Environmental Compliance and Enforcement Indicators in The Netherlands

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1. INTRODUCTION

The final purpose of an environmental policy is reducing the load of the environment and eliminating harmful effects on humans, animals and vegetation. Legislation is one of the tools to reduce the effects. In the Netherlands there are about 600 pieces of environmental legislation, in which the Inspectorate for housing, Spatial planning and the Environment has a task to enforce compliance.
In order to get a grip on which task should be performed with priority and which not, and how to enforce compliance in a smart way, the Inspectorate has developed a Compliance Strategy. This Compliance Strategy is based on risk- and compliance indicators as well as knowledge of reasons for non-compliance. The strategy can be seen as a way to make compliance transparent and to use the newly developed indicators for several purposes: doing the right things (priority setting), doing the things right ('smart' enforcement) and for accountability.

2. THE COMPLIANCE STRATEGY

Compliance in the Dutch Compliance Strategy is – like the definition of the OECD – seen as the behaviour a regulatee shows to respond to regulatory requirements. So the key-word is behaviour. Compliance enforcement is focused on changing the behaviour of the regulatee so he or she will comply according tot the requirements in the legislation.
A regulatee has certain reasons to respond positive or negative on regulation. The negative responses are summarised in the so-called *Table of eleven*, a broadly accepted and used list of reasons for non-compliance. This table of eleven was developed by the Ministry of Justice and the Erasmus University, Rotterdam. The table of eleven can be seen as list of non-compliance response indicators.
When compliance behaviour and the reasons for non-compliance is known, it is possible for inspectors to enforce compliance in a smart way (to be effective and efficient).

Table 1: reasons for non-compliance

Dimensions for spontaneous compliance
T1 – knowledge of legislation
T2 - cost / benefit
T3 – acceptation of the rules
T4 - values of regulatee
T5 – informal control (within the regulatee branch)

Control Dimensions
T6 – informal chance of being snitched
T7 – perception of the control chance
T8 – perception of the chance of detection (when controlled)
T9 - selectivity of the inspector

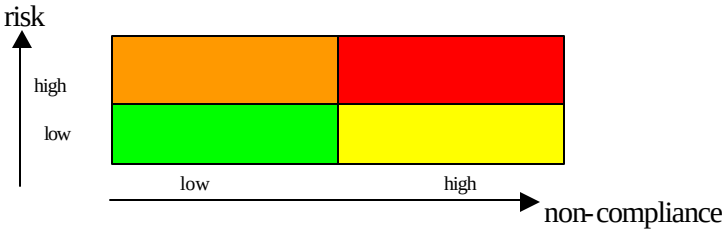
Sanction dimensions
T10 – chance of being sanctioned
T11 – height of the sanction

One of the first activities within the Compliance strategy was the identification of all the pieces of environmental legislation. Then per piece of legislation the possibility of compliance, enforcement and sensitivity for fraud was established. If this score is negative the Inspectorate will not enforce, because their investments will not be effective and efficient. In stead the Inspectorate will address the policymakers to improve the legislation.
Next: per piece of environmental legislation the regulatees were identified. On this regulatee-level the present state of risks and compliance behaviour were identified and classified in risk and compliance indicators.

The height of the compliance indicators were estimated and are based on expert knowledge. In several expert meeting panels, inspectors have given their impression on how the regulatory requirements were complied. The compliance indicator is the measurement of the gap between required and actual compliance: a measure for non-compliance. The required compliance rate is, for convenient reasons, put on 90-100%. There are 4 classes of compliance gap-indicators established: good (90-100%, class 1), sufficient (90-80%, class 2), mediate (80-60%, class 3) and bad (< 60%, class 4). So the compliance indicator will be a measure for the needed compliance efforts the Inspectorate has to make.

Risk indicators are developed on the same way: In several expert workshops risks were estimated per piece of environmental legislation per regulatee on the aspects: public health, safety, sustainability and social factors in case the Inspectorate should not enforce compliance. There are also 4 classes of risk indicators distinguished: very high, ++ (= class 4); high, + (= class 3); mediate +/- (= class 2); and low, – (= class 1). All the measurements for the four aspects should be scored and added, so the maximum risk indicator could be 16, the smallest 4. See annexe 1.

