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Slovenian Water Management and EU - Challenge and Opportunity

1. Summary

The pollution of rivers, endangered underground water and water springs, hazardous substances in the soil, uncontrolled disposal of large quantities of waste - these and many other problems severely reduce the quality of life and hinder the country's overall development. The majority of surface watercourses are excessively polluted (29% fall into the third and fourth water quality class). The pollution is spreading towards river sources. The quality of groundwater has been deteriorating recently.

It is evident from the "Strategy for Economic Development" of Slovenia that the approximation to the European Union is the right choice for Slovenia.

2. Preface

There is a long tradition of environmental protection in Slovenia. It is therefore no coincidence that Slovenia marked the occasion of the First World Conference on the Environment, held in Stockholm in 1972, by publishing the Green Paper on the Environment, which presents the state of the environment in Slovenia and laid down the first guidelines for its improvement.

One of Slovenia's distinctive features is its landscape diversity. With the domination of Alps on one side and Karst with the maritime region on other side. Slovenia's territory is a meeting-point of Central European and Mediterranean natural features. It is open in all directions: towards Central Europe and towards the River Po Valley and the West, and towards Eastern Europe. All this endows Slovenia with exceptional biological and landscape diversity, which in turn results in considerable sensitivity of its environment.

Environmental problems have accumulated during the process of industrialization and urbanization, particularly in the second half of this century. The bulk of problems concentrated on the fifth of the territory, due to its landscape characteristics. These problems can only be addressed gradually, within the limits of material capacities and technological achievements, and by taking into account the experience of more developed countries and Slovenia's advantages.

An important factor affecting water supply is the scattered supply system. 85 % of the water is distributed from public networks, 14% from private wells, 5% from rainwater reservoirs, and 4% from other sources. Approximately 47% of the total amount of piped drinking-water is used by households, 39% by industry and the manufacturing sector, while 8% are supplied



to livestock farms, 5% to the tourist industry, and 1% to all other purposes. Statistical data on water supply indicate a gradual increase in water losses along the supply network over time. The extent and physical distribution of this phenomenon is not fully described. However, most of the losses can probably be ascribed to the technical conditions of the mains and distribution network.

It is evident from the "Strategy for Economic Development" [1] of Slovenia that the approximation to the European Union (EU) is the right choice for Slovenia. But if we are to prevent possible detrimental effects on the environment in time and maximize the benefits arising from the approximation process, a thorough preparation is necessary. With regard to the possible positive and negative effects of the approximation process, the following should be emphasized:

- Slovenia has to adapt its environmental protection system to EU requirements; transitional periods and additional funds will have to be ensured during the negotiations for those requirements which Slovenia, for various reasons, will not be able to fulfil by the time it becomes a member of the EU.
- The adoption of the system of environmental instruments established in the EU is not only an obligation but also an important opportunity to solve the problems of setting up the environmental protection system with greater speed.
- The alignment with EU environmental policy is an opportunity to introduce changes to the production and consumption patterns. Additional mechanisms will have to be established to prevent the indiscriminating transfer of environmentally-harmful technologies to Slovenia and to ensure the appropriate protection of Slovenia as an exceptionally sensitive area (biodiversity, the Karst region, size, sensitivity to trans-boundary effects (sea, air), settlements).
- The conservation of biodiversity is Slovenia's comparative advantage in the process of integration into the EU, especially in the promotion of sustainable development in rural areas.
- The introduction of complementary environmental protection mechanisms will be needed. Traditional methods of supervision will be progressively supplemented by modern mechanisms, based on the market strength (introduction of process and production standards), consistent prevention, and the enforcement of the principles of wide co-operation and shared responsibility.
- Approximation to the EU calls for the strengthening of Slovenia's currently weak institutions.

The process of Slovenia's accession to the EU is expected to have positive effects on the co-ordination of environmental, economic and development policies in the country. It is an important factor of change and additional encouragement for effective implementation of a contemporary (sustainable) environmental policy.



3. Environmental accession strategy

3.1 Work plan for the accession activities

The work-plan programme of the accession activities is divided into three phases:

1. inception,
2. strategic planning,
3. implementation.

