42;
² Ibid., 41.
claim that the studies were limited to a short period would be to claim that site studies were actually made, which was not the case, so this aspect is left out here), and with a specific aspiration within the development assistance era – promoting what is considered development and progress, and also, as stated in Part Two, promoting export of Swedish technology within this setting.

The absence of science in the joint comparative study

Fletcher’s “hydrological investigation” was delivered to SIDA in September 1967, at the same time as preparations for a larger comparative study of the Wami and the Great Ruaha rivers were at their height. The Tanzanian government was in need of external funding for the further advancement of the Wami scheme, and as both the World Bank and SIDA had asked for a comparative study with the Great Ruaha, this was the first step that had to be taken. While SIDA’s wishes to make SWECO the consultant for the study, and turn the imposed Balfour, Beatty into mere observers, failed, Fletcher was put in charge of the study. By this time, Fletcher had already been contracted to handle the correspondence regarding the hydropower business with Tanzania for SIDA, drafting the letters for SIDA’s General Manager and formulating the terms of reference for the comparative study to be made.¹

The settings for the comparative study of the Wami and the Great Ruaha have been discussed in Part Two. In this section I will go deeper into the actual scientific performances during the study which started in October 1967 and was finalized with the delivery of the report: Comparative Study of the Wami River and the Great Ruaha River Developments in Tanzania.²

The report was delivered to SIDA in July 1968, and its findings – favouring the Great Ruaha project – together with Fletcher’s support for the methods of the study as well the outcome – were used by SIDA to urge the Tanzanian government to drop its wishes for the development of the Wami River and to go ahead with the Great Ruaha power project.³

¹ SRA, F1AB 1388, Letter from Fletcher, Uddeholms Aktiebolag, Sept. 11, 1967 to SIDA, Sthlm, Narfström.
³ Ibid.; SRA, F1AB 1389 Letter fr Fletcher, July 23, 1968 t Willén, SIDA, Sthlm; SRA, F1AB 1389, Copy of letter, July 29, 1968, fr E Michanek, SIDA, t Jamal, Minister for Finance, DSM.
The preparations for and the majority of the negotiations regarding the joint comparative study took place in Stockholm.\textsuperscript{1} Whenever there were differences of opinion during the joint study, the role of Fletcher was to settle the issue and to make sure that the report was produced on schedule and did not exceed the cost ceiling set by SIDA. The physical closeness between Fletcher, his office located in Munkfors, 350 kilometres from the SWECO office in Stockholm, made it easier for the Swedes to meet. The contacts with the British consultants in London were mainly limited to letters and telex correspondence.\textsuperscript{2} On one single occasion, after the field studies were finished and only the paper work remained to be done, Fletcher judged it important enough to necessitate a discussion in person with the consultants of Balfour, Beatty and asked SIDA to pay for a flight and a two-night stay in London.\textsuperscript{3}

The final joint comparative study report dealt with three energy options: hydropower on the Wami or Great Ruaha rivers, and a thermal power plant in Dar es Salaam, presenting the Great Ruaha as the best alternative. However, these three alternatives were not the only ones available when the investigations started. Other alternatives for hydropower development in the Rufiji basin were discussed, and then eliminated from the comparative study. Possible sites on the tributaries of the Great Ruaha: the Lukosi, the Yovi and the Little Ruaha, came up during the meeting with both the consultants SWECO and Balfour Beatty in December 1967. In the minutes from the meeting, Fletcher states that it was agreed not to consider the Yovi and Little Ruaha sites at all, although his minutes offer no explanation for this choice.\textsuperscript{4} A possible explanation, revealed in the correspondence between SIDA and Fletcher as well as internal memos, may be that the costs of the study, to be paid by SIDA, had a ceiling which provided for a limited set of studies. Initially it had been set at 300,000 Swedish crowns, but by November 1967, after the first consultant meeting in Stockholm, the costs had already been estimated at double this amount.


\textsuperscript{2} SRA, F1AB 1389, Fletcher, Anteckningar om Tanzania den 18.1.68.


\textsuperscript{4} SRA, F1AB 1388, Fletcher, Sthlm, Dec. 20, 1967, Tanzania Power, Notes from discussions in Sthlm on the 20th December, 1967.
Furthermore, the circumstances of the joint study were considered a source of uncertainty, as SIDA had been more or less been forced to accept a situation with two consultant companies, one from the former colonial power, and the other the Swedish company with little experience of Tanzania. In the end it might turn out that there would be no joint recommendation, but conflicting views regarding which scheme to proceed with. Time and money would have been wasted without any final decision being reached. The extra costs had to be accepted by the Swedish government, an acceptance that arrived promptly.\(^1\) There was heavy pressure on John Fletcher to make the two consultants come up with something feasible and productive, and eliminating other possible sites at an early stage was probably a means of avoiding the possibility of conflicting views.

One alternative that was accepted for investigation by Fletcher was the Lukosi River site. The basis for accepting it was that it could be included in the study as a bargain without any extra expense or waste of time.\(^2\) However, after the field studies, and without having been visited by any of the consultants, and based only on studies of contour maps, this potential site was dropped without further ado.\(^3\)

**Irrigation aspects dropping out**

The fact that the Great Ruaha alternative became the joint proposal was also due to the way irrigation aspects were treated in the joint comparative study. As described in Part two, the Tanzanian government had been eager to include irrigation in the comparative study. With the Swedish involvement, the irrigation question had been seriously downplayed even before the terms of reference for the study were established. However, even though the irrigation aspect had been reduced to paper work, this turned out not to be such an easy task. Not having any

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\(^2\) SRA, F1AB 1388, Fletcher, Sthlm, Dec. 20, 1967, Tanzania Power; Notes from discussions in Sthlm on the 20th December, 1967; SRA, F1AB 1389, Letter from Fletcher, Munkfors, Jan. 5, 1968, t Willén, SIDA, Sthlm.

\(^3\) SRA, F1AB 1388, Fletcher, Anteckningar om Tanzania den 18.1.68.; SRA, F1AB 1389, Copy of letter fr. SWECO t Fletcher, Jan., 25, 1968; SRA, F1AB 1389, Fletcher, TANZANIA POWER, Notes on Tanzania Power, Feb., 28, 1968; SRA, F1AB 1389, Fletcher, Apr. 18, 1968, Tanzania Power, Notes from discussions in Sthlm, Apr. 17, 1968.
local contacts in Dar es Salaam familiar with the existing documents, SWECO made a number of efforts to collect earlier studies on irrigation from the rivers through their co-workers. A SWECO measurement specialist, working on a project in Zambia, was asked on his way home from Lusaka to stop for a maximum of a week in Dar es Salaam to pick up earlier reports, and then to go to the FAO in Rome to try to get hold of their documents.\(^1\) Even SIDA was involved in the work of collecting information. A World Bank report on agriculture and irrigation in Tanzania would have to be collected in person by Willén in the course of a visit to Washington, but judging from the reference list of the final report this specific document was never obtained.\(^2\) Not even the seven-volume FAO RBS was easily accessed, as only a single copy was held at the Tanesco office in Dar es Salaam.\(^3\) As the final date for the study approached – a month before the initial final date, and two months before the new postponed date - the consultants turned to the Dutch consultant Ilaco for special advice regarding the irrigation potentials of the rivers.\(^4\)

With no field studies of the potential for irrigation and also access to documents difficult, the scope of the study was considerably narrower than originally wished by the Tanzanian government. In the final report, the irrigation aspects are mentioned, although without any estimation of potential benefits. The report concludes that potential irrigation from the Wami River (90 000 acres of the coastal plain) is not as attractive as earlier estimated. For the Great Ruaha, an area of 24 000 acres of land downstream of the Kidatu power plant site had been identified, as well as the possibility of supplying water through a channel to the nearby Kilombero sugar estate. The FAO RBS investigation, which had identified 531,000 acres of irrigable land on the upper Great Ruaha River – meaning upstream of both the Kidatu and Mtera sites - was not referred to, despite the fact that the ongoing plans for developing this area would be an apparent competitor for the use of water.\(^5\)

\(^2\) SRA, F1AB 1389, Copy of letter fr Willén, SIDA, Sthlm, Jan.11, 1968, to Fletcher, Munkfors, Munkfors; SWECOARCH, Comparative Study Wami-Great Ruaha
\(^3\) SRA, F1AB 1389, Fletcher, Anteckningar om Tanzania den 18.1.68.
\(^4\) SRA, F1AB 1389, Fletcher, Tanzania Power, Notes from discussions in Sthlm Apr. 18, 1968, 3; SWECOARCH, Comparative Study Wami-Great Ruaha.
\(^5\) SWECOARCH, Comparative Study Wami-Great Ruaha, 5, 32.
The start of the joint comparative study had been delayed first by the realization that the SIDA funds would not be sufficient to cover the costs, and that support from the Swedish government had to be awaited before going any further. Once the issue of the funds was settled, other administrative problems cropped up. Before the contracts with the consultants could be signed, the terms of reference for the study had to be accepted by the Tanzanian government. This took more time and effort but was finally done on January 9, 1968.1

Besides the administrative problems, the joint comparative study team would soon enough encounter the same problems as had the FAO RBS experts. The field studies due to be started in February were disrupted by heavy rains. Initially the plans for the field study included a team of seven from SWECO and Balfour, Beatty, arriving at the beginning of February. The team intended to deal with both hydrological and geological investigations. The first stay was to be supplemented by a shorter follow-up field study.2 The plans were washed away by the Tanzanian climate. The rainy season from September to November 1967 had turned out to be wetter than usual, or at least not adapted to the study plans, as it turned the Great Ruaha into its fierce version – described by pre-colonial travellers a century earlier - thus rendering it impracticable for the WD&ID to obtain the figures on river bed levels or surface water levels that were supposed to be delivered before the joint comparative study team left Europe.3 A discussion arose regarding how to deal with the problem. While BB&Co wanted to go ahead as planned, SWECO wanted to postpone the study until more figures were available from WD&ID. In the end the compromise reached, following the intervention of Fletcher, was not to further delay the study. A small team of just two geologists (one from BB&Co and one from SWECO), together with an engineering guide from SWECO, went to Tanzania to stay for a short time. The men spent less than three weeks in Tanzania. How much of that they spent at the sites is not discussed in the documents examined. However, the initial study plans were far from complete, as another problem turned up, much like those encountered by the FAO RBS a decade earlier. The plan was for the geologists to use a helicopter to get to the