When the risk indicators and the compliance indicators per legislation form are put in an 2 x 2 matrix, a forceful tool is available to indicate priorities and non-priorities. Classes 3 and 4 are indicated as high risks/ high non-compliance; classes 1 and 2 as low risks and low non-compliance.



In 2003 the matrix was used for the first time to identify the priorities and non-priorities of the Environmental Inspectorate for the year programme 2004. For the year programme 2005 more stakeholders will be invited to join in their expert knowledge in the whole estimation process: the environmental policymakers and NGO's. Later on the regulatees will be also consulted.

3. WERE ARE WE NOW?

Within a year's work the Environmental Inspectorate developed a robust model for compliance management based on indicators of the present state of compliance and risks at stake. But note: all indicators were estimated!
The use of estimation as a method was a deliberate choice. Quickly and at low costs results were obtained. By putting different expert panels on the same data, more objectivity was obtained. In 2002 four rounds of expert meetings were held.

In 2003 we will start to measure (during the inspections) if the estimates are valid and the model is as good as it promised to be. Also scientific data will be used to establish validity of the estimates. We expect that in 80% of the cases the expert estimations will cover reality.

The method of expert meetings will be continued for compliance management the next years. But the experts will be supported by measured indicators and scientific data to make their judgement more sophisticated.

This year the experts will be supplied with the following data:

- Estimates on risks, compliance gaps, compliance behaviour.
- Inspectorate measurements (compliance rates, compliance behaviour).
- Compliance measurements (# of Inspectorates, # of compliance prosecutions, # of penalties).
- Monitoring data on compliance and emissions (reduction of discharges, environmental effect monitoring).
- Number of complaints (per piece of environmental legislation).
- Scientifically based fact sheets on public health, safety and sustainability risks (developed by the State Institute for Public Health and Environment).

In the Inspectorate Year programme 2004 objectives are set for diminishing compliance gaps for several priority tasks. The challenge will be to find effective ways to reach the set objectives. Within the Compliance Strategy programme there are secondary programme's to support this challenge: A special programme is set up to provide the inspectors with sophisticated tools to reach the objectives. The programme is called: smart enforcement. In this programme per reason for non-compliance toolboxes will be designed to set up an ideal intervention mix tot enforce compliance. An other supporting programme will indicate if the results are within reach (compliance evaluation; ex-ante and ex-post).

1. MONITORING ENVIRONMENTAL COMPLIANCE INDICATORS

The OECD has developed an input-output-outcome model to classify compliance and enforcement indicators in order tot manage compliance (see Congrespaper). When the Dutch compliance and enforcement indicators are compared with this model, they cover most of the mentioned indicators. The following indicators are monitored and use tot manage compliance (see also annexe 2):

Inputs:

- # compliance promotion officers (policymakers).
- # compliance enforcement officers.
- investments in training, IT, sampling etc. (€).
- # days planned for compliance: promotion and enforcement.

Outputs:

- # compliance promotion campaigns.
- # of inspections.
- # of prosecutions.
- # and height of penalties.
- # days realised for compliance: promotion and enforcement.

Intermediate outcomes:

- Compliance rates.
- Risk rates.

Final Outcome:

- Ambient load of pollutants in air and water by a PRTR system (see annexe 3).
- Environmental effects monitoring in the yearly *State of the Environment* and *State of Nature* reports of the State Institute for Public Health and The Environment.

All indicators are tools the expert can use tot give his or her impression on the state of compliance and enforcement of Dutch environmental legislation and thereby develop a base for decision making for compliance management.

