

EUROPEAN APPROACHES TO ENVIRONMENTAL REGULATION

PROJECT REPORT

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CONTENTS

Section	Title	Page
<u>1.</u>	Executive summary	3
<u>2.</u>	Introduction	8
<u>3.</u>	Methodology and approach to analysis	9
<u>4.</u>	Approaches to better regulation	12
<u>5.</u>	Framework for environmental regulation	14
<u>6.</u>	Understanding the regulatory burden	18
<u>7.</u>	Risk-based regulation	20
<u>8.</u>	Simplifying and easing permit requirements	25
<u>9.</u>	Joining up to reduce the burden of inspection	28
<u>10.</u>	Mix of instruments and measures used to achieve air quality outcomes	30
<u>11.</u>	Mix of instruments and measures used to achieve waste management outcomes	34
<u>12.</u>	Mix of instruments and measures used to achieve water quality outcomes	40
<u>13.</u>	Holistic, co-operative and educational approaches	48
<u>14.</u>	Implementation of voluntary standards – Green Public Procurement	53
<u>15.</u>	Support for business innovation - nanotechnologies	59
<u>16.</u>	Conclusions and recommendations	63
<u>Annex A</u>	Scoping paper – 30 September 2010	65
<u>Annex B</u>	Project progress and next steps – 13 December 2010	75
<u>Annex C</u>	Bibliography and contributors	94
<u>Annex D</u>	Relevant EU Directives and Regulations	99
<u>Annex E</u>	Context: models of government, administrative structures and division of responsibilities for environmental protection	102
<u>Annex F</u>	Better regulation programmes	107
<u>Annex G</u>	Approaches to environmental regulation	113
<u>Annex H</u>	Comparison of mix of instruments / voluntary measures to achieve air quality outcomes, including requirements under EU National Emissions Ceilings Directive	121
<u>Annex I</u>	Comparison of mix of instruments / voluntary measures in place to achieve waste management outcomes, including requirements under the Waste Framework Directive, Landfill Directive, Waste Incineration Directive and Packaging Directive	126
<u>Annex J</u>	Comparison of mix of instruments / voluntary measures in place to achieve water quality outcomes (particularly to reduce contamination of groundwater and surface water with minerals such as phosphate and nitrogen), including to meet requirements of Water Framework Directive and Nitrates Directive	131

1. EXECUTIVE SUMMARY

Overview: What can Defra learn from this study?

1.1 Of the five countries studied as part of this review, the greatest potential learning comes from Sweden, the Netherlands and Germany.

1.2 The **Netherlands** is particularly notable for its comprehensive and highly structured approach to better regulation – with a pioneering better regulation programme, a systematic approach to risk-based regulation and enforcement and to joining up inspections, recent efforts to ease and simplify permitting requirements and a long-standing national environmental education programme.

1.3 **Sweden** is interesting for its mature suite of long-term Environmental Quality Objectives, its efforts to measure and rank administrative burdens including through a comprehensive database and its consolidated Environmental Code. Like the Netherlands, Sweden has pursued a number of initiatives in recent years to ease and simplify permit requirements, and has a well-embedded approach to environmental education.

1.4 While it is for policy experts to judge the potential significance and transferability of the policy-specific initiatives recorded in this report, points to look for include:

- **Air quality:** widespread adoption of Low Emission Zones in German cities;
- **Waste management:** comparison of the instruments deployed by different countries to achieve the desired balance between different waste management options;
- **Water quality:** the range of approaches adopted to tackle diffuse pollution from agriculture, including co-operative and behaviour change approaches, and multi-stakeholder approaches to wider water management;
- **Green Public Procurement:** particularly comprehensive national programmes in Sweden and the Netherlands and a high-profile and well-communicated city approach in Barcelona;
- **Nanotechnologies:** an advanced national strategy in Germany.

1.5 The paragraphs below explore the findings of this review in more detail and signpost the location of further information.

[Section 2: Introduction](#)

1.6 Defra's Better Regulation Programme invited IHPER to undertake a short research project on approaches to environmental regulation. This report is the culmination of a scoping study and **short, targeted, literature-based review of European Union (EU) approaches to, and trends in, key aspects of environmental regulation**. The goal was to identify innovative approaches and potential areas of competitive advantage, developing a resource to help inform Defra's future strategic direction, and potentially to assist policy development in specific areas.

Section 3: Methodology and approach to analysis

1.7 The review focused on **five countries** – Germany, Hungary, the Netherlands, Sweden and Spain - and **five policy areas** - air quality and pollution; chemicals and nanotechnologies; sustainable products; waste management and prevention, and water availability and quality (relevant EU Directives and Regulations are reproduced at **Annex D**). These were selected to provide a geographical spread, range of approaches to regulation and mix of mature and emerging regulatory challenges.

1.8 The research was further focused by a number of **cross-cutting themes** identified as being of particular interest to Defra: holistic and co-operative approaches; the relationship between the regulator and regulatee; the degree of regulatory responsiveness; joined up compliance and enforcement; alternatives to classic regulation, and best practice in policy-specific areas. Scoping papers prepared for the review are reproduced at **Annexes A and B**.

1.9 Evidence was gathered through **literature- and web-based research**, where possible targeted in line with advice from Defra and Defra Network experts. A full bibliography is at **Annex C**.