2 SRA, F1AB 1389, Copy of letter fr. Willén, SIDA, Jan. 11, 1968, t Director of Water Development and Irrigation (WDID) DSM; SRA, F1AB 1389, Fletcher, Tanzania power, Notes on meeting with Balfour, Beatty & Co, Mar.14,1968.
3 SRA, F1AB 1389, Copy of letter from Nils Wretblad, SWECO, Jan. 25, 1968, t Fletcher, Munkfors; SRA, F1AB 1389, Telegram fr.Sw. Emb. DSM, Beijer t. SIDA Sthlm, Willén, Jan. 29,1968
sites to be investigated, but this means of transport was ruled out on grounds of cost, and thus the scope of the investigation was further reduced.¹

The hydrological studies were limited to the collection of supplementary gauge readings organized by the WD&ID and the figures were sent to SWECO in Stockholm and Balfour, Beatty in London for analysis.² While no further investigation of the discharge volumes and water levels took place, the engineering guide from SWECO (Per Åke Nordström) raised an alert as to the basis for the figures, reporting upon his return to Stockholm that the figures acquired “left many question marks”.³

However, despite the question marks, the SWECO representative reported that during the visit to Tanzania he had started leaning towards the Great Ruaha power project. This was not based on the calculations but on “general considerations”.⁴ In the accessed sources, there is no evidence of what these considerations would be, other than the fact that the large financer (World Bank) and the planners (Balfour, Beatty and Co. Ltd., and Tanesco) involved were already in favour of the Great Ruaha power project.


² SRA, F1AB 1389, Fletcher, Tanzania Power, Notes from the discussions in Sthlm on the 17th April, 1968, Notes from discussion in Sthlm on the 18th April, 1968; SRA, F1AB 1389, Anteckningar om Tanzania den 18.1.68.

³ SRA, F1AB 1389, Fletcher, Notes on Tanzania Power, 28th February, 1968.

⁴ Ibid.
While the joint comparative study of the Great Ruaha and the Wami had led to the decision to go ahead with the Great Ruaha, it also resulted in the plans for the Mtera reservoir being postponed to a later stage. The first phase was proposed to be the Kidatu reservoir and hydropower plant.\footnote{SWECOARCH, Comparative Study Wami-Great Ruaha.} As described in Part Two, the work proceeded fast after completion of the comparative study, with SWECO in charge of the preinvestment study – the investigation that would provide the basis for the negotiations for funds and for the tenders to be made before starting construction. Hence the SIDA-funded and SWECO-managed preinvestment study was conducted in order to determine the technical and economic feasibility of the hydropower scheme (including an analysis of the power system and market) and present a detailed report.
for the project’s funding by the World Bank. In short, the study was to be a detailed description of the whole hydropower project and was to be based on field studies and site investigations. Although there had been few previous studies on the area, and despite the fact that the joint comparative study had raised a number of questions regarding the adequacy of water flow figures, the time period allowed for the preinvestment study was less than one year. Pressured by the strict schedule, as well as the budget ceiling, SWECO consultants had again to rely on the earlier water level measurements. The detached approach of earlier surveyors was continued. Social conditions, local water management issues such as irrigation, and the potential need for the relocation of people were left to the Tanzanian regional authorities to explore and to a rapid ecological impact study requested by the World Bank.

The hydrological investigations for the preinvestment study were performed by Erling Reinius, a hydrology specialist working for SWECO and at the same time professor of hydraulics at the Royal Institute of Technology. The preinvestment study report for the Great Ruaha power project phase 1 is not available in the Swedish archives, either SIDA’s or SWECO’s. According to an informant, a SWECO archivist, the documents were jettisoned by his predecessor due to shortage of space.

Reinius died in 1992 and I have not had access to any personal notes by him. However, stories about his work are retold by his son, Kristoffer Reinius, who has himself worked on the Mtera reservoir within the Great Ruaha power project, contracted by SWECO, and Erling Reinius’ widow, Ulla Reinius. Reinius decided to give up her professional career when she married Erling, as the income tax for married couples in Sweden at that time, made it almost pointless for her to work. Instead, she accompanied her husband on many of his work-related trips around the world, during which she took notes in her diary and also took photos.

For the preinvestment study for the first phase of the Great Ruaha power project, Erling Reinius was allowed only three weeks to do his field work in Tanzania. In 1969, accompanied by his wife, he spent ten days examining the Kidatu and Mtera sites. During the

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1 SRA, F1AB 1389, Copy of Agreement between SIDA and SWECO on preinvestment study, Sthlm Nov., 14, 1968, terms of reference for the preinvestment study.
2 Ibid., 1.
3 See Part two.
5 Ulla Reinius, Pers. interview, May 6, 2005.
stay, Reinius photographed the sites, measured water flows, and checked the previously installed gauging instruments. 1 Reinius, like Nordström before him, was confronted during his visit with the inadequacy of the earlier records. After interviewing local residents Reinius realized that measurements had not been taken during floods. In other cases, it was not clearly established from which point the measurements had been made. Another problem was that the gauges installed since the 1950s were not vertical, making the readings inaccurate in comparison with earlier ones. 2

Like the FAO RBS scientists, and the comparative survey team, Reinius did not allow these inadequacies to block the ongoing work. Reinius presented his findings and thus contributed to the finalization of the preinvestment study which was delivered in November 1969. And again the possible scientific inaccuracies mattered little in the context of the hydropower construction plan, supported by the Swedish development assistance and the World Bank funds.

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1 Ibid.; Ulla Reinius archive, Diary for 1969.
The work for the second phase of the GRPP, the construction of the Mtera reservoir, was also preceded by a preinvestment study, with the same objective as the first. The SWECO archives contain a large number of documents for the second phase of the Great Ruaha power project, saved on microfiche, allowing a closer look at the scientific investigations.

Being already involved in the construction of the Kidatu power plant and reservoir, and having been promised that it would be hired as the consultant, SWECO was formally contracted for this study in July 1974. The final report was delivered seven months later. It recommended the construction of the Mtera reservoir and the extension of the Kidatu power plant with two additional units of 50 MW each.¹ Like previous studies, this study was also bound by both time and budgetary constraints. Reinius was the only person delegated to establish figures for water flows, including calculations on sedimentation. For field studies, according to the time and cost schedules, Reinius was allowed to spend two weeks in Tanzania, including visiting the sites.²

In the archival sources, correspondence reveals how Reinius and others viewed the insufficiency of available data and the uncertainties regarding the figures for water flows and sedimentation transport. Along with the work on the Kidatu power plant and reservoir, Reinius had asked in 1970 for further measurements of water flows and sedimentation transports on the Great Ruaha. By 1972, these investigations had still not been made, due to lack of funds for installation of equipment, so in a letter to the responsible ministry – the successor to the WD&ID - Water Development and Power – Reinius urged them to start the work immediately.³ Two years later, during work on the preinvestment study, Reinius had apparently received figures from measurements, but as these were somewhat surprising in view of earlier recorded measurements he wrote to the Ministry for Water Development and Power asking for clarification:

¹ SWECOARCH, 26757-12, Great Ruaha Power Project Tanzania, Mtera and Stage II of Kidatu, Preinvestment study, Volume 1; SWECOARCH, 26757-000, Letter from Tanesco, J.S. Kasambala, DSM, Apr. 8, 1974 t SWECO, Kristensen, Sthlm; SWECOARCH, 26757-000, Internal memo by SWECO P.A. Nordström /T. Rosendal, Apr. 26, 1974.
² SWECOARCH, Sthlm, 26757-, Appendix to SWECO letter Oct. 23, 1974 t Tanesco, DSM. SWECO, Great Ruaha Power Project, Mtera and Stage II of Kidatu preinvestment study. Time and cost schedules; Appendix 2, List of Personnel and hourly rates of staff working regularly for the project; SWECOARCH, Sthlm, 26757-600, Telex from Reinius, Aug. 8,1974 to Boing.
³ SWECOARCH, 26757-120, Letter fr E. Reinius, SWECO, Sept.18, 1972, to Water Development and Power, Project Planning and Research Station, Ubungo, DSM.
The measurements at Mtera of 1971-74 were effected during the last part of the rainy season only when the sediment concentration is usually less than in the first part of the rainy season. However, also during the last part of the rainy season of 1957-1960 the sediment concentration was seldom less than 150 mg/l, implying that the sediment concentration was measured to be very much greater 15 years ago than today also during comparable times of the year. There must be some explanation to this very surprising result.¹

Reinius maintained in his letter that it was unlikely that the differences could depend on any remarkable changes in the sediment production of the catchment area, and that it was probably a result of different – less reliable – measuring methods. The Tanzanian ministry replied that the problem was due rather to the methods used during the FAO RBS investigation than the current methods. The current methods were more precise, and also performed by a qualified person:

Regarding the measuring site at Mtera, it is performed by a suspension cable from the main Road Bridge (...) by a Hydro man who is experienced in the flow measurement and water sampling task and most of the field officers are graduated from the Technical Collage [sic], and sent to the Regions after a field practical period.²

Hence, the questioning of the results by Reinius fell short. Being located in Stockholm and allowed only two weeks of field studies, Reinius had to rely on the resident SWECO engineers in Tanzania and asked them to push the Tanzanian counterpart to assemble the necessary data for the preinvestment study.³ Other correspondence also reveals the difficulty of the scientific investigations, in this case due to equipment breaking during floods, as reported by Erasmus D. Komba, at the Mtera site, who writes to SWECO in Dar es Salaam:

“The D/stream gauge that was broken during rain season has now been repaired. And I have also already started to read every Monday and Friday starting 1st September 1975.”⁴

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⁴ SWECOARCH, 26757-120, Letter fr. E. D. Komba, Mtera SWECO House, Sept. 3, 1975 t SWECO DSM.
This short note shows the difficulties experienced in measuring the flows of the Great Ruaha River. The same problems as during the FAO RBS, and all the previous studies that SWECO had been involved in, were repeated. Measuring the Great Ruaha at its fierce period was very difficult. Reinius was aware of the difficulties, and noted in a letter:

*In principle there are daily values of water levels and sometimes river discharges but often they are incomplete. We have for our work made the compilations into monthly values.*

The Mtera reservoir site had already been identified by the FAO RBS, but with caution due to the high evaporation aspect. The FAO RBS hydrologist had pointed out the great difficulty with which the measurements had been taken, and that more studies were needed. Neither of the ensuing studies had actually provided more secure data, and the problems that the FAO RBS had faced had also caused trouble for their successors. Yet despite the uncertainty of the scientific measurements, the reports were continuously produced, and all gave a green light for a hydropower development with a large reservoir at Mtera.

