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This is the published version of a chapter published in *Efficient Environmental Inspections and Enforcement*.

Citation for the original published chapter:

Artman, H., Brynielsson, J., Herzing, M., Jacobson, A. (2016)

More efficient environmental inspections and enforcement

In: Herzing, M., Jacobsson, Adam (ed.), *Efficient Environmental Inspections and Enforcement* (pp. 246-). Naturvårdsverket

Rapport / Naturvårdsverket

N.B. When citing this work, cite the original published chapter.

Permanent link to this version:

<http://urn.kb.se/resolve?urn=urn:nbn:se:kth:diva-239621>

# Chapter 12

## More efficient environmental inspections and enforcement

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In the context of EMT, environmental inspections and enforcement (EIE) have been analysed from different scientific perspectives. This is also reflected in how the concept of efficiency is used in the different chapters of this report. External and internal efficiency, which are defined in the introductory chapter, have been the natural reference points in each chapter. This chapter summarizes the results of EMT's work, with particular focus on the factors influencing the efficiency of Swedish EIE.

The following section addresses the importance of competence and professionalism for efficiency. Section 2 concerns efficiency and usefulness [se kommentar i det avsnittet], based on the prototype for an information system presented in chapter 10. Section 3 discusses the prerequisites for being able to measure the supervisory work. Section 4 describes the ability to measure supervision performance. Section 5 concludes and summarizes the report.

### 12.1 Efficiency through competence and professionalism

To do the right things at a local office (external efficiency) and to do things right (internal efficiency) you must have the right *competence* and use your *professionalism*.

Competence can be defined as the application of knowledge, skills and behaviour.

Competence is relative and is about how well you can apply knowledge and do a job. By formal competence, one usually means the education or experience that is required and can be measured, in the same way as knowledge, i.e. if you have the knowledge, expertise and ability to perform something. By social competence, one usually means how well you can “handle people” and how well you work in a team. By professionalism, one usually means implementation, purpose and properties that characterize a profession.

In order to use the concepts of competence and professionalism in terms of efficiency and in order to measure their importance for the result of supervision, a discussion is needed to establish what the meaning of a concept really is and what it means for the field EIE. Based on the observations and interviews made within the framework of the programme, we have compiled a number of aspects of the environmental inspectors' (and managers') competence and professionalism at different levels.

We have found two parts or perspectives of the competence needed to carry out inspections: individual competence and team competence. Individual competence can be

divided into both the general basic competence that everyone should have and specialist competence. Basic competence concerns e.g. knowledge relating to environmental legislation and the administrative law as well as language skills so that clarity and correctness are achieved, e.g. so that decisions can be used in a possible hearing. This requires a common nomenclature that is actually in use so that everyone agrees on the concepts at the national level and use the correct terminology and formulations for different types of paper work, for example, formal decisions. Special competence is about ensuring that at least someone in the office has expertise in a specific field, e.g. private sewers, nursery schools, chemicals or technical support systems.

We have also described competence as something common, i.e. a collective competence in the office or within the team. Collective competence is the sum of all individuals' knowledge that should guarantee that the right competence is available within a municipality to ensure that the correct decisions are made, given the issues that have to be managed. Accordingly, there must be consistent competence regarding the basic choices of EIE and each employee's basic knowledge of and competence in legislation, administration and using a correct and clear language both orally and in writing. This, in turn, is about a common ground and consensus for transparency regarding laws and regulations to ensure that operators and the general public have confidence in the decisions made and how they are made.

Social competence is not just something you have, but there are methods for learning about this with respect to attitude and the achievement of objectives in your interaction with people, whether it be between operators and environmental inspectors, the environmental inspector and municipal politicians or within a team of environment inspectors. Competence in this area is about embracing methods regarding attitude and to set measurable targets for the meeting/interaction, for yourself and for the group.

Professionalism can be expressed as the characteristic way in which a person performs his/her work within the framework of his/her professional role. In terms of the environmental inspector, this concerns, for example, being professional in his/her assessments. An efficient assessment in exercising authority is very much about its being in accordance with the rule of law and consistent, but also about its being done correctly from the beginning. The latter means, for example, that it should stand up to a judicial review, so that if it needs to be used in court, it should contain all information that the court requires. An important prerequisite for a professional judgement is that we look at each individual case on the basis of its individual circumstances. It is the quality of the assessment that determines its efficiency in relation to other parameters, e.g. the time you must spend on each specific case. A detailed description of the assessment dimensions can be found in Chapter 6.

What professionalism and competence in the EIE field involves also needs to be defined and filled with content at national, regional and local levels to ensure the formation of a common understanding and transparency in procedures and decisions.