Sections 4 to 15: Findings

1.10 The main body of the research findings are set out in sections 4 to 15.

Section 4: Approaches to better regulation

1.11 Over the past decade, the **better regulation focus** in the target countries has shifted to improving the quality of regulation and simplifying existing regulation. In line with the European Commission's better regulation agenda, most have adopted a programme aimed at reducing the administrative burden on business, with a medium-term target to reduce burdens by an average of 25 per cent. The Netherlands was a better regulation pioneer and has continued to lead the way – in 2003-07 it reduced its administrative burden by 22 per cent; forecasts a further cut of 20-22 per cent by 2011, and intends to continue to reduce burdens by 5 per cent per annum from 2012.

Section 5: Framework for environmental regulation

1.12 This section explores the fundamental principles behind environmental regulation and the strategic and legislative and administrative framework for their implementation in each of the five countries.

1.13 **Fundamental principles** were identified for Sweden, the Netherlands and Germany. Although there is some variation, all share a strong adherence to polluter pays. The Netherlands and Hungary both have an environmental policy framework based on a **multi-year National Environment Programme** and environmental regulation in both the Netherlands and Sweden is based on a set of **long-term objectives** (to be achieved within a generation). Sweden has consolidated its environmental legislation in an **Environmental Code** and Germany aspires to do the same. **Enforcement**

arrangements are driven by the available administrative structures, with significant devolution of responsibility a common feature. The Netherlands appears to lead the way in co-ordinating devolved enforcement, including through widespread use of shared service centres delivering enforcement on behalf of a number of municipalities.

[Section 6: Understanding the regulatory burden](#)

1.14 Section 6 catalogues two case studies – in Sweden and the Netherlands – of approaches used to map and rank administrative burdens.

[Section 7: Risk-based regulation](#)

1.15 Judging by the (sometimes patchy) information available, the target countries are moving towards a **risk-based approach to regulation** (Sweden has an additional emphasis on areas which contribute directly to achievement of the country's long-term environmental goals). Again, the Netherlands appears to be a leader, and this section concentrates on that country's comprehensive programme which works its way through from risk-based regulatory development, via a Framework Vision for Reform of Inspection and Enforcement, to implementation through a focused Inspection Reform Programme. In the environmental sphere, one of the two main Dutch Inspectorates has developed a risk-based compliance strategy. There are two further initiatives of note: a newly developed methodology, implemented in 2008, for information-driven compliance and enforcement, and an ongoing research project on compliance.

[Section 8: Simplifying and easing permit requirements](#)

1.16 In the field of environmental regulation, countries' better regulation programmes are implemented through extensive efforts to reduce the regulatory burden by **easing and simplifying permit requirements**. There have been initiatives in both Sweden and the Netherlands to increase the number of less hazardous activities which have a simple notification requirement rather than an obligation to have a permit. The Netherlands has additionally introduced a single permit to replace 25 licences and permits, and has speeded up the permitting process by expanding the scope of activities for which automatic issuing of a permit is allowed.

[Section 9: Joining up to reduce the burden of inspection](#)

1.17 Most countries complement their emphasis on risk with efforts towards "**smarter enforcement**", notably by **joining up inspection activity to reduce burdens on business**. This section explores how the Netherlands Inspection Reform Programme is taking steps to reduce the burden of inspection – it appears to be far ahead of other member states as regards the sophistication of its approach. Section 9 also explores Swedish initiatives to co-ordinate inspection and a German initiative which provides a single point of contact to help guide permit applicants through the process.

[Sections 10, 11 and 12: Instrument mixes to achieve particular regulatory goals](#)

1.18 These sections document how Sweden, the Netherlands and Germany deploy a mix of instruments and measures to achieve regulatory goals in three areas: air quality, waste management and water quality. The regulatory mix includes **widespread use of economic instruments** – probably to the greatest extent in Sweden – with strong evidence of a trend towards **increased deployment of more innovative alternatives to, or supplementary measures in support of, classic regulation**.

- The examination of **air quality** regulatory measures ([section 10](#)) indicates a number of long-standing and more recently adopted taxes and charges to reduce industrial emissions; the latest approaches to tackling urban transport pollution are variations on the theme of Low Emission Zones.
- Each of the three countries has adopted a slightly different mix of instruments to tackle the same **waste management** challenges ([section 11](#)) – reducing landfill, promoting energy from waste solutions, giving effect to producer responsibility for packaging recycling and recovery and driving up recycling. The mix includes: landfill taxes and landfill bans; an incentive or tax on incineration to achieve the desired balance between this and other waste management options, and a range of measures to get people recycling, including service standards, a deposit-return scheme, and variable charging. Each country has set a range of targets, with Germany's the most challenging - full recovery of municipal solid waste by 2020.
- Tackling diffuse pollution from agriculture remains a key problem for **water quality** ([section 12](#)), and the countries have adopted a wide range of measures over time – taxes and levies, limits, targets and standards, and voluntary, co-operative and incentive-based approaches. To address more general water pollution, most countries have a long-standing wastewater charge or levy in respect of direct (and sometimes indirect) discharges, based on the degree of damage.