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Experts challenging development science

The scientific studies carried out in relation to the Great Ruaha power project may be described as “development science” as they continuously gave a green light for the large Mtera reservoir despite the recurrent uncertainty of their findings. However, there were a few attempts to question these procedures by the individual actors. A number of examples show how engineers and scientists involved in the planning of the Great Ruaha power project attempted to do good science as they had been trained to do, and how this was overshadowed by the rigidity of the development assistance framework.

In 1969 SWECO engineers raised matters that might possibly have called in question the whole project. In a letter from SWECO (Nordström) to the Tanesco general manager, the

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1 Ulla Reinius, Pers. interview, May 6, 2005.
Tanesco and Tanzanian government view on disregarding people living in the planned inundation zone of the Mtera reservoir was challenged:

From the result of the calculations and estimations (sic) in the Preinvestment Study it is evident that the Mtera reservoir plays an important role for the overall economy of the Kidatu power project. Though the question of the availability of the land to be inundated at the creation of the reservoir is not dealt (sic) with in the study, we feel that this question is rather important and it could well be that it may be subject to inquiries from the World Bank.

At discussions with both yourself and with Lwegarulila it has been tentatively concluded that the availability of land at Mtera should not give any problems, since the area is very sparsely populated and does not include any known areas of agricultural or other values. We think, however, this question should be further investigated and we would suggest you to contact representatives of possible interests involved, e.g. Agricultural, Minerals, Forest, Games (sic), etc. authorities in order to clarify the picture in case of an inquiry from the World Bank.1

As discussed in Part Two, the World Bank did indeed ask for further studies regarding the inundation zone, but these studies were more gloss than actual substance. Furthermore, the questions about population aspects were omitted from further negotiations, as the Tanzanian planners declared the necessary relocation of people a part of the ongoing villagization (ujamaa) program and a matter for the regional authorities. At the negotiations in Washington, this was accepted by the representatives of the Swedish government.2

As the planning of the Great Ruaha power project progressed, opposition to the Mtera reservoir arose in Tanzania. By 1971 a committee of representatives from different Tanzanian ministries, the university institution BRALUP, Tanesco and the engineering consultant SWECO had been established to deal with the controversies surrounding the Mtera reservoir and its expected negative impacts.3 In addition, A. Buchanan, a senior executive engineer at the Tanzanian Ministry of Water Development and Power, actively opposed the reservoir. In

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early 1972, he raised the issue of the Mtera reservoir in a letter to the ministry in charge of the Great Ruaha power project development:

From the surface area of Mtera reservoir, full and spreading over 600 km² the annual evaporation is estimated at 1350 mil m³. The estimated average annual evaporation at 940 mil m³ will be a total yearly loss to the Great Ruaha Valley, and also probably to Tanzania, of water resources sufficient to irrigate 400 km² (or 100,000 acres). The Balfour Beatty Report of May 1967 made allowance in their calculations for Mtera for 500,000 acres for irrigation upstream but Sweco design seems to make no such allowance. Indeed if Mtera is to go ahead as planned it will be necessary to restrict all new water usage in the basin – an area extending from Itigi in the North to Njombe in the South, West to Mbeya and East to Iringa in order to feed this wasteful Mtera reservoir.¹

While the first letter was unofficial and confidential, the views of Buchanan became an official viewpoint of the Ministry of Water Development and Power when a letter was sent to the Tanesco General Manager, claiming that Tanesco had no authority whatever to limit abstractions of water upstream of Kidatu (as stated in the 1970 loan agreement for the Kidatu power station). Furthermore, in the official letter signed by Buchanan – of which copies were sent to SIDA and SWECO representation in Dar es Salaam – he stated that the development of the Great Ruaha power project would imply freezing the possibility of agricultural development in an area of 26,000 square miles – or a twelfth of Tanzania’s land area. Buchanan also met the resident SIDA engineer in Dar es Salaam, Stig Regnell, who reported back to SIDA in Stockholm on the objections and acknowledged that the criticism seemed to be of great importance. Regnell took the criticism seriously and wrote to SIDA in Stockholm that it would be necessary to change the plans for the Mtera reservoir:

"Ministry WD & P:s letter 8.6.1972 to Tanesco. It is a severe criticism of the whole Kidatu project. (...) The problem is as I have earlier suggested that the entire regulation level of the Mtera reservoir cannot be used in view of the negative impacts on the environment. In my opinion we will now have to look around for other reservoirs, even if smaller, upstream of Kidatu which besides providing a regulation volume lost from Mtera also possibly would

¹ SRA, F1AB 1393: Copy of confidential letter fr.Buchanan to Devplan/ Letter fr S. Regnell, SIDA, DSM, tSIDA, Sthlm, 19720223.
provide for electricity from new power stations. For these new reservoirs, the evaporation would be less in relation to the volume of the reservoir.\(^1\)

However, although Regnell did his best to alert SIDA to the situation, it seems that his efforts had little effect on the planning process as it proceeded without much disruption. In 1974, Buchanan wrote another letter to Tanesco’s general manager referring to a report by the Regional Water Engineer of Iringa on the Great Ruaha power project. This letter, including the report, was handed to the SWECO site manager in Dar es Salaam, who in turn sent it to the SWECO headquarters in Stockholm.\(^2\) In the letter Buchanan again draws attention to the serious problems of the Mtera reservoir and argued that, for the cost of the Mtera Dam (approximately Tsh. 25 million), two reservoirs could be built at the Utengule and Iringa sites, providing the necessary water flows for the Kidatu power plant but with much less impact on human settlement. Buchanan further extolled the benefits of Utengule dam as the dam would mainly flood permanent swamps and a “virtually uninhabited” area, while at Mtera many people would be displaced and much agricultural land inundated.\(^3\)

The reaction at SIDA in Stockholm to the questioning of the power project in general, and the Mtera reservoir in particular, was to finance an extensive follow-up to the first ecological impact study. In a memorandum at SIDA proposing the approval of another 6 million Swedish crowns for further ecological studies as well as studies of the power sector in Tanzania, it is stated that many problems with the Mtera Dam are foreseen but that further studies will be made in order to prevent these:

For some years numerous meetings have been held with a specific ecological committee.(...)SIDA has sent observers to the meetings. The problems of coordination have been great and the only concrete result that has been achieved is a general acceptance of further investigations. On a regional level it is said that there will be no problems related to the construction of a reservoir of this size. It would only be an advantage for a region with great water scarcity during most part of the year. Also the displacement of people that will be

\(^1\) SRA, FiAB 1393, Letter fr Stig Regnell, SIDA, DSM, t SIDA, industribyrå, Sthlm, June 14, 1972.


required are considered easily dealt with. As the construction of the Mtera dam may bring along great problems of erosion, it is of great importance that the issue of ecology is dealt with so that preventive measures can be made at an early stage.¹

The proposal from the SIDA department was accepted by the SIDA board, which provided the extra funds needed in order to finance an ecological impact study to be carried out by SWECO.² However, the alternative of smaller reservoirs proposed seems not to have been investigated at all. Within the SWECO preinvestment study for phase 2 of the Great Ruaha power project, there are no traces of the alternative reservoir sites. Apparently, the time schedule and budget ceiling for the preinvestment study did not allow for extending the scope for hydropower development.

Conclusion

In this chapter I have discussed the technoscientific settings in which the Swedish involvement in the Great Ruaha power project took place. First of all, not being a former colonial power in Tanzania, or any other African country, meant that for the Swedes – SIDA representatives and the SWECO engineers and experts – there was a lack of knowledge of the African rivers and waterscapes. They were not familiar with the colonial scientific tradition and within the development assistance context they were not allowed time and funding to learn more about it. It is possible that the altruist Swedish development assistance paradigm played a role in creating this setting. The image of Sweden not being a colonial power meant also that Sweden could distance itself from the colonial era and all that had been produced during that period. Instead of basing calculations on earlier measurements produced within the Tanzanian context, before deciding to go ahead with the Great Ruaha power project, the decision-makers at SIDA thought it enough to produce an estimation based on a (regulated) Swedish river. It was acceptable that the person doing this was not based in Tanzania but sitting at his office in Sweden, his authority deriving from his position as a manager of a successful Swedish power company. This procedure could fit into the image of Sweden as

¹ SRA, F1AD 895: Insatspromemoria 19740301, SIDA INDB-B/TAN-DAO, Eriksson/E. Stöd till Tanzanias kraftsektor, 11, 12.
² SRA, F1AD 895, Utdrag ur styrelseprotokoll, nr 1974-8, Apr.26, 1974.
representing the new era, bringing progress and development to a formerly colonized territory.