3.1.1 Inception phase

- Establishment of the Department of European Affairs within the MESP¹ as a co-ordination unit for the accession activities of the MESP.
- Preparation of a programme methodology and needs assessment on the Accession Strategy.
- Definition of the Accession Strategy preparation approach.
- Common understanding of links between different sectors within the MESP, as well as the establishment of the required links between MESP and other ministries, institutions and EU institutions and programmes.
- Compilation of documents and data related to the accession process.
- Development of time planning for the strategic planning phase with the identification of the priority tasks.

The inception phase was completed in February-March 1997.

3.1.2 Strategic planning phase

- Redefinition of the NEAP² and incorporation of the pre-accession activities.
- Preparation of the accession strategy as a document and the determination of the conditions for introducing this process.
- Identification of "stakeholders".
- Definition of the responsibilities and appointment of key persons for the preparation and implementation of the Accession Strategy and the approximation of environmental acquis.
- Preparation of the timetable for the implementation phases of the approximation of the legislation.
- A general review of the compliance with the White Paper on environmental legislation through the so-called harmonogramme.

¹ MESP - Ministry of the Environment and Spatial Planning

² NEAP - National Environmental Action Programme



- A first comprehensive review of current and proposed EU legislation, beyond the White Paper, including important process-related legislative framework, which has to be incorporated into national legislation.
- The first compliance assessment of the current status of national environmental legislation to EU legislation, which identifies the first legislative "gaps", for planning further approximation activities.
- Efficient use of technical assistance support by EU programmes - Development of Implementation Strategies for Approximation in Environment (DISAE) and using the possibilities of the approximation facilities such as the Technical Assistance Information Exchange Office (TAIEX), and others.

The strategic-planning phase was completed in July 1997.

3.1.3 Implementation phase

- Preparation of the Environmental Accession Strategy as a political commitment and as a document of steps and accession activities to be a complementary document of the NEAP and other strategic documents of the MESP.
- Definition of the implementation costs and the timetable for meeting the EU environmental acquis.
- Preparation of the scenarios for the implementation of the environmental acquis within environmental acquis clusters which comprise several phases of approximation depending on the priorities, as well as available financial and other sources.
- Implementation of the accession activities for accomplishing the sustainable development and the long-term environmental goals.

4. The process of approximation of environmental legislation

4.1 *Compliance evaluation of the approximation of environmental legislation*

In the context of the work plan for accession, the following activities have been related to the approximation of Slovenian environmental legislation to that of the EU:

- A first general compliance assessment for White Paper-related legislation was undertaken by the MEPP in the form of a harmonogramme.
- The first task has been to assess the body of EU environmental legislation and compare the requirements contained therein to existing Slovenian legislation. A compliance table was set up as a tool for this first overall gap analysis between EU measures and existing Slovenian law in order to gain an idea of the size of the gap to be bridged and assist in the choice of the steps to be taken on a national level.
- A first compliance assessment of Slovenian environmental legislation with EU requirements has been undertaken in the framework of the Phare project in cooperation with MEPP staff. The legislation listed here is the EU legislation which forms the environmental acquis. This legislation is the bulk of EU environmental legislation which Slo-



venia has to transpose and implement in its national legal order, as a condition for membership of the European Union.

5. Slovenian water management activities

Water management activities include:

1. Regular maintenance of river basins, steep mountain streams and accompanying infrastructure of water regime.
2. Long term research activity, adjustment of development programs, planning water balance.
3. Monitoring of water regime due to international obligation, in case of special circumstances (flood, erosion, drought).
4. Flood defence with needed security, inspection of high water holders, dikes.
5. Arranging of river basins and preserving primary water flows, protecting green surfaces and fertile soil in rural areas.
6. Retention reservoirs and collecting reservoirs, multi purpose use and reuse of water on water deficiency regions.
7. Participation in drinking water supply, managing citizen equality for personal use of drinking and sanitary water.
8. Concern and participation about decreasing measures of pollution of surface water and groundwater (polluters must take appropriate measures to decrease the level of pollution).

5.1 Water management principles

Water must be managed sustainable and conserved to meet current and evolving needs without compromising the ability of future generations to meet their own needs. Water is a vital component of the environment. Water is recognized as one of Slovenian's most important natural assets and the aquatic environment, including the diversity of aquatic life, must be protected.

Water plays an essential role in a prosperous economy and balanced economic development. Water must be wisely allocated and efficiently used, and regulatory and administrative processes for managing water must be streamlined, user-friendly and fair.

Water must be managed using an integrated approach with other natural resources.

- The interdependence of water quality and water quantity is recognized;
- Water management is based on a watershed approach.