[Section 13: Holistic, co-operative and educational approaches](#)

1.19 A trawl for **holistic and co-operative approaches** to achieve environmental goals revealed evidence of **multi-stakeholder approaches** to water (and water quality) management; **behaviour change** approaches to reduce diffuse agricultural pollution and change household consumption habits, and **civic engagement** through opportunities to live in an environmentally friendly way. Countries' approaches to **environmental education** varied in breadth and depth, generally involving one or both syllabus requirements for school, further and higher education as well as job-based training (e.g. Sweden), and specific environmental education programmes (e.g. Netherlands, Hungary).

[Section 14: Implementation of voluntary standards: Green Public Procurement](#)

1.20 This section explores how each of the five target countries has responded to the EU's voluntary standards for green public procurement (GPP). All of the target countries bar Germany have a **National Action Plan for GPP** in place (and Germany is preparing to develop one). These range from a mature and advanced approach (Sweden and the Netherlands) - covering an extensive range of product groups, with strong political support, effective dissemination and training, and robust management structures - to a much narrower (Spain, Hungary) focus on just a few product groups.

Section 15: Support for business innovation: nanotechnologies

1.21 Section 15 examines how Sweden, the Netherlands and Germany are tackling the risks and opportunities posed by an emerging area for regulation – nanotechnologies. The countries' efforts to grasp the challenges posed by **nanotechnologies** are led by a mix of central government departments, national expert scientific bodies and national innovation agencies, and are often co-ordinated by a multi-stakeholder Commission. There is evidence of varying degrees of advancement in preparing a national strategy – with Germany in the lead. Key ingredients in strategies are a research programme into the risks, public dialogue around the risks and opportunities, and action to open up future markets and to equip the industry.

Section 16: Conclusions and recommendations

1.22 The main body of the report sets out a range of approaches with potential relevance for the UK. However these findings must be viewed in the context of the high environmental standards which drive the approach to regulation in those countries – leading to some gold-plating of EU standards and constraints on the opportunities for better regulation.

1.23 If Defra has an **appetite to take further the research documented in this report**, it will need to be shaped by expert consideration of the evidence in the context of Defra's strategic aspirations and policy and implementation challenges. **The scope for action to further expand Defra's knowledge of other countries' approaches to environmental regulation is threefold:**

- a) **Broaden knowledge of EU approaches** in other i) policy areas and/or ii) countries.
- b) **Deepen knowledge of EU approaches** covered by this report.
- c) **Explore non-EU approaches** (e.g. other OECD countries).

A mix-and-match approach might be taken, incorporating elements of some or all of the three options outlined.

1.24 **IHPR recommends that the report is used as the basis for dialogue within Defra and with the Environment Agency and Better Regulation Executive as to the usefulness and applicability of the information it contains and, in light of this, whether the Better Regulation Programme wishes to pursue further research under any of the three options suggested above.** The more Defra can define its needs, the more effective any further research will be. IHPR considers that the most fruitful avenue would be option c) – exploring the same or similar subject areas in non-EU OECD countries. Depending on the view of Defra experts, it may also be worth probing particular subjects covered in this report in more detail (option b)).

2. INTRODUCTION

2.1 In autumn 2010, Defra's Better Regulation Programme invited IHPR to undertake a short research project on international approaches to environmental regulation. It was agreed that the first phase would take the form of a scoping study and short targeted review of European Union (EU) approaches to, and trends in, key aspects of environmental regulation. The review was to be targeted to identify innovative approaches and potential areas of competitive advantage, developing a resource to help inform Defra's future strategic direction, and potentially to assist policy development in specific areas.

2.2 This **review of approaches to environmental regulation in the EU** is one of a suite of Better Regulation Programme projects designed to develop the evidence base in a way that will nurture the Department's better regulation culture and support the further development of policy teams' capacity. Projects range from development of a catalogue of Defra's existing regulatory stock and research into alternatives to regulation, to social research on microbusinesses' needs and how enforcement might be tailored to different types of business.

2.3 This report pulls together the outcomes of the review of approaches to environmental regulation in the EU and makes recommendations for further work.

3. METHODOLOGY AND APPROACH TO ANALYSIS

Project objectives

3.1 The project was framed around two objectives:

- First, to research and prepare a **scoping paper** for discussion and challenge with Defra, leading to agreement on the scope and methodology for the first phase of the review;
- Second, to carry out a **literature-based review** targeted as agreed with Defra, delivering a report providing a high-level summary of key trends based on easily accessible information and proposing further research if needed.

Scoping paper

3.2 The scoping paper (**Annex A**) was prepared with input from a small number of key Defra and Defra network colleagues with relevant policy, EU and international, legal, economic and compliance knowledge, for consideration by Defra's Analytical Group. The paper provided a high-level analysis of:

- Key factors influencing regulatory variation (e.g. spatial and geographical constraints, current socio-political framework);
- The main features of the resulting regulatory models (e.g. flexible vs. inflexible approach; balance in compliance and enforcement between carrot and stick), and
- Key trends in environmental regulation over time.

3.3 It then went on to consider, for the proposed literature review:

- Which countries should be targeted – EU or non-EU; similar or dissimilar to the United Kingdom (UK);
- Which policy areas should be the focus, and
- What types of information should be gathered.

Agreed focus for research

3.4 Defra agreed that **the literature review should proceed as proposed in the scoping report.**

3.5 There would be a focus on **five countries** in the EU – Germany, Hungary, the Netherlands, Sweden and Spain. These countries were chosen for their geographical spread, and for the range of approaches they epitomised (centralised vs. federal; prescriptive vs. flexible). There was to be flexibility to include case studies from other Member States if relevant.