However, the intrinsic nature of “development science” shows other aspects of interest. While doing the studies for the power scheme, the Swedish scientists and experts, working at SWECO like their predecessors in the FAO RBS, were pressured by the short time limits and small budgets allowed by the development assistance context. While some of the individual Swedish engineers seem to have made sincere attempts to do good science and consequently to contribute to construction of a hydropower scheme in the way they had been trained, it seems as though the macro context of development assistance seriously limited their achievements. Just as the British colonial scientists, and specifically Gillman, had been arguing for the need of serious studies, followed by the experts under the FAO RBS, the Swedish experts expressed a wish for scientific investigations conducted in the way they had been trained, but had to conform to the practices of the current development assistance context. Relating to the argument advanced by Arun Agrawal on the perceived difference between local knowledge and Western science, or as in this case, local understandings and detached approaches, Western-trained scientists of the British colonial period had access to local understandings of the watercourses and agricultural systems. In the development assistance era, Western-trained scientists and experts attempted to perform science according to the methods within which they were trained, while the political context – the objective being to provide a study that would support the construction of a large-scale hydropower scheme – discouraged their efforts. The technoscientific basis for the Great Ruaha was not based on scientific studies, but rather on “general considerations”, implying political considerations, as the Swedish engineer Nordström had recognized in his report back to Sweden. As within the FAO Rufiji River Basin survey, so in the preinvestment studies Western-trained scientists were, willingly or unwillingly, turned into “scientific alibis”.
Fig. 48. The Mtera reservoir at its lowest, by the landing station Chamusilise. Photo: the author, Nov. 2000.
12. The invisibilised peoples of the Great Ruaha project

Emerging on the north side of the Mporotos from the cool dripping masses of foliage, where at every turn of the swampy path one is prepared to encounter buffalo, there is a delightful and wonderful view. Over the half-hidden villages of the sturdy Wasafwa peasants, over their fields golden with ripening corn, their pastures dotted with large herds of cattle, sheep and goats, one gazes into the hazy plain of the upper Ruaha, 1000 m. below, and across to the solid scarp of Usangu.¹

Tanzania shall not permit any abstraction of water from the Great Ruaha River or its tributaries upstream of Kidatu that will in any way reduce the potential output of the Kidatu generating station.²

These two quotations refer to the peoples inhabiting the catchment area of the Great Ruaha River. They are separated by four decades and a transition from colonial period to development assistance era. The first quotation is by Gillman, at that time about to take up the position of Chief Engineer of Tanganyika Railways. It is a description of a part of the landscape surrounding the upper reaches of the Great Ruaha River. Gillman had travelled the country on foot to investigate the landscape and the scope for development, and argued for further studies, as well as investment to provide for access to water for the inhabitants. While Gillman acted within a colonial setting, with a close connection to the landscapes and visions of rural development - the second quotation derives from the Joint Financing Agreement for the Kidatu Hydropower plant and illustrates a complete contrast, invisibilising the people in the catchment area of the Great Ruaha River, and disregarding all their needs for water for agricultural development. In one single phrase, it is stipulated that people living upstream of the Kidatu power plant are not allowed to use the water of the river as they wish; instead they

¹ Gillman(1927),117.
have to let it be used for the production of electrical power, to be transmitted to the cities. As discussed in the previous section, this stipulation, like the plans for constructing the Mtera reservoir, was at an early stage severely criticised within Tanzania, and the critics claimed it implied putting a stop to agricultural development within one of the most fertile land areas of the whole country. However, although much criticised as unrealistic, this stipulation has in many senses lived on, exemplified by the attempts to make the inhabitants upstream of Mtera to save water when the problems of lack of water for power production started in the early 1990s.

In Sweden a policy of ‘Swedification’ of ethnic minorities was pursued concurrently with the hydropower exploitation of Sapmi. A similar policy was the order of the day in independent Tanzania. Here a process that could be defined as “Tanzanification” was introduced under the presidency of Nyerere. Tanzania was to become one nation. Everybody was to speak the same language – Swahili - and citizens were asked to embark upon a specific Tanzanian form of socialism, called Ujamaa. Ambitious programmes for development were designed, starting with the first five-year development programme in 1964. With the Arusha Declaration of 1967, the socialist Tanzanification project was pushed further ahead.

When the Swedish state, through SIDA, contributed financial facilities as well as technological and scientific expertise for the construction of the Mtera Dam, it viewed the land as Tanzanian state territory. The land of the inhabitants of the whole catchment area and the land of the inhabitants of the Mtera Dam impoundment area were considered to belong to the Tanzanian state and thus free for the state to exploit. The Tanzanian land policy has a historical background dating back to colonial times. During the colonial period, the land in the territory had been declared to belong to the German crown, after which the British colonial government declared all land public land. At this time, European settlements had been encouraged, while at the same time the rights of the “natives” were protected to a certain extent. In the areas not reached by European settlers, different traditional systems for land tenure were applied. At the time of independence and with the Tanzanian elite’s socialist

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1 The term “Swedification” has been used by scholars to describe different notions of what a Swedish citizen was, by singling out “the others” – i.e. Sámi, Gypsies, immigrants etc. See for instance Ehn (1993); Frykman (1993) Løfgren (1993); Lindgren (2002)
ideas of collectivization of land, combined with their unwillingness to chase Europeans away, European settlers were given “right to occupancy” while the predominant idea of land in Tanzania was that it belonged to the Tanzanian republic. All land in Tanzania then became public land. In 1969, a system of parallel land tenure systems in Tanzania was introduced. The peasant and pastoral sectors governed by the “customary land tenure” had an assumed right of occupancy, while the plantation and urban sectors were governed by the “statutory land tenure” and had a granted right of occupancy. This means that the peasants and the pastoralists were turned into tenants, facilitating expropriation, even if the customary landholders had been using the land for generations. In many ways, the Tanzanian system was similar to the system introduced in Sweden in the territories of Sapmi.¹

As the issue of displacement of the people in the impoundment area was discussed in the negotiations preceding the final signing of the joint financing agreement for the Great Ruaha power project, the Tanzanian representatives welcomed it as fitting in well in the Ujamaa policy. As shown in the previous chapter, no objections came from the Swedish state representatives, and the issue was left to the Tanzanian authorities to deal with on their own. Yet, as in the Swedish case of the hydropower exploitation of Sapmi, the decision-makers within SIDA could not possibly have been unaware of the problems and implications of this question, which calls for use of the term “invisibilisation” as an act of will to fulfil the prospects of development assistance.

Against this background, in this chapter I discuss the peoples of the Great Ruaha power project at Mtera and how they were invisibilised in different ways. That is, I discuss how people that had little or no voice in the planning process were treated by that process. I focus on three groups of peoples: peoples of the catchment area, displaced peoples of the impoundment area and the migrants – the inmovers. The inmovers in the case of the Mtera Dam fall into two subgroups: those moving in to do construction work and provide related services at the dam and hydropower plant and those moving into the area to exploit the so-called ‘multipurpose’ character of the dam, such as the fishery that developed due to the artificial lake. This categorisation follows the categorisation made both by the dam developers in the specific Great Ruaha power project, and in the first ecological and social impact studies made before and at the outset of construction work, and also includes a category ignored by

these studies – the people living in the catchment area of the Great Ruaha River, who were concerned by the stipulation on restricted access to water.\(^1\)

The sources used as a basis for the discussion are the ecological impact studies, which were all financed by SIDA and in my interpretation function as a statement of what was demanded from the Swedish development assistance side, in their printed versions of 1977, 1985 and 1997.\(^2\) To discuss the content of these studies, I refer to interviews with people at Mtera, and to literature dealing with the catchment area.

The (old) Mtera village and their neighbours who hardly existed

At the inauguration of the Mtera Dam in 1981, a few years before the dam reached its full extent and FSL for the first time, J.S. Kasambala, the managing director of the TANESCO, expressed his views to the local inhabitants on the impoundment:

\textit{A project of this magnitude causes disturbances to human and animal life. It is unavoidable. However extensive ecological studies were carried out to foresee the impact and to make necessary plans. It was established that 1011 persons were living in the intended reservoir before the works started. Compensation was accordingly paid by TANESCO to these people and they were requested to shift to another appropriate site. After a lot of investigation and site studies regional authorities of Iringa decided to establish a village at Migoli 25 km from this dam on Mtera/Iringa road for rehabilitation of these villagers. The regional authorities are arranging to supply piped water to the new village. TANESCO is building a dispensary and a community hall at a cost of 650,000 T.Shs. at the new village.}\(^3\)

According to Kasambala, only 1011 persons were concerned by the inundation of the Mtera Dam. These people were to be compensated as a new and more modern village, with water supply, was prepared for them not far away. The ‘extensive ecological studies’ that he referred to in his speech were the ecological impact study for the Mtera Dam, financed with

\(^1\) For other categorisations see for instance UNDP (undated), referring to five categories: Stayers, Inmovers, Outmovers, Transients and Other Communities.


\(^3\) TANESCO archive, DSM, Speech by Ndugu J.S. Kasambala, Managing Director, TANESCO, on 19th February 1981 on the occasion of the opening ceremony of the Mtera Dam.
Swedish tax funds, and conducted by researchers from Sweden and Tanzania, and it was from there that the figure 1011 came.1

The background of the study to which Kasambala referred was created before the first financing agreement for the Great Ruaha power project in 1970. In the negotiations leading to the agreement it was acknowledged that the big Mtera Dam would cause massive negative environmental impacts. Thus, the World Bank required an ecological impact study. SIDA decided to finance the study, and commissioned it from the Swedish consulting company SWECO, which then employed a professor at the Institute of Systematical Botany at Uppsala University. The first study, completed in two parts in 1970 and 1972, showed that there would be severe environmental consequences.2 SIDA then again, after the controversies on the Mtera reservoir, in 1974, allotted a large sum of money to further studies. The project was again awarded to SWECO, which employed the same professor as project manager. The result was an enlarged study, dealing with environmental and health hazards.3 The final report was published in 1977, under the title *Ecological Studies of the Mtera Basin.*4 As part of the study Tanzanian researchers in the Department of Sociology at the University of Dar es Salaam were requested to make a sociological survey of some of the villages in the impoundment area. However, the sociological survey comprised only 11 of the total 150 pages. On these 11 pages, of which 2 pages were allocated to photos and graphs, the people living in both the future impoundment area and some parts of the catchment area are described in text.5

When stating that the number of people who would have to move was only 1011, Kasambala was referring to a table listing a number of people in four villages in the Mtera basin, who would be affected by the impoundment.6 Yet Kasambala had not read the report very well – the researchers actually indicated that the total population living in the catchment and impoundment areas could be as much as 20 000.7 However, Kasambala might not be accused