Water must be managed in consultation with the public.

- The public must be involved in water management and decision-making;
- Information sharing and open communication must be provided for.



Water must be managed and conserved in a fair and efficient manner.

- Enforcement action when required must be applied firmly, fairly and consistently;
- Water management must respond to differing local and regional needs.

5.2 Integration, responsibility and roles

Integrated resource planning is directed through legislation such as the Water Act [6] and Environmental Protection Act [4]. Planning conducted under these acts, needs to be done in an integrated manner because of impacts one resource may have on another. In some cases water and other resource management objectives are not compatible. Therefore, water management planners must work closely with other resource planners, and vice-versa, to ensure that resource management objectives are identified and understood, and potential conflicts are resolved. Where required, various resource planners should seek to work together to achieve mutual goals.

The State has the responsibility for the approval and adoption of water management plans and decisions under the Water Act [6]. Environment will continue to play a lead role by creating, coordinating, authorizing and approving water management plans. Other government, non-government organizations or stakeholder groups may also develop water management plans. By committing to sustainable resource and environmental management, the State has made it clear that all Slovenians share responsibility for water management. The State will ensure that the level of consultation will be appropriate.

5.3 Scope of planning for water management

The scope of planning relates to the geographic limits of the planning area as well as to the breadth of issues and information considered. Water management planning is most effective when it considers all areas likely to affect or be affected by the plan. Therefore, geographic limits for water management planning areas will normally be watershed boundaries rather than boundaries such as cities or local authorities.

A watershed is an area from which all water flows to a common location. The largest watershed level is a major river basin, of which Slovenia has six (Coastal river basin, Soča river basin, Kolpa river basin, Drava river basin, Mura river basin, Sava river basin). Water management planning in a sub-basin must consider implications to the major basin. Commitments or objectives resulting from a planning process in a sub-basin should not adversely affect other sub-basins or the major basin. The following are some instances where the larger watershed should be considered when developing a water management plan for a sub-basin or even an individual water body:

- A plan for the larger basin does not exist;
- Allocation for water within the basin is considered to be close to acceptable limits;
- There are conflicting interests that must be considered;
- Protection of the aquatic environment needs to be achieved on a larger scale.



There will be instances where planning areas will vary from watershed boundaries. Aquifers and the areas that feed into them do not necessarily reflect surface watershed boundaries and will therefore require a different type of planning boundary. However planning will still need to be done in the context of sustainable objectives in the larger basin or basins in which the aquifer is located.

Water management planning can address a broad range of issues at a variety of magnitude or may involve just a single issue. Planning can also be done when a more comprehensive approach is needed to address a number of issues.

5.4 Planning priorities

Local or regional planning priorities must be developed in consultation with the public. Provincial priorities for planning will consider regional and local input. The criteria for determining which planning initiatives are to be undertaken and their priority include the following:

1. Pressure on the resource:

- What are the present and anticipated demands for water?
- What are the current and projected issues in terms of water quantity, quality, aquatic and riparian (bank or shoreline) habitat and species?
- Long term or short term, or local or regional; or isolated or cumulative?

2. Public concern:

- Are there human health concerns?
- Are there environmental, economic or social concerns?
- Are the concerns international, national, provincial, regional or local?

3. Relationship with other resources and initiatives:

- Are there other related resource issues?
- Are there other related resource commitments?

In addition to the above criteria, there may be advantages to conducting water management planning at the same time as other planning initiatives. Regional strategies will provide a level of integrated resource management that outlines shared planning opportunities.

5.5 Water management plans

Water Management Plans provide broad guidance for water management, set out clear and strategic directions regarding how water should be managed or result in specific actions. Water Management Plan must include the following:

- A summary of the issues considered;



- A description of the area in which the Water Management Plan applies;
- A summary of the information assembled as part of the planning process;
- The recommended options and strategies to address the issues; and
- A list of performance monitoring requirements.

6. Drainage and wastewater treatment

The abundance of waters, although inappropriately distributed, is one of Slovenia's major comparative advantages at the turn of the millennium. Therefore it is very important to stop the deterioration of surface waters and, in particular, groundwater.

At the beginning of the 21st century we are facing the problems of the quality and quantity of waters, different and more worrying than those in the past, which a few decades ago initiated the development of pioneer environmental and water management policies. Today the initial approach, based on the local and partial discussion of individual water sources, no longer complies with the modern principles of the protection and optimal use of water and the aquatic environment.