The argument about professionalism and competence may sound like a matter of course. Given that environmental inspections take place through those individuals that are appointed to carry out this task, i.e. environmental inspectors, and that EIE is spread across the country to places with different administrative, organizational and financial conditions, the definitions and the content of the concepts at all levels are fundamental for ensuring consistency and transparency.

## 12.2 Efficiency and usefulness

For the research field Human Computer Interaction (HCI), there is a central definition of what constitutes good usefulness, namely the ability to use a system.

THE STANDARD ISO 9241-11 DEFINES THE USEFULNESS OF A SYSTEM:

The extent to which a product can be used by specified users to achieve specific goals with effectiveness, efficiency, and satisfaction in a specified context of use.

This definition puts the user and the system in first place, where their interactions will achieve the objective of a given task in an efficient manner. Accordingly, the user should not need to get a “headache” over how to use the system, but the system is a means of achieving the end. We might possibly put satisfaction in parentheses, although it relates to whether the user feels that he/she has done something efficiently and effectively. Effectiveness involves the degree to which the task fulfils something for the organisation in general (external efficiency) while efficiency here concerns internal efficiency.

In most cases, a task is included in a system of other tasks that together constitute the overall objective, for example, as in the description of professional judgement above. Therefore, it becomes key to clearly describe the system boundaries that constitute the outer part of the system. Environmental inspections can have “the values of impact on the environment” as the outer boundary. However, in the EMT programme, it is not the environment that sets the boundaries, instead it is the internal consistency of environmental inspections given the Environmental Code that represent the system boundaries. In this context, you can say that all tasks that inspections consist of (conversations, check of self-inspection, etc.) are to achieve the objectives set out in the Environmental Code. In this respect, the decision support prototype is part of how you manage inspection data, and how some of the inspectors' work processes are arranged.

As mentioned above, the extent to which objectives are achieved in relation to resource usage is a common way of defining internal efficiency. The key here is what is the objective. We may possibly achieve an objective, yet have considerable resources at our disposal and therefore be inefficient if we had been able to achieve the same objective with fewer resources. The objective of EIE may be linked to, e.g., environmental quality, legislation, rule of law, coordination of efforts, administrative practices, inspections, failure rate, time and resource consumption.

The decisive factor is which objective is put at the forefront and, in some respects, this may vary depending on the user in question. At the first level, it is the inspector who needs to prepare, implement and make decisions and make an efficient follow up with the help of the system. In this case, it is largely about administrative accuracy relative to the task, i.e. using correct information as a basis for creating correct information relative to those performing the same or similar tasks. Coordination across the country, consistency and impartiality are key factors.

At the next level, the municipality, it is crucial that the assembled information from the previous year corresponds well with the following year and that the tasks are carried out in the best possible way to achieve as many objectives of the Environmental Code as possible. For example, imagine that a municipality chooses to focus on operators that have high emissions or, historically, have frequently acted incorrectly, rather than on the many operators that conducted themselves impeccably. Depending on what you consider to be efficient, the number of operators being inspected or the impact of the operators on the environment, you get completely different definitions of efficiency.

At the third level, it becomes a more nationally collected view of EIE. Once again, it is entirely dependent on what objectives are considered to be the benchmark for efficiency. Simple measures such as the number of hours per object may ignore the degree of difficulty of the specific case. For this reason, it is essential that all inspection objects have been “risk-classified”, i.e. defined based on a number of criteria such as the impact of the activity on the environment during normal operations, the environmental impact in the event of failure, but also economic risks.

EIE and the activities for which inspection data provides a basis are thus an example of multi-attribute assessments where a set of attributes must be fulfilled to various degrees: different efficiency definitions are obtained depending on the objectives to be considered and to what extent they should be met.

It then becomes crucial what objectives are defined for the operation, and what resources and means that are available for this. Focusing on the inspector, our intention has been to avoid adding new tasks and increasing the use of resources. This might be called defining the efficiency negatively – it must not become worse. Furthermore, the system is designed to support the inspector in terms of reliability and safety relative to the operator's possible questions, opinions, comments, etc., and the planning and preparation of inspections.

We have also said that “data quality must be guaranteed on a local level for the degree of efficiency to be met at this and other levels”. By this, we mean that it is when making the collection that you have the opportunity to determine how accurately you gather data and that it is here that you tag the data to make it available to others. For example, you can make a visual inspection to see whether something is at a reasonable distance from something else, or you can measure the distance. Tagging the gathered data is about creating opportunities for others to share it. For example, the same kind of inspection

must have the same tagging, i.e. the measurement of an incinerator must be tagged as that and not as ovens in general or by temperature expressed in the number of degrees.

## 12.3 Measuring the inspection work

How can we measure people's work to influence the fulfilment of the objectives of the Environmental Code, given both the structure of the Environmental Code and the Administrative Act and the prerequisites and character of the work? We assume that environmental inspectors' professionalism and competence constitute the basis on which their work rests. Thus, it is fundamental to define what constitutes professionalism and competence.