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1 Johansson/Hedberg (eds.) (1977)
2 SRA, F1AB 1393 Hedberg, Ecological study of the Great Ruaha Power Project, Phase 1A. Sept.1, 1970; SRA, F1AB 1393, Hedberg, Report on Phase 1B of ecological study, Great Ruaha power project, Tanzania, Jan., 1972.
4 Johansson/Hedberg (ed.) (1977)
5 Ngaula(1977); Nyange (1977); Hamad (1977); Massawe (1977)
7 Nagula,(1977); Nyange (1977), Hamadi (1977); Massawe (1977)
of total misinterpretation or of giving misleading information, as the conclusion concerning the number of displaced or affected peoples is not easily deduced from the sociological survey in the published report. Nowhere in the report are there any clear indications of the number of people that would actually be affected or displaced. Even the calculated numbers published are said to be speculative as the report states that people were constantly moving into and out of the area. Furthermore, the Masai, the nomadic pastoralists of the area, were not included in the censuses.1

[Fig. 49. Abbasi Mwendakusela and Magomba Meshack, Tanesco employees at Mtera and displaced inhabitants of the (Old) Mtera village, in front of the Mtera reservoir. Photo: the author, Nov. 2000.]
Abbasi Mwendakusela and Magomba Meshack are two of the displaced inhabitants of the impoundment area of the Mtera reservoir; they were also employed by Tanesco. During my visit to the Mtera reservoir and power plant in November 2000, I was invited to interview them by my host at the Tanesco power plant. I spent two hours talking to the two men, the setting being a group discussion.¹ This was in the very early phase of my work on the dissertation, and the questions I asked had the character of a first encounter. Furthermore, the interview was complicated by language problems. Mwendakusela spoke some English, while Meshack spoke no English at all. Interpretation was provided by the Tanesco staff present at the discussion. I started by questioning the two men separately, but after a short while they helped each other to remember certain things. As it proved difficult to return for further interviews I have opted to make use of this small empirical material as it gives a voice to a few of the displaced peoples in the absence of more extensive studies. A very brief journalistic investigation of those displaced and of compensations they received took place in the 1980s, and was presented in 1987. I will refer to this investigation to illuminate the issue of economic compensation.²

Meshack is originally from the (Old) Mtera, where he used to farm land.³ Since 1981 he has been employed as a security guard at the Tanesco Mtera site. Mwendakusela originally comes from Mbeya, and arrived at (old) Mtera in 1973 as he had heard about the coming hydropower project. Mwendakusela was engaged in 1977 by SWECO, working as an assistant surveyor for dams and roads, until 1988, when he was employed by the Tanesco as a dam attendant.

According to these two men, several meetings were held with the Tanzanian authorities before impoundment. Mwendakusela and Meshack recalled the names of the persons that met the people of the (old) Mtera village. In 1977 every village in the

¹ Also Ms Florence Gwang’ombe, Tanesco research department, DSM and Arne Kaijser professor of the Dept of History of Science and Technology, Royal Institute of Technology, Stockholm who accompanied me on the journey to Kidatu and Mtera as well as Mafuru, Tanesco, acting engineer at Mtera power plant, were present at this discussion.
² Ngaiza (1987)
³ There is a “New” Mtera village, located near the contractor’s camp on the Great Northern Road, which was an “unplanned settlement” according to Nordström/ Johansson (1985), 71.
impoundment area was visited by a commission of the Tanzanian authorities. No *wazungo* (white people) were present at these meetings. The villagers were worried: where would they live, and how would they be able to find fertile land to grow their crops? No questions were asked by the visiting Tanzanian authority representatives about the needs and wishes of the inhabitants of the impoundment area. Instead there was one-way communication with the government representatives telling them what was going to happen, where they were supposed to move and what compensation they might receive. Mwendakusela participated in two of the meetings, with about 40 - 60 villagers. He himself received no compensation, because he owned no house of his own. Meshack, who did not have time to attend the meetings, as he was busy working on his land, was one of the few persons who received the highest compensation, 5000 Tanzanian Shillings. He lost 5 hectares of land where he had been growing millet. The compensation was small, Meshack said. It was not even enough for the construction of a new house. Today he lives in the so-called ‘Italian camp’ of the hydropower plant with his family. According to Ngaiza’s investigation in the 1980s, the compensation varied between 80 to 1,200 USD. The majority of households, however, did not receive more than 150 USD, which did not correspond to the cost of a new house.

There were a few attempts to protest against the displacement when the water of the reservoir began to come closer to the (old) Mtera village. Some people wrote letters to the Tanzanian government. In the end, nothing helped. They were forced to move. Some 200 adults and children were relocated from the (old) Mtera village. Only a few villagers were offered continued employment with Tanesco once construction had been completed.

At the end of my interview I asked the two men whether their lives had changed for the better or the worse with the coming of the Mtera Dam. The response was difficult to interpret, maybe in consequence of the presence of senior Tanesco employees as well as my own position as a white interviewer from Sweden, the important donor in the construction of the dam project. Meshack and Mwendakusela remembered the Swedish engineers, whom they referred to as ‘very good people’. The direct answer to my question was ‘somehow better’, said with a smile and a sigh. The new land the Mtera villagers had been granted was

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1 Mwendakusela recalled the names of some of the representatives of the Tanzanian authorities: Hidsoni, area commissioner, Matandula, Member of Parliament, Mwallijamba, ward leader, Ngahoja Razi, ward leader.
3 Ngaiza (1987), 6ff.
5 Ibid.
6 Ibid.
less fertile. Farmers encountered many difficulties in finding areas good enough for cultivating crops. But later on, they managed to grow vegetables. They now say that the new village is better as it receives water from the Mtera.\textsuperscript{1} However, knowing what the scientists wrote regarding the new settlements and the water provision, the statement that it is better might be doubted. The water from Mtera was not considered safe by the dam development planners due to diseases such as bilharzia, and the Swedish scientist Dick Johansson, in the 1977 report, recommends that after displacement the new villages should “avoid the use of water from the reservoir for drinking or household purposes”, and that efforts should be made to supply the new villages with pure ground water.\textsuperscript{2} There is certainly scope for further investigations of the displaced inhabitants of the Mtera reservoir.

\textit{Invisibilisation of the people in the catchment area}

In the joint financing agreement for the first part of the Great Ruaha power project, signed in 1970 by the World Bank, Sweden, Tanesco and Tanzania, it was stipulated that upstream use of water must be restricted to allow for the production of electricity at Kidatu power plant. This stipulation touches on the issue of the future use of water upstream of the Great Ruaha project. In one phrase the stipulation states that people upstream of Mtera and Kidatu, and in the catchment area, are not allowed to use the water. It also stipulates that future growth of the number of people in the catchment area would have to conform to a water and land use policy adapted to the needs of the Mtera reservoir. However, within less than two decades it turned out that this was more a matter of wishful thinking than a realistic assumption.

During the planning of the construction and running of a hydropower plant, one of the most important factors is the supply of water. As early as 1969, the SWECO engineers investigating the feasibility of the whole power project had alerted Tanesco to the problem of water availability for the power plant in the light of the upstream activities and environmental impacts. In the early 1970s there had been fierce debate about the size of the Mtera Dam and its potential storage capacity. The response from SIDA, the World Bank and the Tanzanian government had been to provide for ecological impact studies, so as to propose solutions to the problems expected to arise, and, with this, the issue was considered solved.

\textsuperscript{1} Ibid.
\textsuperscript{2} Johansson, “Multi-purpose planning”(1977), 162.
Yet, although invisibilised by the key decision-making actors it seems unlikely that the people in the catchment area and their economic activities were unknown to the planners. The Usangu plains had long been one of the major centres for rice-growing in Tanzania. In Tanzania’s second five-year plan of 1969 rice-growing on the Usangu plains was given high priority. Furthermore, SIDA had initiated a huge water provision programme in Tanzania, parallel with the hydropower support programme, involving the same people as dealt with hydropower at SIDA. A number of the villages located on the Usangu plains received support for the construction of pumps and other related technologies for water supply. A Nordic cooperation project for agricultural development, known as the Nordic Mbeya Project, was also located in the catchment area. A professor of sociology, attached to the Nordic Africa Institute in Uppsala, Knut Pipping, investigated parts of the Great Ruaha catchment area in the early 1970s. Pipping reported that it was known that the Wasangu, as well as another ethnic group, the Wahehe, were mainly cattle herders, and that they also cultivated maize, red millet and tobacco. He also reported that not only the Wasangu and the Wahehe populated the area, but also a number of other ethnicities, one important group being the rice-cultivating Baluchis. The work of Pipping was published in 1976 and, as the study was published by the Nordic Africa Institute, it is fair to assume that it was available to the planners at the time of the finalisation of the first ecological impact study. Even if the Swedish decision-makers in the Great Ruaha power project process did not bother to study the assembled knowledge from the colonial period on the peoples inhabiting the catchment area, they actually had access to extensive knowledge published and available in Sweden.

Hence, it seems fair to use the term “invisibilisation” and discuss this in terms of the technoscientific paradigm in relation to large-scale hydropower as established within the Swedish development assistance setting. However, while the inhabitants of Sapmi – after construction - have not been discussed in terms of disturbing the water flows, the people of the Usangu plains and the rest of the catchment area of the Great Ruaha River were

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3 Planning team of the Tanzanian-Nordic agricultural project(1970); Rydén (1976); Pipping(1976), 4.
4 Pipping (1976)
5 Ibid.
invisibilised until the problems of water scarcity were manifested in the early 1990s. On this occasion, it became evident that the sociological survey carried out within the ecological impact study of 1977 had been far too modest in indicating only around 20 000 people in the catchment and impoundment area. I will return to this issue in the section on ‘invisibilisation continued and discontinued’.

The inmovers

The ‘inmovers’ (migrants), who were to come to the area were not completely invisibilised in the studies completed before construction work started. The question discussed was what the inmovers were supposed to do upon arrival. In the environmental impact study of 1976 the migrants are described as Tanzanian. They were then subdivided into categories of future settlers at the reservoir. One group was expected to concentrate on fishing. The other was expected to come to the area in search of employment at the construction site.1 In the impact study, a warning of environmental hazards to the inmovers was raised. There are references to the risk of the spreading of fatal waterborne diseases, and the recommendation to establish health stations is made.2 However, there is one problem that was never mentioned in the early study of the 1970s: the risk of sexually transmitted diseases, as a consequence of the prostitution that comes with any large infrastructural project. In this case, it was the gender and sexuality of the inmovers that was invisibilised.