As the custodian of natural resources, the State is obliged to enforce the general principles of water management based on ecology and economy and to take into account water as the crucial factor in sustainable development.

The action programme covers two periods with regard to individual environmental policy areas: the period until 2008 (in accordance with requirements of the EPA [4]) and the period until 2003. Within these two periods individual measures are defined. Priority areas are:

- To reduce emissions from point sources – wastewater from industry and livestock farms and urban wastewater;
- To reduce emissions from diffuse sources – intensive agriculture, dispersed settlements without wastewater treatment facilities, traffic;
- To restrict old pollution sources threatening the aquatic environment.

Activities will be focused on the reduction of emissions from industry into wastewater collecting systems and the aquatic environment, on the renovation of obsolete industrial wastewater collecting systems, on the better maintenance of facilities for storing hazardous substances and on the better management of run-off water from polluted surfaces.

Systems for collecting wastewater will gradually be connected to wastewater treatment plants using appropriate methods. The current state in the treatment of wastewater generated by the population is shown in Figure 1 the level of treatment in all-existing plants and facilities will be determined by regulations. New collecting systems with wastewater treatment plants will have to be constructed in settlements with no public collecting systems.

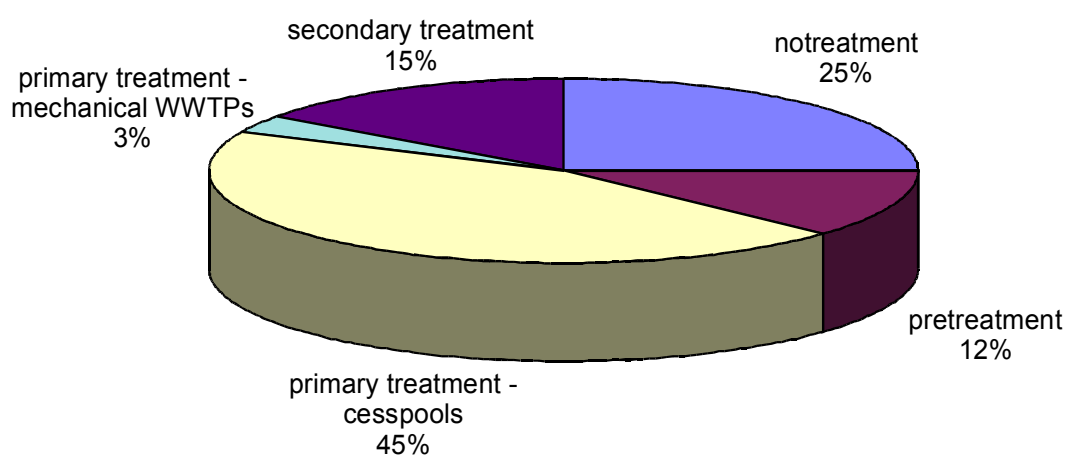


Figure 1: Treatment of wastewaters generated by the population

In determining which facilities have a priority, the criteria for optimal and integrated water management³ and individual levels of wastewater treatment, taking into account not only emission but also imission criteria⁴, have to be observed. In the regions with special ecological and economical characteristics (the Karst region, the Alpine region and regions with specific landscape values and interesting for tourism) advanced treatment (tertiary treatment) will be necessary.

Drainage and wastewater treatment in Slovenia are managed by different regulations. Wastewater generated by 75% of the population is treated by various methods, of which 15% is secondary wastewater treatment, 12% mechanical treatment and 48% primary treatment (including cesspools) and 25% have no cleaning at all.

³ The problem of waste water treatment is closely related to water consumption, especially in relation to meeting the drinking water needs and ensuring minimum total costs of waste water treatment and water consumption.

⁴ It has to be taken into account that in the major part of the territory of Slovenia there are mostly smaller watercourses with a low intake capacity and are therefore more ecologically sensitive than larger watercourses.