Annexe 3: PRTR system in the Netherlands

1. INTRODUCTION

The development of a PRTR (Pollutant Release and Transport Register) in The Netherlands started in 1974 as a method to measure effects of environmental policy. At that time there were a lot of environmental problems like smog episodes, difficulties to produce drinking water, eutrophying lakes by algae growth, dying forests…
The Ministry for the Environment, which was recently founded in that year, had some general policy starting points like "abatement at the source", or "polluter pays". Sulphur dioxide emissions to air and oxygen demand in water from industry were taxed and the concentrations were monitored by some measuring stations. But for the many pollutants contributing to the problems this was not a feasible approach. As the problems were related to air as well as to water pollution it was decided to design an integrated system covering all compartments. This meant bringing three ministries, statistical offices and other research institutes together. Discussions with industry about providing emission data lead to an agreement on the condition that emission data were only to be reported together with emissions from non-industrial sources. To incorporate those sources a system was designed that would now a days be called a geographical information system (GIS). Developing emission factors for non-industrial and small industrial sources was the other activity developed.
In 1990 GIS software became available which made life a lot easier. Adapting this system to new developments was and is a continuous process. The result was a system covering emissions from all sources to all compartments in the whole country.

2. AGREEMENT WITH INDUSTRY

Obtaining data from industry was based on an agreement with organized industry. The data were gathered by a government sponsored research organization, TNO, who took care of quality and completeness. If a company refused they got a letter from their organization reminding them of the agreement, if they still refused they got a letter from the Environmental Inspectorate telling them that we regretted their decision and would forward it to the competent authorities.
After that the number of refusals was very low. Between 1974 and 1983 about 8000 companies were visited. After that the number was reduced to 700 by using a pollution indicator based on the maximum admissible concentration (MAC) value.
In 1999 reporting became mandatory for about 250 companies. The other 40.000 companies are in the GIS database with their location but with estimated emissions prepared by expert groups from statistical data about their contribution to the general production..

3. APPLICATIONS

Defining policies and monitoring the results
Based on the data gathered by the PRTR, policies for reducing emissions are developed. There are several tracks. The 'substance track' was based on so-called criteria documents in which for a single substance all sources were identified and located. Combined with transport model calculations and

comparisons with quality measurements this gave a good insight into the contributions from the different sources. With industrial branches covenants for reduction of emissions were agreed. As to traffic a whole set of measures like catalysts, reduction of aromatic content in petrol etc were established. Prohibiting the use of certain solvents in consumer products and obliging the farmers to inject the manure into the soil were other examples of measures. The success (or lack of it) is monitored yearly and published in an Environmental Report, the Environmental Balance, and recently also in a datawarehouse on Internet. There is also a yearly evaluation meeting with the many partners concerned, where weak points in the system are identified and proposals for improvement are discussed.

Providing input for transport models

Transport modeling is the link between the environmental quality and the emissions at the source. Air transport modeling needs more detailed information like timeframes, temperature, location, and height of the emission. The level of geographical information needed depends on the purpose of the model, long-range transport or urban models. This also applies to the water and soil transport models.

Informing the public

Of course the public has a right to have access to the data available. For the industrial emissions the limitation to essential pollutants has not given much problems with confidentiality. There are some restrictions possible but it's up to the companies to prove that real damage might occur. A problem is that questions might arise from the public referring to what is happening in their direct environment. Many of the data in the database on that level are based on statistics, national marketing data, and emission factors that may not be applicable to a local situation. There is still a lot of work to do to improve this.

Comparing the efficiency of industrial processes

An important option for using PRTR data is comparing the emissions from different companies within a certain branch. There have been some examples where the branch organizations organized such an exercise themselves. In some branches where fierce competition prevails this was sometimes not really possible.

Supporting spatial planning

Spatial planning can be an instrument for improving environmental quality in vulnerable areas. There have been several examples, for instance in comparing alternatives for a planned road, where different scenarios based on the PRTR data were evaluated as to their environmental impact.

5. CONCLUSIONS

Designing effective instruments for improvement of the environmental quality is hardly possible without the insights provided by a well-organized PRTR. Developing the simple one-track approach that is the starting point in most countries into a more general system, opens ways to a wider range of applications. However quality control and exchange of experiences need good communication tools to be really cost-effective.

Annexe 1: example of the compliance indicator system

Annexe 2: IT support system for expert meetings