In the absence of actual studies of the inmovers I will return to the observations by my informants from the (old) Mtera village. Mwendakusela and Meshack remember the time of migration to the construction site of the Mtera Dam. They mention the arrival of about a thousand Tanzanians and around 50 Italians. The inmovers were all males, from Rome and Milan. There were 10 persons from Mauritius and five Swedish engineers with their families.3 The arrival of so many people in the area, mainly men living alone, also led to prostitution. The women who sold their bodies were both local women and women migrating to the area. (At this point, I confined myself to a heteronormative view and did not ask any questions regarding male prostitution.) Mwendakusela and Meshack stated that there were about 100

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1 Johansson, “Multipurpose planning” (1977), 163.
2 Malaria, filariasis, trypanosomiasis (sleeping sickness) and bilharzia. See Goosen/ Goosen – Kleipas (1977); Matovu (1977); Mosha/ Mndolwa (1977)
female prostitutes, serving both Italian and Tanzanian men. Meshack and Mwendakusela are still upset by the way that the Italians, especially those from Milan, treated the women. They would, for instance, make the women stand in a line and then point out the women from whom they wanted to buy sexual services. When the women stayed overnight with the men in the construction site, they would be offered rotten food.¹ By the year 2000, prostitution still continued, although the number of prostitutes had decreased to around 10 women.²

The issue of prostitution and its possible consequences is not mentioned in any pre-investment study, nor in the environmental impact study for the Mtera Dam. There seems to be no interest in this issue at all before construction. Yet, the issue of sexuality and socializing with the other sex was not completely forgotten by the engineering consultants. In the archives a few references touch upon how the Swedish engineers involved in the Great Ruaha power project were encouraged to bring their families along and how this discussion formed part of the extended negotiations between SWECO, SIDA and Tanesco. It also featured in the planning of the construction site. The consulting engineer responsible for making the preliminary plans for the construction site planned for family houses with suitable facilities. Yet, for the ordinary construction workers, the situation was different. The majority of houses were in the form of bachelors’ residences – clearly not intended for families.³ Avango has described the design tradition of industrial sites as part of a paternalistic industrial community tradition, in which the hierarchies of the persons at the work places acquire concrete form in the siting of the buildings.⁴ Seeing it in relation to the technoscientific paradigm perspective, it could be described as forming part of a ‘normality’ tradition of large-scale hydropower plants. The physical design of the site also forms part of the technoscientific paradigm in relation to large-scale hydropower. This is further stressed when in historical descriptions, prostitution at these construction sites is excluded or, when mentioned, rarely referred to as something unusual or bad. Instead it can be described as being something so ‘normal’ that it is

¹ Ibid.
² Ibid.
³ SRA, F1AD 912 Tanzania Electric Supply Company Ltd, Great Ruaha Power Project, Mtera Power plant. Addendum No. 2 to TD11 – Civil Works. Dated Sthlm 19830131. Facilities for the staff of the Mtera construction site are described in the tender documents: “The [Mtera] village is at present partly occupied and only bachelor units and public facilities will be made available for the Contractor’s local workmen.” [Italics by the author.] SRA, F1AD 897 Tanesco, Outlines of Negotiations held during 13.7.1976 to 15.7.1976 in Tanesco office in Dar es Salaam between SWECO and Tanesco.
⁴ Avango (2005) See also Ericsson (1997)
not even considered worthy of investigation or special measures. For instance, in literature related to hydropower development in Swedish history, the issue of prostitution is sometimes present, but then mainly as anecdotes about heroic men and the entertainments they had besides their work.¹

Invisibilisations continued and discontinued

The way to overcome the problem of the expected negative impacts of the Mtera Dam was to make funding available for an ecological impact study, which would propose plans of action. As I have indicated above, a study was made before construction work started on the Mtera reservoir. This study (1977) pointed to a number of environmental and health hazards. It also pointed to the need for medical care to prevent disease. The medical care facility recommended was considered important because of the expected increased rate of malaria in the population.² Yet in the year 2000 access to medical care near to the Mtera reservoir was still a problem. A discussion with a Tanesco personnel officer stationed at Mtera provided the information that nomadic pastoralists of the Masai group sometimes died on the way to a doctor, as the distances were too long.³ In the landing station at Chamusilise, close to the Mtera waterline, no health care facilities were available.⁴

The 1977 study did not pay much attention to social aspects and expected impacts on the livelihoods of people affected. Nor did it make any exact estimate of how many people would be affected. There was no prediction of the size of the anticipated population moving into the area as a consequence of the construction of the regulation reservoir. The study did however underline the need for further studies, which led to follow-up studies, in 1985 and again in 1997. Both these studies were financed by SIDA and completed under the supervision of

¹ I have found no historical research work made on prostitution at larger infrastructural works in Sweden. However, I have found mention of prostitution or activities referred to as sexual promiscuity in several historical accounts. See for instance Santesson (1983), 65f; anecdote about a man who sold his hut and his “old woman” when he was to leave the work site. Related to the railway constructions in the north of Sweden, a woman of Norwegian origin, Anna Rebecka Hofstad born in 1878, nicknamed “Black bear” (Svarta Björn) and dead at the age of 22, has become a legend, due to her way of living and the appreciation she met among the men in the railway construction work. See for instance Mesch/ Andersson 1995), 89f.; Klausen (2003) Bursell (1984) touches upon the issue of the male dominance among Swedish construction workers and masculine culture that she sees as a consequence.
³ John Bosco Mtega, personnel officer at Mtera hydropower station, Pers. communication Nov.18, 2000..
SWECO and in both the focus is again mainly on environmental aspects. Social aspects are, to a large extent, left out. However, in the study of 1985, while no specific chapter on social issues exists and no sociologists assisted with the research, the environmental aspects discussed are closely related to the social aspects, as the study concerns health, fishing, wildlife and land use. Certain attempts are made in this study to describe the impact on the local population and on migrants, i.e. inmovers who came for fishing, as well as the pastoralists. (The study did not categorise migrants in terms of different ethnic groups; neither did it delineate their geographic origin.) A brief description of the inhabitants of the impoundment area is given, but there is no detailed study of what happened to them and how they managed in the new villages.1 The study ends with a number of recommendations on how the Mtera reservoir ought to be managed. The authors propose a long-term monitoring study of the environmental development of the region, with specific reference to water quality, sedimentation rates, floating debris, fish and fishery, and wildlife. Regarding the social impact, the authors conclude that the region received a large number of immigrants from all parts of Tanzania as well as neighbouring countries, something that has led to ‘various patterns of settlement and social development’. According to the authors, this social development should be “guided in a direction set by the political leaders and the planning authorities”.2

The follow-up study of 1997 is a more extensive study describing the environmental situation in 1993/94. The study I refer to here is the edited and shortened version of a “specialist’s report”.3 In this report of 211 pages (plus summary and recommendations, reference list and appendices), thirteen pages are devoted to a chapter on ‘Social, Economic and Cultural Aspects’. The study for this chapter was performed by four researchers affiliated to the Department of Sociology at the University of Dar es Salaam.4 Two interesting points emerge from an examination of this social, economic and cultural impact study from an ‘invisibilisation’ perspective. First of all it is interesting to note that the authors describe the reservoir area, prior to impoundment, as ‘sparsely populated’, ‘occupied by the Wagogo and a few Masai pastoralists’.5 No figures are presented regarding the different ethnicities, before

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1 Nordström/Johansson (1985), 50ff, 71f.
2 Ibid., 98ff.
5 Ibid., 155, 157.
or after impoundment, whereas a “population explosion” is described as one consequence of the reservoir.\(^1\) Like the description of the Sámi in Sweden, the description of a “few” pastoralists seems as much as a strategy for omitting to describe the actual situation before and after impoundment, a strategy for invisibilisation. However, my analysis is based upon the published version of the study, financed by SIDA, and therefore it is difficult to establish from where this strategy of invisibilisation came and whether the Tanzanian sociologists actually collected more information.

Secondly, this study does discuss gender issues as it describes the gender relations in the traditional societies (Masai, Gogo and Hehe) as well as the ‘impact on role and status of women’ of the hydropower exploitation.\(^2\) Addressing gender issues in impact studies had by 1990s become an integral part of SIDA-funded activities, which explains this specific effort.\(^3\)

However, while gender was completely left out in the earlier studies, the introduction of a gender perspective in the study of 1997 takes a specific form that exposes a strategy of invisibilisation. The study made reference to certain gender contexts, while avoiding discussing others. In a presentation of the traditional societies, before the construction of the Mtera Reservoir, women are described as ‘inferior and subordinate’ to men. The men of the traditional society are as inheriting all property rights. Hence the study does describe important gender roles that may have had great importance in relation to the loss of land due to inundation and displacement, but this aspect is left out as the impacts of the Mtera reservoir is discussed. The description of the “impact [of the Mtera reservoir] on roles and status of women” is instead reserved for describing the beneficial impacts that the Mtera reservoir had on unmarried women moving into the fishing villages. These women have, according to the study, mainly gained economically and socially from the reservoir.\(^4\) In this sense, the use of “gender” as a category has become a part of a strategy of providing evidence that the reservoir has been beneficial to “women” in general.