The measures to be taken until 2008 to achieve the objectives in the field of aquatic environment are:

- To draw up a water management strategy⁵, harmonized with the strategies in agriculture, industry, energy sector, transport and tourism. One of the priority tasks in Slovenia is to develop a strategy for achieving final objectives concerning individual catchments areas, taking into account optimal economic and environmental solutions within the integrated utilization of water resources and the planned exploitation of comparative advantages.
- The initial phase of the implementation of the NEAP [3] will be focused on the building of those wastewater treatment plants, which are related to the fulfilment of the requirements of Slovenian legislation and EU directives. First projections show that building of wastewater treatment plants for settlements with less than 2,000 inhabitants and for settlements with between 2,000 and 15,000 inhabitants will be carried out in the second phase of the implementation of the NEAP (after 2003). The building of these facilities is the responsibility of local communities therefore it is not possible to estimate the scope and costs of these activities.
- To introduce into the water quality protection environmentally and economically effective methods for the protection of the aquatic environment using technologies adjusted to the natural conditions and material capacities of Slovenia.
- To ensure the conditions which will enable the providers of public services for the drainage and treatment of wastewaters to undertake the tasks laid down in this programme. Special attention has to be given to the method of following the Polluter Pays Principle, because the costs of building new environmental protection facilities are very high for countries in transition⁶.
- To ensure the application of energy-efficient and environmentally optimal wastewater treatment techniques by introducing measures at the institutional and organizational levels. Organizational measures, which are indispensable for achieving the objectives, include: the setting-up of an organization system in accordance with the principle of regional integration and strengthening of professional and administrative institutions at the national level to ensure the implementation of the principles of sustainability in the management of national water resources⁷.

⁵ In 1993 the water management strategy commissioned a national water management programme. In the programme the current state, including water protection, was well analysed. The proposed measures for the protection of individual catchment areas, groundwater and sea are specified in two priority classes: the first class includes essential rehabilitation measures and the second one measures for achieving the satisfactory state of water.

⁶ For example, in Austria the state covers between 50 and 75% of the costs of construction of new public utility facilities; the rest of the required funds is contributed by local communities (provinces, municipalities).

⁷ The setting-up of a body of experts to control the implementation of the strategy, to revise projects with regard to technical and economic issues, to manage, control and operate the systems for the protection and use of waters, integrally and by regions.



6.1 Programs funding

A polluter covers the total costs arising from environmental burden, in accordance with regulations. The costs must not be underestimated so as to generate a profit for the polluter at the expense of the community or the environment.

In order to promote the reduction of the environmental burden and to ensure the use of less harmful alternatives, an ecological tax may be imposed with regard to the content of the environmentally harmful component in a raw material, energy feedstock or product; with regard to the harmfulness of their use or the harmfulness of operation, equipment or service; or with respect to waste generation.

The estimated costs of the implementation of the program measures are **SIT 135 billion**. This estimate takes into account only measures planned in the program for the next five years. The dynamics of cost distribution by years is linear; approximately SIT 26 billion (0.5% GDP) a year is envisaged for the implementation of the measures mentioned.

Possible financial resources for the implementation of the programmes are:

1. Long-term ecological reservations – funds that companies have reserved in accordance with the Act on the Ownership Transformation of Companies for solving environmental problems are important for the achievement of environmental protection goals.
2. Loans from the Environmental Protection Development Fund (non-commercial loans according to the criteria of selected priorities in the NEAP, subsidizing of the interest rate, deferment of payment).
3. Long-term resources or mechanisms (loans from multilateral creditors (IBRD, EBRD, EIB, bonds of local communities or the State)).
4. Non-reimbursable EU funds for associate countries (Phare, EU Cohesion Funds, EU Structural Funds).

The following should be taken into account:

- When municipal budgets were defined as possible sources for the co-financing of the program, it was estimated that municipalities will cover 20% of the costs;
- Additional source of funds is payments received for public utility services; the share of the source is hard to define, because the MESP is not responsible for pricing of public utility services;
- To approve the utilization of the ECO-Fund⁸ loans the agreement of the Ministry of Finance is needed, therefore the allocation of the funds listed below is uncertain; so far not even the half of the available loans were utilized owing to the borrowing limit for local communities stipulated by law.