3.6 Research would concentrate on five policy areas:

- Air quality and pollution;
- Chemicals and nanotechnologies;

- Sustainable products;
- Waste management and prevention;
- Water availability and quality.

3.7 Air, waste and water were selected as areas of mature regulation in which countries were likely to face broadly similar challenges. Chemicals and nanotechnologies is an emergent area; the first element highly regulated, the second not (yet). Sustainable products is also a newer area, with a strong focus on business benefits and with the potential for first-mover advantage.

3.8 The research would aim to gather contextual information for each country regarding its regulatory, governance and compliance framework; the key policy goals, and trends over time. It was also desirable to identify cost and benefits where possible. It would then focus on specific aspects including the degree of regulatory responsiveness and deregulatory and simplification approaches.

3.9 The focus of the research was further honed in brief conversations with Defra policy colleagues and with the Better Regulation Executive, as summarised in the paper *Project progress and next steps* at **Annex B**. This generated a consolidated list of areas of particular interest to Defra to help ensure the research would be as useful as possible. These areas were:

- Holistic and co-operative approaches;
- Relationship between the regulator and regulatee;
- Degree of regulatory responsiveness;
- Joined up compliance and enforcement;
- Alternatives to classic regulation;
- Best practice in policy-specific areas.

Literature and web-based research and contextual information

3.10 A full bibliography for the research is at **Annex C**. The researcher worked through OECD reports and other general literature sources to build up the base picture for each country and each policy area before going on to use Government and other websites and specialist literature to build up more detailed information on particular case studies. For reference, **Annex D** lists the EU Directives and Regulations relevant to each of the target policy areas (this was based on another 2010 IHPR project for the Better Regulation Programme, which mapped the EU environmental regulatory baseline). **Annex E** sets out the findings of initial contextual research on each of the five target countries' model of government, administrative structures and division of responsibilities for environmental protection.

Approach to analysis

3.11 Although the literature review was shaped by the focus on the five countries, five policy areas and the cross-cutting themes of particular interest identified by Defra

colleagues, in practice the research was limited to information easily accessible in published documents or on websites.

3.12 As much more information was available in English regarding the approach to environmental regulation in Sweden, Germany and the Netherlands, the report concentrates on these three countries. A few interesting case studies were identified for Hungary and Spain; these have been included where relevant. Although the research kept a look out for innovative approaches in other EU member states, in practice nothing was identified that was significantly different to the measures reported upon for the target countries.

3.13 The remainder of the report is structured according to the key areas in which information of interest to Defra was uncovered. These address:

- **Overarching frameworks:**
 - Better regulation programmes (section 4 and supporting evidence in **Annex F**)
 - Framework for environmental regulation (section 5 and supporting evidence in **Annex G**)
 - Understanding the regulatory burden (section 6)
- **Practical action to reduce the burden of regulation:**
 - Risk-based regulation (section 7)
 - Simplifying and easing permit requirements (section 8)
 - Joining up to reduce the burden of inspection (section 9)
- **The mix of instruments and measures used to achieve:**
 - Air quality outcomes (section 10 and summarised at **Annex H**)
 - Waste management outcomes (section 11 and summarised at **Annex I**)
 - Water quality outcomes (section 12 and summarised at **Annex J**)
- **How holistic, co-operative and educational approaches contribute to regulatory goals** (section 13)
- **Approaches to the voluntary EU commitment to Green Public Procurement** (section 14), and
- **How countries are tackling the risks and opportunities posed by an emerging area for regulation – nanotechnologies** (section 15).

3.14 Conclusions and recommendations for action are set out in section 16.

4. APPROACHES TO BETTER REGULATION¹ (evidence base in Annex F)

4.1 This section explores key trends in the target countries' approaches to better regulation.

4.2 Sweden and the Netherlands were better regulation pioneers in the 1970s and 1980s respectively. Sweden's early efforts focused on keeping the regulatory stock clear and clean, broadening to encompass deregulation associated with market liberalisation in the 1990s. The country started falling behind other EU member states in the early 2000s before driving a new focus on improvement and simplification (reflecting the trend across the EU).

4.3 The Netherlands has consistently remained a trend-setter, with a steady focus on administrative burden reduction including pioneering the Standard Cost Model (SCM) for reduction of administrative burdens². The country also pioneered action to ensure that compliance and enforcement are considered at the start of the regulatory development process.

4.4 Germany also has a long-standing commitment to streamlining the regulatory state, reducing the bureaucratic machinery and simplifying the legislative environment. This is not made easier by the federal system which (the OECD feels) can hold back innovation and the development of a broader view of regulatory quality.

4.5 While the influence of the European Commission's better regulation agenda³ is evident across all five countries, it has been a particularly strong driver for action in Spain and Hungary. Spain is a relative newcomer to better regulation, introducing its first programmes for administrative simplification in the late 1990s, around the same time as Hungary's first national deregulation programme. Spain's system of autonomous communities poses similar challenges to those generated by Germany's federal system: in Spain it is said that a legalistic culture continues to flourish, there are rapid shifts in

¹ Main case study sources for this section: OECD's *Better Regulation in Europe* reviews for Sweden, Netherlands, Germany, Spain 2010; OECD's *Regulatory reform in Hungary: Government capacity to assure high quality regulation* (2000).