Finally, an important gender and sexuality aspect referred to, but by its limited extent in the text at the same time almost dismissed as unimportant, is the issue of prostitution. The study actually points to the problem of girls of 7-14 years becoming alcoholics and engaging in prostitution. Being a study of the 1990s, when the knowledge

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1 Ibid., 157.
2 Ibid.
3 Hannan (2000)
4 Musoke/Bwenge/Badru/Nderumaki(1997)
about HIV/AIDS was widespread, and Tanzania badly hit, it is interesting to note that at this point there is no discussion of possible relations between prostitution and HIV/AIDS. Yet this relationship had already been contributing in the early 1980s to the revisibilisation of the social structures of the construction camp at the Mtera Dam. An engineering consultant, working on the construction of the dam at the time, remembered how the issue became a big problem (at least in Swedish media). However at this time the problem was solved by “closing the gates to the construction site”. Thus it seems as if when the issues of gender and sexuality in the late 1990s entered the framework for analysis of the impacts of the Mtera reservoir, these categories, at least in the published version of the study, were used only for providing arguments in favour of the reservoir. At the same time gender and sexuality related serious health problems resulting from the construction of the reservoir are invisibilised.

The people in the catchment area have lately become visibilised with both names and faces in a development assistance project – the SMUWC project – from the former colonial power Great Britain. Below are two quotations from the SMUWC project brochure, Talking about Usangu, which addresses the peoples of the catchment area and their water usage:

(W)ater in the Mkoji River was flowing well until the people in Ilongo diverted the water… yes… it does occur… water dries up when our neighbours in Ilongo are farming during the dry season…’; Mama Komizambili, Sangu Farmer, Ukwaheri.

(W)hen we realised that the Ruaha River was drying up, we were all shocked…’; Sultani Matinda, Ikoga.

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1 The first cases of AIDS were discovered in Tanzania in 1983. Cf World Health Organization (2004)
2 Sten Lööf, Pers. interview, Oct. 10, 2000. I have not gone further into the archives of Swedish media to investigate the amplitude of the attention drawn to the problem.
3 For HIV/AIDS in Tanzania, see for instance World Health Organization (2004) Decosas (1996) has shown how the construction of the Volta dam in Ghana in the 1960s brought in its wake prostitution, which in a longer perspective has been an important cause of the spread of HIV/AIDS in the country. As a consequence of the inundation of land for the construction of the Volta dam, many women of the Krobo people, who lost their land, started working in service business, and also started selling sex to the inmoving construction workers. The illegitimate children who were the result of these sexual relations had very few means of economic support during the continued construction boom. The illegitimate daughters, especially, found their livelihood by selling sex, as their mothers had done before them. Studies have shown that HIV/AIDS infection rates are the highest amongst these women, born between 1956 to 1965 while the construction of the Volta dam was at its height.
4 SMUWC stands for “Sustainable management of the Usangu Wetland and its catchment”. SMUWC (2004) The project received funding from the British Department for International Funding (DFID)
5 Cited in King/ Thomas (2001), 8.
6 Cited in King/ Thomas (2001), 2.
The above quotations are from two different inhabitants of the area upstream of the Mtera Dam, in the catchment area of the Great Ruaha River, the Usangu plains. When planning for the Great Ruaha power project, and the Mtera Dam, the ones who were to be displaced from the impoundment area were described as being ‘few’, and some of the villages of the catchment area were mentioned in the sociological survey of 1976. The total number of peoples affected is estimated at around 20 000, and the researchers point to the possibility of a population explosion as a consequence of the dam construction. But there was no discussion in the report of the impact of the construction of the dam on these people, nor of their impact on the project.

I will not attempt to discuss any of the possible impacts on the inhabitants of the catchment area, but I will point out how these peoples suddenly became visibilised as a consequence of the water shortage of the hydropower system. The water shortage in the early 1990s, only a few years after the Mtera Dam reached its full extent in 1984, led to power rationing in Dar es Salaam. In response a number of projects dealing with aspects of water usage upstream were initiated. In the process of convincing the inhabitants of the catchment area to take more responsibility for their own water consumption (even though it was uncertain whether their water consumption actually had any effect on the water levels of the Mtera Dam)\(^1\) these peoples suddenly became an object of interest and economic investment. A joint study by the Danish development assistance agency, Danida, and the World Bank, stated that the area (here defined as the Great Ruaha River basin) was inhabited by an estimated 980 000 persons by 1993.\(^2\) The SMUWC project of Great Britain was even more extensive in research and project objectives. In these two projects the riparians of the Great Ruaha River and its tributaries became visibilised, at least in the sense that they were now identified and their problems featured in academic research projects. They were also included in water management projects. Some of the peoples even became faces with names in information brochures, as the two persons cited above.

\(^1\) SMUWC (2001), Annex 1, 17
\(^2\) Boesen et al. (1995), Part II, p.2.5.
Conclusion

In this chapter I analyse the technoscientific basis regarding the people in the catchment area and inundation zone for the Mtera Reservoir. I have used the term “invisibilisation”, commonly used within feminist academic research. I indicated the similarity to how the Swedish state went ahead with hydropower exploitation in Sapmi. In this sense, the idea of a technoscientific paradigm in regard to large-scale hydropower seems relevant.

To start with, I have discussed how existing knowledge of the peoples of the catchment area was unused, or disregarded, when planning and taking the decisions regarding for the Great Ruaha power project. By referring to published literature I have shown that the catchment area of the Great Ruaha had been known for many decades for its potential for agricultural development. Besides recognizing the potential for agricultural development and thus possibilities for European settlement, pre-colonial and colonial scientists and travellers indicated the existence of numerous ethnicities living and thriving in the area. I have also shown that studies of the people in the catchment area also existed in Sweden at the same time as the planning for the Great Ruaha power project proceeded. Knowledge about the catchment area and its population was known also to the SIDA, as there were parallel Swedish development-assistance-financed activities within agricultural development, located in the catchment area. These activities were dealt with by the same department at SIDA that dealt with the hydropower project. Within Tanzanian development planning, easily accessible to the Swedish planners, certain areas within the catchment area stood out as major centres for rice cultivation, and thus competitors for the water resources within the Great Ruaha river catchment. Furthermore, I have shown that the Swedish experts from SWECO did raise the problem of the people living in the catchment area and that the construction of the dam would impact on their livelihood, and vice versa that the water might not suffice for the hydropower production as it was used for agriculture. Yet, the planning for the power project proceeded, and decisions to finance it were taken.

Hence, what stands out as the interesting part of the “development science” context is how important knowledge is “invisibilised”, as are people affected by and having an effect on the project. Using Kuhnian terminology, in regard to how scientists may deal with anomalies, it can be referred to the option when recognizing important anomalies - while the anomalies in the large scale hydropower technoscientific paradigm are mentioned on numerous occasions, and even recognized by the scientists involved, the problems are left for
the future to deal with. The driving force behind going ahead with the project to be the development-assistance context, as funding is available despite serious problems being recognized. Agendas other than good science and best technology, seem to take the lead. (In this particular case, however, the future came very quickly, as water scarcity turned up less than a decade after construction of the Mtera reservoir.

Secondly, I have returned in this chapter to one of the preconditions for the persistence of the technoscientific paradigm; the view that the inundated and affected territory populated by indigenous peoples/ethnic minorities is state property. In Sweden the land of the indigenous Sámi, Sapmi, was considered state property and its inhabitants were considered to have few or no formal rights to the land on which they had depended for thousands of years. It seems as though this view came along with the Swedish development assistance representatives to the Great Ruaha power project. Without further discussion Swedish state representatives at the negotiations in Washington agreed to finance a large dam that would displace local inhabitants, when Tanzanian state representatives claimed the displacement would form part of the Tanzanian villagization project. Moreover, when financing scientific studies of possible negative environmental and social impacts on three occasions, SIDA financed further documents that fitted the Mtera reservoir into the technoscientific paradigm, viewing the project as bringing progress and development to Tanzania. Questions that might have seriously undermined this view were not asked, or at least, if asked, these questions did not form part of the published reports. Other questions, for instance regarding gender aspects, when raised, were adjusted in ways that would fit into the overall framework of the technoscientific paradigm. The anomalies in the paradigm are presented in the published versions of the scientific documentation as minor problems that can be dealt with, or alternatively left without further comment.

I have also returned in this chapter to the theme introduced in Part 1, discussing Swedish hydropower exploitation in Sapmi, of how in certain cases invisibilisation in the planning process may ultimately lead to the peoples in question taking the initiative in becoming visibilised. In the case of hydropower exploitation in Sapmi, this led the Sámi people to start to mobilise themselves. In Tanzania, however, there has been another kind of mobilisation of local inhabitants, as problems of water scarcity struck the large-scale hydropower project. Since the early 1990s, lack of water in the Mtera Dam has caused severe problems in the electricity production of the Kidatu and Mtera power stations and a number of attempts have
been made to explain the causes. In response, development assistance actors from Denmark and Great Britain contributed to the visibilisation of the peoples in the catchment area of the Great Ruaha River. Within these two projects the locals were visibilised from a range of viewpoints. One concrete aspect is the way that the people living in the area are visualised through the project, with photos of different individuals, in many cases, albeit not all, with their names, as well as quotes from interviews. The number of people living in and moving into the area was also documented, whereas early impact studies made no significant mention of them.
Part Three: Conclusion

The object of Part Three has been to analyse the technoscientific basis for the Great Ruaha power project. I have set out to determine what kind of knowledge, and whose knowledge, formed the basis for the decision of the Swedish government to finance the Great Ruaha power project in 1970 and in 1974. As far as the issue of water flows and sedimentation is concerned, the brief answer to this question is that the knowledge was scanty. To a large extent, the decisions were based on investigations made in the 1950s, by the FAO Rufiji River Basin survey, where the experts involved themselves warned that their investigation was merely a reconnaissance study and that before going ahead with projects, far more studies would be needed. As the Swedish development assistance agency entered, bringing Swedish experts and scientists, funds were insufficient for any further extensive studies. While the knowledge used was based on methods accepted in Western scientific training, the grounds for the existing data were questioned both by the investigators themselves as well as by Swedish scientists and experts. Local understanding of the environment produced during the colonial period was disregarded, as also were the views of local inhabitants. Furthermore, even knowledge produced within other Swedish contexts, knowledge regarding other water-demanding projects as well as population structures within the catchment area that affect water flows and sedimentation, was disregarded, as the overall imperative was for the Great Ruaha power project to go ahead. I have also shown how, within the sphere of Swedish development assistance, scientific studies of the people living in the inundation and catchment area have been adapted to fit into the framework allowing for the Great Ruaha power project.