⁸ Environmental Development Fund of Slovenia



The review of the planned costs of the implementation of the program and possible financial resources by environmental protection sectors are shown below. The shares of the planned financial resources are:

- budget funds 22%
- wastewater tax and waste disposal tax 33%
- municipal budgets 23%
- foreign funds 15%
- Eco-Fund loans 7%

YEAR	COSTS	FINANCIAL RESOURCES				
	Public sector	State budget (MESP only) ⁹	Water pollution tax	Municipal budgets	Foreign funds	Loans from Eco-Fund
1999	26,556	1,058	7,600	5,300	1,500	2,000
2000	26,560	1,653	9,670	5,300	4,000	2,000
2001	26,560	2,182	11,700	5,300	4,000	2,000
2002	26,560	2,454	13,750	5,300	4,000	2,000
2003	26,560	2,800	15,700	5,300	4,000	2,000
Total	132,796	10,147	58,420	26,500	17,500	10,000

Table 1: Planned costs of the implementation of the program in the field of water protection in the period 1999–2003 and possible financial resources in SIT million

7. Conclusions

Throughout the review process, Slovenians made it clear that government needed to ensure sustainable water management and a healthy aquatic environment. The government agreed that effective and efficient water management planning is essential and made a commitment through the Water Act and to develop a document to guide such planning.

The pollution of rivers, endangered underground water and water springs, hazardous substances in the soil, uncontrolled disposal of large quantities of waste - these and many other problems severely reduce the quality of life and hinder the country's overall development.

It is evident from the "Strategy for Economic Development" of Slovenia that the approximation to the European Union is the right choice for Slovenia. Standards and norms are have

⁹ In addition to the listed funds, the funds of other spending units (Ministry of Transport and Communications; Ministry of Agriculture, Forestry and Food) are needed for the implementation of the measures



been present in Slovenian water management for many years, they also settle the national water management activities. The Slovenian government is preparing a new legislation about waters in Slovenia, which will include guidelines of EU. It will be put into action in year 2002.

A polluter covers the total costs arising from environmental burden, in accordance with regulations. The costs must not be underestimated so as to generate a profit for the polluter at the expense of the community or the environment. So, the program is based on the assumption that protection of the environment is a condition for and driving force of undisturbed development and one of the conditions for accession to the EU.

The estimated costs of the implementation of the program measures are **SIT 135 billion**. This estimate takes into account only measures planned in the program for the next five years. The dynamics of cost distribution by years is linear; approximately SIT 26 billion (0.5% GDP) a year is envisaged for the implementation of the measures mentioned.

8. References

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- [8] Integral Pollution Prevention Control, (96/61/EC, 90/656/EEC, 91/692/EEC)
- [9] Directive on Landfill of Waste, (99/31/EC)
- [10] Urban Wastewater Directive, (91/271/EEC, 98/15/EC)
- [11] Drinking Water Directive, (80/778/EEC, 91/858/EEC, 90/656/EEC, 91/692/EEC)
- [12] Water Science & Technology, Treatment Plants, Vol. 38 (3), 1998

9. Annex 1: Emission taxes and fines in Central and East European countries

	Bulgaria	Czech Republic	Slovakia	Estonia	Hungary	Latvia	Lithuania	Poland	Romania	Slovenia
Air pollution										
• Emission standards	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
• Permits	no	yes	yes	yes	yes	yes	yes	yes	yes	no
• Emission charges (number of substances)	no/yes	yes (approx. 125)	yes (approx. 125)	yes (approx. 150)	no	yes	yes	yes (more than 60)	no	no
• Method of enforcement	fines, criminal accountability	monitoring, fines, criminal accountability	monitoring, fines, criminal accountability	monitoring, fines	fines	monitoring, fines	monitoring, fines	monitoring, fines, closure of plant	monitoring, fines, prosecution	monitoring
Water pollution										
• Wastewater discharge permits	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
• Charges for discharging (number of pollutants)	yes	yes	yes	yes (8)	no	yes (30)	yes (30)	yes	yes (11)	yes
• Method of enforcement	fines, criminal accountability	monitoring, fines, criminal accountability	monitoring, fines, criminal accountability	monitoring, fines	closure of plant, fines	monitoring, closure of plant, criminal accountability	yes, discharge tax	monitoring, fines, closure of plant	monitoring, closure of plant	monitoring, fines, closure of plant
Solid waste										
• Waste disposal permits	no/yes	no, planning	no, planning	yes	yes	yes	yes	yes	no, waste register	no, planning
• Charges for disposal	no/yes	yes	yes	yes, also incentives	no	yes, hazardous	yes, tax for disposal	yes (152 substances)	no	no
• Method of enforcement	monitoring, fines, criminal accountability	penalties	penalties	penalties, criminal accountability	penalties	fines, closure of plant	checking, fines	checking, fines	fines, criminal accountability	checking, fines
Payments to Eco-Fund	yes	yes	yes							
• directly			yes		yes	yes		yes	no	no



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