² The International SCM network defines the Standard Cost Model as a quantitative methodology for determining the administrative burdens for business imposed by regulation. It may be used to measure a single law, selected areas of legislation or to perform a baseline measurement of all legislation in a country. It is suitable for measuring simplification proposals as well as the administrative consequences of new legislative proposals.

³ The European Commission's latest (October 2010) Communication on better regulation is entitled "Smart Regulation in the European Union". It concludes that "better regulation must become smart regulation and be further embedded in the Commission's working culture". This reinforces the Commission's earlier messages about impact assessment and consultation, and contains a commitment to "fitness checks" of the *acquis*, including pilots in the environmental area. The Communication contains three key points:

- 1) The aim of smart regulation is to design and deliver regulation that respects the principles of subsidiarity and proportionality and is of the highest quality possible. This is about the whole policy cycle.
- 2) Smart regulation remains a shared responsibility of the European institutions and of Member States.
- 3) The views of those most affected by regulation have a key role to play in smart regulation: the Commission plans to lengthen the period for its consultations and carry out a review of its consultation processes to see how to strengthen the voice of citizens and stakeholders further.

regulatory competence across levels of government, and gold-plating occurs incrementally as competence passes from national, to regional, and then local government.

4.6 All five countries have a better regulation programme in place dating from 2006 or 2007. Sweden, the Netherlands and Germany all have a stated focus on reducing the administrative burden on business: Sweden aiming for “less, easier” regulation, and both Sweden and Netherlands emphasising the need for the reduction in burden to be “noticeable”. Spain has an additional focus on reducing the burden on citizens, including through particular action at sub-national levels “closer to citizens”; Hungary’s 2007 programme is reported to focus around establishing a comprehensive quality assurance system integrated into the legal process (it is not clear whether Hungary also has an administrative burden reduction programme). There was consistency in the drivers for better regulation, with two key themes: supporting economic growth / freeing up and revitalising business, and sustaining or boosting competitiveness.

4.7 Both Sweden’s and Spain’s programmes focus on large swathes of simplification measures in annually-updated plans. The Netherlands’ current focus is on a risk-based approach to the development of regulations and enforcement. Key features of German better regulation are reported to include sunseting, less detailed regulation, benchmarking to strengthen the efficiency of administration, and one-stop agencies.

4.8 Sweden and Germany both followed the Netherlands’ early example, and the goals of the Commission’s better regulation agenda by setting a target over four years for a 25 per cent net reduction of business administration costs stemming from information obligations in legislation, as defined by application of the SCM. Spain is more ambitious – aiming for 30 per cent over four years. Hungary aims to achieve a reduction of 50 per cent over the six years to 2013. The Netherlands was the only country for which information was available about performance against targets – the country achieved a 22 per cent reduction in administrative burden over the period 2003-07, and expects to achieve a further 20-22 per cent by 2011. The Netherlands is also the only country for which a longer-term target was apparent – an ongoing reduction in administrative burden of 5 per cent per annum after 2012.

4.9 Information on implementation arrangements was patchy. Independent watchdogs have been set up both by the Netherlands (ACTAL – the Advisory Board on Administrative Burdens) and Sweden (Better Regulation Council); Germany has also established a Regulatory Control Council (not clear if this is independent). In Sweden, Ministries and government Agencies contribute to a rolling Action Plan to track measures under way and implemented.

5. FRAMEWORK FOR ENVIRONMENTAL REGULATION⁴ (evidence base in Annex G)

5.1 This section explores the framework for environmental regulation in the five target countries. Where possible it identifies:

- The fundamental principles on which environmental policy and regulation are based;
- The strategic framework for environmental protection (e.g. programme, long-term objectives);
- Legislative structures;
- The extent to which economic instruments are used, and
- The approach to, and division of responsibilities for, enforcement.

5.2 Not surprisingly, the fundamental principles on which environmental policy and regulation are based share common features in Sweden, the Netherlands and Germany. The framework is simplest in Germany: polluter pays, precaution, and co-operation. Sweden also adheres strongly to the polluter pays principle and cites five further fundamental principles – the promotion of human health, preservation of biodiversity, preservation of cultural heritage assets, preservation of ecosystems' long term production capacity, wise management of natural resources. The Netherlands shares Germany's principles regarding both polluter pays and precaution, and adds four others: sustainable development, prevention, prevention at source, and as low as reasonably achievable. There was no easily accessible evidence of Spain's underpinning environmental principles, nor of Hungary's (although it may be surmised that the latter's National Environmental Programme – see below, not available in English – would set these out).

5.3 It is worth noting that Sweden, the Netherlands and Germany are strongly driven by the goal of high environmental standards. This sometimes leads them to “gold plate” implementation of EU requirements (for example through landfill bans), and it also means that their approach to better regulation is generally focused on reducing administrative burdens without compromising the level of environmental protection.