The competence that must exist at an environmental office can be defined based on individual basic competence, individual specialist competence and the group's collective competence. This means that you must ask the questions: What must everyone be capable of doing? What must someone be capable of doing? Have we covered everything we need to know with the people we have? These questions must then be broken down onto a detailed level, where the different qualities of the competence are identified, including the competence highlighted in chapters 6, 7 and 8. Therefore, we must specify what the competence consists of at the detailed level in order to be able to perform certain work and to illustrate this by putting competence into words.

However, you also need to define competence at local, regional and national levels in order to meet the specific needs of different parts of the country, while ensuring that the required competence is available at the national level to guarantee the external and internal efficiency of environmental supervision.

The different types of competence and aspects of professionalism are described in chapters 6, 7 and 8. These chapters discuss judgement dimensions, the professional vision and objectivity as components in making professional judgements and that environmental inspections are a reflective practice where modifications must be carried out for each judgement. In addition, we problematize the fact that the environmental inspector both as a profession and as an individual and a body is important for and affects the performance of EIE. Moreover, through the different types of self-assessment that the environmental inspectors made when they were trained in motivational interviewing (MI), you can measure both the communication method in itself and its impact on the effectiveness of EIE.

Competence and professionalism are complex concepts that must be specified and filled with relevant content in order to be measured. The MI study shows that competence regarding communication, listening and attitude can be measured through surveys and reflection.

## 12.4 Measuring outcome and efficiency

When you need to find a way of measuring the effect of EIE and efficiency, you must be creative. We cannot see that there is any single way of measuring or any single measure. Instead, you must measure the efficiency, external and internal, in different ways, both qualitatively and quantitatively, from both self-assessment and “hard data” and also set the different measurements in relation to each other and to the objectives of the Environmental Code and other objectives of an operator. The key is to find what we want to measure (objective) and then find ways of making the measurement.

According to chapter 1. § 12 of the Ordinance on Environment Inspections and Enforcement, an operational inspection and enforcement authority shall “[...] *annually follow-up and evaluate their inspections and enforcement.*” The aim is to ensure that inspections are performed efficiently and according to rule of law. How an operational inspection authority should follow up its inspection activities is, according to our knowledge, not more precisely defined in laws, regulations or other key documents. Moreover, the concept of efficient EIE lacks a uniform definition at the national level in Sweden. A prerequisite in order to be able to express an opinion on efficiency is that the outcome of EIE is measured and set in relation to objectives and resource usage which, in turn, presupposes that the data is collected in a consistent manner over time. The difficulties with the availability of comparable data have been highlighted in different chapters of this report and have also been recognized in previous studies (e.g. Cloudberry, 2008). These problems are partly due to EIE being performed by so many agencies, partly to the relevant databases being inaccessible and lacking harmonization (which is described in chapter 5).

Yet even if the data supply situation were better, it is not entirely obvious how efficiency should be measured. The difficulties in measuring inspection and enforcement results are discussed in detail in Nordin (2008) which states that research concerning performance measures in inspection activities has often focused on the measurement itself and not on the context in which the measurements are used and what is easily measurable (resource usage and performance) rather than effects and achievement of objectives. Nordin points out the difficulty in formalising knowledge-heavy inspection and enforcement activities, where the balance between autonomy and administrative control is of particular importance as the enforcement of regulations and their application depends on an interaction between the inspection authority and the regulated object. Therefore, complex activities like EIE cannot be represented by simple performance measures. The performance measures that are used will therefore not capture all aspects of the inspection staffs’ activities. The use of performance measures can then lead to the inspection and enforcement staff putting too much emphasis on aspects that are measurable, while other equally important parts of EIE may be neglected. Similarly, the operators' motives can be affected.

As pointed out by Nordin (2008), there are risks involved when using measures of inspection activities and outcomes. If environmental inspectors were only evaluated based

on how many inspections they perform annually, there is a great risk that they prioritise quantity instead of using their professionalism to conduct rigorous inspection and enforcement work. If, on the other hand, inspectors were assessed by the number of ESCs they have issued, there is a risk that they would become overzealous in their enforcement work and the quantity would suffer as they can focus on inspection objects where breaches are assumed to be easy to detect or difficult to refute. Accordingly, in order to evaluate inspections and enforcement, several measures need to be taken into consideration.

Within the framework of IMPEL (European Union Network for the Implementation and Enforcement of Environmental Law) a project was carried out where ten indicators for environmental inspections were evaluated. The findings reported in IMPEL (2010) were always to have a wide range of indicators, and to be clear about the pros and cons of focusing on a selection of indicators. Indicators that were proposed included: the number of inspectors, the number of working hours, the number of inspections, the number of inspections performed as a ratio of the number planned, the average inspection time, etc. Many of the problems with measurability of inspections mentioned in this document are included in the report.