Analysing the technoscientific basis for the Great Ruaha power project I have used two terms, “development science” and “scientific alibi”. With the term “development science”, I have implied that the science and knowledge produced had a specific political framework, the framework of development assistance. “Development science” also indicates a certain distance from “colonial science”, as produced within a new era – the development assistance era – with different political backgrounds. However, “development science” also implies certain linkages to the colonial science, the importance of location, as well as the inherent aspirations within colonial science. “Development science” is science using the status and power provided by Western scientific training and positioning at Western universities, and at
the same time carrying aspirations, the vision of “development” or “progress”, and in the context of development assistance projects it is performed in specific ways that seem to overshadow local understandings. “Development science” is a situated knowledge, departing from specific partial perspectives, depending on the development assistance donor contexts. “Development science” receives its power and status from the persons involved being trained at Western universities, but also, and more importantly, from the capital involved in the development assistance projects. However, as I have shown by an analysis of some of the scientists and experts involved in the process, individual Western-trained scientists may and sometimes actually do oppose the methods used. But in the larger context, with the massive funding available through development assistance, it seems as though their objections may be disregarded and they may end up as “scientific alibis” as their names and scientific affiliations are used as indicators of quality for the reports produced.
CONCLUDING DISCUSSION

Feminist and postcolonial theories aim to challenge established practices, visions and discourses. Alluding to the painting of René Magritte "The Betrayal of Images" (1929), on which he writes “Ceci n’est pas une pipe” – “This is not a pipe” - below a picture of a pipe, serves well to illustrate my efforts. There are several interpretations of and numerous discussions regarding the painting, and what Magritte intended to say, all referring to the contradiction between the script and the image. Michel Foucault discusses the painting in terms of questioning visual representation, as a part of questioning modernity. Foucault argued that within “modernity”, people are positioned within established systems of seeing, linking reality with visual representation.¹

¹ Foucault (1973)
While a pipe may seem simple to grasp, a hydropower plant is not a familiar picture to most people. Hydropower plants are often located far away from urban centres. And even if one can visit a large hydropower plant, it is really difficult to actually see the whole system. Just to get a grasp of its physical parts – reservoir(s), control room, turbines, generators, transformers, electric cables, tunnels, inlets and outlets etc. – one needs special access, in most cases granted only to trusted staff. Then, besides the man-made physical structures, the hydropower plant relies on water flows from rainfall, streams and groundwater within the catchment area of the rivers providing the water. The social part of a large-scale hydropower plant is as complex as the physical structure, including the people taking the decision to construct the power plant, planning for the hydropower plant, working on its construction, as well as the people affected by the construction of the power plant, reservoir and, it should be remembered, the electrical transmission lines stretching out over the landscape as well as the people affected by the power produced, or the power not produced (for example when power is rationed due to lack of water in the system). Then, there is the symbolism attached to large-scale hydropower plants. The prevailing understanding of large-scale hydropower in the current big dam era is that of a provider of progress and development. Large-scale hydropower plants are “real” and “good” technology. They are the measure of what a nation can accomplish in terms of science and technology. They are the measure of wealth and future. And they are also a kind of measure of man, the male, as the rational creature in control of nature, the woman. Or at least, this is what can be concluded when discussing a large-scale hydropower scheme in general. Analysing a large-scale hydropower scheme in this specific context, with Sweden as the exporter of a technological know-how, capital etc, leads to another set of complex aspects.

The aim of this study has been to analyse the history of a specific large-scale hydropower scheme – the Great Ruaha power project in Tanzania – and to establish why and how this scheme came about. Accepting the view that technology and science are socially constructed, and also carriers of political ideologies, I have set out to identify the key actors involved in the decision-making process and discuss the contexts within which they acted. The Great Ruaha power project came about in a period of Tanzanian decolonisation and as Sweden took its first step towards becoming a major donor within development assistance, as well as a major actor within the large-scale hydropower sector and within the framework of development assistance. Going through archival sources, doing field studies and interviews, I have been confronted with the subject of the colonial era and decolonization. My solution has
been to include in the analysis aspects of how the colonial era and decolonization influenced this specific project and the actors involved. Thus, aligning with postcolonial authors, I have opted to discuss development assistance as continuity from the colonial era. While it can be argued that ideas and imagery from the colonial setting have influenced Swedish development assistance, Sweden had not since the end of the 19th century been a colonial power, overseas. I have shown that this turned out to be of importance in many ways in the context of the Swedish entrance into the Tanzanian hydropower sector.

I have opted to talk in terms of “paradigms” - technoscientific paradigm in relation to large-scale hydropower in Sweden, merged with a specific Swedish development assistance paradigm highly influenced by a colonial imagery. This paradigm also presented Sweden as an altruistic nation, “better” than the former colonial powers, pretending that Sweden had never had anything to do with colonial projects. Within this development assistance paradigm Swedish technology, science, know-how and personnel were presented as being a better option for the former colonies, after their exploitation by the colonial powers. However, at the same time, at least initially, the Swedish official stance of altruism complicated matters. Being better than the others meant that Swedish enterprises would have to compete on an equal basis, the development assistance aid had to be unconditional. The Swedish development assistance representatives involved had to deal with this context. By fair means or foul they had to ensure that the official Swedish policy of untied aid would be followed, while at the same time they had to facilitate the fulfilment of the second part of the Swedish policy, namely support to Swedish enterprises.

While Susan Holmberg has argued that the Swedish development assistance reflects an export of the Swedish welfare system, I propose that in the case of large-scale hydropower, what is exported is a hydropower system influenced by a Swedish “technoscientific paradigm”. Large-scale hydropower is about control of watercourses and territory. Sweden was not a colonial power overseas, but instead the Swedish state in the 20th century acted as a colonial power within its own borders regarding the northern territory, Sapmi. I argue that what created within a Swedish context, as the Swedish state strengthened its grip on Sapmi, the main pillars of this specific technoscientific paradigm was the equating of large-scale hydropower with progress (for the nation). The paradigm also included the view of territory and water as belonging to the state, free for exploitation, while disregarding and invisibilising
the people living in the area as well as their use of the territory and watercourses. The paradigm allowed for technological design that turned lakes into open sea and traditional ice roads into death traps, and forced watercourses into tunnels for kilometres, leaving open wounds in the landscape, while propounding the idea that the territory was hardly populated. Defining “colonisation” as domination of territory, unbalanced economic power relations and attempts at changing cultural images in ways that further emphasise the unbalanced power relations, the hydropower exploitation of Sapmi was a colonial project – an internal colonization project. In this sense, the technoscientific paradigm created within the Swedish setting can be considered colonial. This paradigm, merged with the Swedish development assistance paradigm influenced by colonial imagery, was the context that followed the Swedish actors involved in Great Ruaha power project.

Then again, returning to the links between colonial period and development assistance era, it is of importance to discuss the roles of the Tanzanian key actors involved. The Swedish development assistance actors did not act in a vacuum but negotiated with the Tanzanian government. Havnevik has shown in the case of the Stiegler’s Gorge project (which has not yet been constructed) that the Norwegian development assistance search for hydropower projects matched the Tanzanian government’s vision of large-scale hydropower development.\(^1\) The Great Ruaha power project exposes a similar course of events. Also the Swedish state-supported efforts to expand on a global market came at a time of decolonization, and coincided with a Tanzanian quest for independence from the former colonial power and a wish to enter the world wide big dam era. In this sense, the role of Sweden within the Great Ruaha power project can be seen as a supporter and an enabler of the reproduction of a similar paradigm in a Tanzanian setting. The big dam era had already reached Tanzania, but to play a part in this era massive external support, i.e. funds, was needed. Being carriers of a Swedish technoscientific paradigm in relation to large-scale hydropower, Swedish development assistance actors and extensive funds were willing enablers within the internal Tanzanian colonization of watercourses and territory, providing design and technology that allowed for the invisibilisation of Tanzanian citizens.

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\(^1\) Havnevik (1993)
However, Tanzania was an independent state at this period, and in the context of development assistance with its unequal power relations between donor and receiver, I have shown that the Swedish involvement did influence the decisions taken by the Tanzanian government. Whereas the Tanzanian government wished for agricultural development and hydropower production in combination, the Swedish involvement, supported by the World Bank, brought about investment in a project with electricity production as its only outcome.

Failure of technology transfer is one of the themes of the debate on colonialism and technology and science. In this sense, my study has provided a historical analysis of the Great Ruaha scheme and its troubles with water shortages leading to power rationing, starting less than a decade after the construction of the Mtera reservoir. In this sense I have shown that the absence of a Swedish colonial presence in Africa was of importance in regard to the production of knowledge for the design of the scheme. During the colonial era, colonial scientists had assembled knowledge of watercourses and sedimentation as well as human activities affecting the water flows, by living in the area and talking to the local inhabitants. A colonial scientific arena had been created, and the knowledge was accessible to anyone who wished. But, in the era of development assistance, considered as a break with the colonial period, it was acceptable to disregard this knowledge and to base a whole hydropower scheme on extremely short series of water flow measurements, questioned even by the scientists that had performed them. In the development assistance era modern scientific methods were used to produce documents that formed an illusion of good science and consistently good technology as a basis for a large-scale hydropower project. I have shown that the scientists and engineers involved were aware of the shortcomings of their methods and how they were applied in the field, they were aware of the limitations to their studies, and some of them even called for further investigations, or even questioned the whole Great Ruaha scheme. However, within the framework of the development assistance paradigm, merged with the technoscientific paradigm, it seems that the space for questioning was limited. I have not gone into the question of why this was so; such a study could be a continuation of the questions raised here. However, my interpretation, based on the surrounding contexts of the technoscientific and development assistance paradigm is that “doing good” was a strong driving force, and the development assistance project, even though it involved economic interests, was per se doing something good and thus not questionable.
This dissertation has shown that a hydropower plant is not just a hydropower plant, and especially if it is a hydropower project within the framework of Swedish development assistance. Although Sweden was not a colonial power in Tanzania, colonial imagery, and relations to the colonial era, as well as Sweden’s background of internal colonialisation, exerted an influence on the decision-making process and the actors involved in the Great Ruaha power project.
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