5.4 The Netherlands and Hungary both have an environmental policy framework based on a multi-year national environment policy plan or programme. Hungary is currently on its third National Environment Programme which defines the main lines of environmental policy to 2014 as follows: environmental education, climate change, environment and health, preservation of biodiversity, sustainable land management, water and waste management. The Netherlands' Policy Plan⁵ identifies seven key problems anticipated for 2030 and how these should be tackled, as well as setting out a vision for the environment in 2030 as follows:

“Environmental policy should contribute towards a safe and healthy life within an attractive living environment and surrounded by dynamic nature areas, without

⁴ Main case study sources for this section: OECD *Environmental Performance Review* –for each country; www.international.vrom.nl; www.umweltbundesamt.de; www.sweden.gov.se .

⁵ Summary of the Netherlands' 4th National Environmental Policy Plan available in English at www.international.vrom.nl.

damaging global biodiversity or depleting natural resources, at present, elsewhere, and in the future.”

5.5 Sweden's environmental policy has been objective-oriented for several decades and, like the Netherlands, works to long-term goals. Since 1999 this has taken the form of a system of Environmental Quality Objectives (EQOs), of which there are now 16⁶. The structure, on which decisions are taken by Parliament, and which is now overseen by an all-party parliamentary committee incorporating expert membership from NGOs and Government departments, has developed over time. The 16 EQOs are subsidiary to “generational goals” (indicating the direction of required changes in society that need to occur in one generation to achieve EQOs); both are underpinned by milestone targets.

5.6 It appears that in Spain, strategic environmental policy objectives (the nature of which is unclear) are set by national authorities in co-ordination with the Autonomous Communities. Notwithstanding the wealth of English-language information on German environmental policy and regulation, it did not prove possible to identify an overarching framework or ambition.

5.7 In 1999 Sweden reformed its environmental legislation by adopting an Environmental Code: a comprehensive framework consolidating previously fragmented legislation and introducing a framework for monitoring environmental progress.

5.8 Germany has a long-held ambition to do the same (and has a full Code in draft) but so far has been thwarted by difficulties in securing final agreement between the coalition parties on its implementation. However since 2004 the German federal government has succeeded in passing eleven laws to repeal redundant regulations, and in 2010 reached a compromise in the absence of agreement on implementation of the Environmental Code. This included preparation of a Simplification Act repealing some 85 acts and ordinances concerning environmental policy, as well as introducing - for the first time - uniform nature conservation and water management legislation which standardises Germany's fragmented legislative framework and is directly applicable throughout the country rather than delegating responsibility to individual Lander.

5.9 Both the Netherlands – with its Environmental Management Act 1993 – and Hungary – with a key piece of legislation introduced in 1995 and subsequently amended – have a framework piece of environmental legislation. It appears that the Netherlands' goes further than Hungary's in enabling a fully integrated approach to environmental management. There was no evidence of a framework approach in Spain, although there are a number of laws and decrees at national level laying down certain requirements and environmental standards throughout the country. The Autonomous Communities have many powers in relation to the environment, and many municipalities also have their own ordinances.

5.10 Sweden appears to the leader in the introduction of economic instruments, with around 70 in force. These are also widely deployed in the Netherlands and Germany, and

⁶ Sweden's EQOs are set out in full at <http://www.sweden.gov.se/sb/d/5400/a/43485>.

Hungary has introduced some economic instruments, for example the “environmental load charge” applying to air emissions and waste water discharges. The OECD commented that Spain makes “limited use of environmental taxes and other economic instruments to influence behaviour, as it is widely believed they could affect competitiveness and employment”.

5.11 In every country, enforcement responsibilities are shared between national, regional / state and local agencies, with varying degrees of decentralisation. Decentralisation appears to be greatest in Sweden, where responsibilities are shared mainly between 90 government agencies and 290 municipalities. Responsibilities in the Netherlands are also widely spread, between two national inspectorates, state and regional water boards, provincial authorities and municipalities; here there are two bodies – an Inspection Council and a National Environmental Enforcement Co-operation Secretariat – in place to stimulate co-ordination, including of inspections. The Netherlands also has a tradition whereby municipalities establish “shared service centres” to execute permitting and compliance assurance responsibilities on their behalf or provide information support to the municipalities. There are 26 such centres nationwide bringing together 150 municipalities, the most prominent of which is the Rijnmond Environmental Protection Agency (DCMR)⁷ in the Rotterdam area in the Province of South Holland. Created in 1972 by 18 municipalities (including Rotterdam) and the provincial government, this is the largest regional environmental agency in Europe with about 550 staff. Hungary’s enforcement structure appears to be simpler, split between national and regional inspectorates – but relatively little information was available so this may not present the full picture.

5.12 Enforcement in Germany and Spain is guided by the federal structure. Germany splits responsibilities between the Federal Environment Agency (the Umweltbundesamt – UBA) and an Environmental Inspectorate in each Land. Spain does have national inspection agencies – including SEPRONA (the Nature Protection Service of the Civil Guard) – but most enforcement is delegated to the Autonomous Communities alongside responsibility for enforcing their own areas of competence. Enforcement activity by the Communities is overseen by a “peripheral administration” which employs 100,000 people. The OECD reported that the approach to enforcement varies significantly across Spain; the Ministry of Environment has set up surveillance networks for air, toxic waste and sea water quality controls to help Autonomous Communities to compare their performance.