It is easily ascertained that outcome data in particular is extremely limited in that only a specific type of action is captured (see chapter 3). The data collection is done by different agencies, and usually only goes back a few years in time. Unfortunately, there is currently a lack of consistently collected relevant data of Swedish EIE. The value of such data is great for many reasons. First, it would make it possible to measure EIE efficiency. Second, the evaluation of such statistics would strengthen the compliance with rule of law. Third, it is needed to meet any future requirements from the EU. Last and not least, it would promote research on EIE in that evaluation and comparison as well as the testing of theoretical hypotheses would be made possible. Most crucial is that inspectors are given the opportunity of inter-organisational learning, i.e. that each inspector is given the opportunity to compare his/her assessment (formulations, concepts, decision support, etc.) with other inspectors using the same inspection points.

In the survey presented in chapter 2, it was shown that about 60% of the municipalities use some form of measure/indicator to measure the performance of their inspections. It is unclear what the remaining 40% do, which makes it difficult to compare different operational EIE authorities. In the municipalities where indicators are used, the data can, of course, be useful to evaluate the authority's inspection over time. However, for comparisons between municipalities to be possible, there must be co-produced measures that are clearly defined and collected in a consistent manner.

## 12.5 Summary

In this chapter, efficiency has been discussed from several different perspectives. It has partly been about describing what influences efficiency in an EIE context. And partly it has been about discussing different ways of measuring the efficiency of EIE. The latter in

particular, i.e. measuring efficiency and thus, being able to highlight what contributes towards efficient EIE, constitutes the core of the problems that characterise EIE. The complexity of inspections, which is described in detail in this report, is reflected in the difficulties in measuring its outcome.

Measuring efficiency in a meaningful way requires a deeper understanding of the complicated reality of EIE and the possibilities and limitations of a statistical evaluation of EIE. This has been the point of departure for EMT. A large part of the work of EMT and thus, a large part of this report, has been devoted to examining and analysing the complexity of EIE. Although measurability may seem to have been overlooked, not least because of the poor data-supply situation, efficiency has at all times served as a reference point.

When the Environmental Protection Agency launched the research programme *Efficient Environmental Inspections and Enforcement* five years ago, the following important points for efficient EIE were emphasized:

- EIE support and control self-inspection and the operators' responsibility.
- EIE are differentiated so that efforts are made where they are most needed.
- The EIE authority interacts with other EIE authorities.
- It is important to develop measures of EIE in general and efficient EIE in particular, for example in the form of indicators.

The first paragraph has a clear link to the inspection methodology, while the next two paragraphs concern the planning and evaluation of inspections. The last point is related to the measurement of outcomes, which requires consistent data collection over time. These four starting points reflect the division into sub-projects that was made in the call and subsequently within EMT.

The insights into the inspectors' work situation gained through the field studies of sub-project 1 have contributed towards identifying the characteristics of efficiency in the inspector's profession and professional judgements. The communication methodology – motivational interviewing – which was developed has the aim of making the meetings between inspectors and operators more efficient.

Sub-project 2 has worked to identify the mechanisms that influence stakeholders' motives. A deeper and more differentiated understanding of these motives can give a good indication of how inspection efficiency can be improved. Within the framework of sub-project 2, existing data that measures the outcome of inspections has also been collected and analysed statistically. The availability of data, collected in a consistent manner over time, is essential to evaluate and compare inspections in Sweden. The efficiency of inspections presupposes that its effect and the resources available are continuously measured and evaluated.

A major obstacle to the measurement of inspection performance and efficiency is the lack of data concerning how inspections are currently managed. Sub-project 3 has worked to

develop a prototype for an information system that is meant to support the inspector and thus, achieve a higher degree of efficiency in the professional judgements. Such a system would also facilitate the evaluation of EIE and allow comparisons between the work of different authorities. This would make it possible to identify any deficiencies in the efficiency of EIE relating to both the use of resources (internal efficiency) and the priorities made (external efficiency).

Against the background of the poor data supply situation that currently prevails, the question of which measures should be used is, to some extent, set too early. Only when there are conditions for a consistent collection of a variety of different data is it meaningful to evaluate which measures of inspection performance that are useful. Accordingly, achieving efficiency in today's EIE is about *the ability to measure rather than what should be measured*.

Creating conditions for more efficient information management would not only facilitate the individual inspector's work situation, which in itself would have an efficiency enhancing effect. It would also make possible the collection and compilation of a variety of different variables that might be of interest in order to create measures and indicators for the execution of EIE. Making it possible to measure is therefore crucial for the work to make today's EIE more efficient.

## 12.6 References

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