5.13 The Netherlands appears to take the lead in innovating on enforcement and compliance (see also **section 7**) with a risk-based Compliance Strategy in place to prioritise action and ensure smart enforcement; efforts have also been made to secure joint inspections to reduce the inspection burden, and quality standards are in place. Sweden’s approach to enforcement is also prioritised according to environmental risk and focuses on industries and sectors that are big polluters or directly contribute to delivery of an environmental goal or to plugging a gap. Regional County Administrative Boards (CABs) conduct a “needs assessment” on an annual basis to determine a programme of monitoring and information collection to achieve environmental outcomes. Limited

⁷ www.dcmr.nl/en

information was available about Germany's approach, but it did set out the quality parameters in place to measure inspectors' performance.

5.14 The OECD described Spain as having "some way to go" on risk-based enforcement, and reported that there were no minimum quality standards. Efforts have been made to improve enforcement strategies but these have tended to focus on increasing controls rather than adopting a more risk-based approach. Hungary still has a developing institutional framework for enforcement; the OECD noted it has strengthened its system of sanctions and increased enforcement activities to tackle high levels of non-compliance.

6. UNDERSTANDING THE REGULATORY BURDEN

6.1 The research identified examples in two countries – Sweden and the Netherlands – of approaches to mapping and ranking administrative burdens.

*Sweden: greatest burdens exercise, baseline measurement and the Malin database*⁸

6.2 In 2004-05 Sweden ran an exercise to tackle the ten most costly burdens. This gave Sweden's Agency for Economic and Regional Growth (then known as NUTEK)⁹ the mandate to measure businesses' administrative costs related to environmental legislation, calculated according to the SCM. The project included creating a database (an assumed forerunner to the *Malin* database, see below, but not clear). NUTEK estimated total annual administrative costs to be SEK3.64bn in 2004 prices, corresponding to 0.14 per cent of Swedish GDP.

6.3 The list of the ten most costly environmental burdens included:

- Costs relating to the permitting of environmentally hazardous activities;
- Self monitoring of such activities;
- Environmental reporting, and
- Certain waste management requirements.

6.4 As a result, in 2005, a new law was introduced which simplified permitting procedures without reducing the level of protection to human health or the environment. Key streamlining provisions included clarifying authorities' obligation to take an active part in the Environmental Impact Assessment procedure, and new organisational and structural approaches, such as a notification requirement for smaller water operations. This made it easier to obtain a permit for extension of / change in the operation of an installation, without having to re-evaluate all existing operations at the site.

6.5 To underpin the administrative burden reduction target in the Swedish Government's 2006-10 *Action Plan for Better Regulation*, a baseline measurement exercise was again undertaken in 2007-08. This took into account 973 laws, ordinances and agency regulations, and 4,600 information obligations. It was based on 2958 interviews with business representatives and experts.

6.6 Progress towards meeting the target to reduce administrative burdens by 25 per cent by 2010 has been monitored with the support of annual baseline measurement updates, through the *Malin* database. The first update measurement was in June 2008.

6.7 The database contains all the proposals for regulatory simplification gathered during the baseline measurement interviews. Progress measurements have been logged at regular intervals into the database enabling ministries and agencies to consider where and how to target their efforts to reduce administrative costs in support of the target. *Malin*

⁸ Main case study source: OECD – Better Regulation in Europe – Sweden – 2010.

⁹ www.tillvaxtverket.se

also includes a simulation facility to calculate the potential administrative costs of new regulations and changes to existing regulations, as well as to determine how many companies were subject to a particular requirement. This function allows the authority to test changes in key variables (time, cost, frequency and population) to get a picture of how changes to a draft regulation would affect administrative costs.

6.8 Based on this analysis and on discussions with the business community, ministries and agencies identify actions as contributions to the overall *Action Plan*, and report on progress.

6.9 The Swedish Ministry of Environment and its five agencies used the *Malin* database to identify burdens and to measure the expected impact of new proposals. The database revealed that administrative costs to the business sector as result of Government legislation on the environment fell from SEK3.64bn in 2006 to SEK3.55bn in 2008, a net fall of 2.52 per cent. Measures taken during this period included the easing of notification requirements for environmental permits, and in 2008 proposed simplification of the Environmental Code was announced. This said, the Ministry of Environment noted to the OECD in 2008 that some simplification proposals were politically unacceptable, and that there were not yet enough projects to meet the target given difficulties in identifying areas where simplification could be achieved without reducing the level of environmental protection.

*Netherlands: Burden ranking exercise*¹⁰

6.10 The goal of the exercise was to identify the top thirty laws with the greatest burden, defined as the highest marginal compliance costs (costs over and above “business as usual” compliance costs), and to reduce these.

6.11 The 1,600 Dutch laws which affect business were reviewed and ranked in terms of the greatest burden to business. Consultants narrowed these down to 125 laws (mainly social security, environmental, tax and customs, VAT). The same consultancy did telephone interviews with over 1100 businesses and asked them to rank the 125 laws in terms of relevance to their business (there were some perverse outcomes from this stage). By convening meetings with key stakeholders (businesses and employer groups, unions etc.), the consultants then narrowed the results down to a consensus on 20 – 25 laws. Implementation of law reforms focusing on the top twenty laws, scheduled for completion in 2010, reduced costs by €0.5bn. (Note: BRE may have been interested in following up this idea.)

¹⁰ Main case study source: BRE Netherlands Country Factsheet 2010

7. RISK-BASED REGULATION

7.1 This section contains just one case study – the Netherlands’ risk-based approach to the development of regulations and how that is followed through into enforcement. As part of the Netherlands’ regulatory reform programme, they have developed a Framework Vision for Reform of Inspection and Enforcement, which is being implemented through an Inspection Reform Programme. In the environmental sphere, one of the two main Inspectorates has developed a compliance strategy. There are two further initiatives of note: a newly developed methodology, implemented in 2008, for information-driven compliance and enforcement, and an ongoing research project on compliance.

7.2 A summary of this suite of measures is included below; more detail is available in the OECD’s report *Ensuring Environmental Compliance* and as marked in footnotes; the Inspection Reform Programme is explained in full in a document available at www.inspectieloket.nl.

Risk-based regulatory simplification

7.3 Over the period 2002-07 the Netherlands Ministry of Housing, Spatial Planning and the Environment (VROM – now subsumed into the new Ministry of Infrastructure and the Environment) pursued a major strategic approach¹¹ examining regulatory burdens to help VROM meet its overall objective of a 30 per cent reduction in administrative burdens by 2007. The core aim was to take a risk-based approach to simplifying the legal framework without reducing environmental protection, with emphasis on the potential offered by information technology and one stop shops. The programme comprised around seventy sub-projects including reducing licence systems / the Single Environmental Permit “WABO” (see **paragraphs 8.6-10**).

Risk-based regulatory development

7.4 New legislation is often based on risk analyses and focuses on activities with a higher risk profile. Dialogue between policy makers, academics, politicians and business representatives has been encouraged, targeting the mechanisms – including (dis)trust - that generate burdensome regulation. The goal is to identify how trust can be used as a steering instrument for “light regulatory” governance, the shape this should take and regulatory areas or business sectors suitable for pilots.

Risk based approaches to enforcement

7.5 Enforcement reforms to develop risk-based approaches have been ongoing for a number of years driven by modernisation of central government, parliamentary pressure for change, and pressures generated by civil service reforms and staff cuts. Inspectorates and enforcement agencies now commonly use a risk-based approach to enforcement and carry out risk analysis based on estimates or measurement of non-compliance.

¹¹ More detail available in the BEST report.

Framework Vision for Reform of Inspection and Enforcement

7.6 The Framework Vision includes the establishment of joint risk analyses between inspectorates, co-operation between inspectorates and municipalities, facilities for digital co-operation, and the reassignment of tasks. The objectives are to develop enforcement bodies that promote trust, take firm action where required, provide better services, operate in close co-operation with other inspectorates at central and local government level, and interact effectively with government policy and lawmaking. This ambition rests on four pillars:

- **Modernisation and quality:** Inspection and supervision reorganised into domains and/or chains, recognisable to the stakeholder, with a single “front office” for each domain, and relevant inspectorates collaborating in the back office. Promotion of a cultural shift, under which inspectors will trust that stakeholders are willing to comply, act proportionately, communicate clearly, and offer advice, with peer assessment to make this work. Inspectors to make as much use as possible of control systems such as quality assurance systems for companies (certification and accreditation) which minimise burdens, based on “lenient where possible, strict where required”.
- **Transferred tasks and clustered expertise:** Where necessary, tasks transferred between central government inspectorates, grouped where possible according to sector (e.g. SMEs, child services) for joint inspections (including “joint regulations” for integrated enforcement) as well establishment of lead inspectorates with authority to act on behalf of others. This was under way with the Environment Inspectorate.
- **More flexible regulatory approach:** Review of existing regulations to determine whether alternative instruments could be used. Where possible, regulations will be linked to target standards (checklists, performance indicators) rather than specific provisions to give inspectors more flexibility.
- **A new understanding of the limits of government responsibility in risk management:** Manage public and political concepts of the role of inspectorates, given often conflicting views on risk and the public interest.

Inspection Reform Programme

7.7 The purpose of the Inspection Reform Programme is to implement the Framework Vision. Its goal, under the tag “More effect, less burden”, is to modernise 15 central government inspectorates, reducing burdens for companies by 25 per cent by 2011.

7.8 Its principles are:

- Supervision to be based as much as possible based on trust;
- Give companies room to take responsibility and make them more accountable, and
- Move away from compartmentalisation.

7.9 The Programme is taking action in two areas:

- To provide a clearer system for stakeholders through implementation of the “domain” approach described above, so that a company will see the administration as if there were only one inspectorate, and

- Through the development and implementation of “common themes” to create an inspection organisation which operates professionally and effectively through a more risk-based approach and without causing unnecessary burden.

7.10 The **domain-oriented approach** focuses on the development of new methods and tools, operating across 18 sectors. In co-operation with the relevant sector, a strategy has been drawn up for each domain which includes:

- More selective inspection of risks and firmer action in response to deliberate violations;
- Placing of trust in businesses which comply with the rules;
- Raised level of professionalism and expertise of the visiting inspectors as well as their understanding of the operational processes of the organisation;
- A single point of contact for business within the government inspectorates; co-ordinated inspection visits (information to be shared where possible), and generation of a single report;
- Data to be retrieved once only, and
- Small and medium sized enterprises to receive a maximum of two standard visits from central government inspectorates.

7.11 The “common themes” for implementation by each inspectorate were developed to modernise each body and its inspection methods. Themes focus on selectiveness (risk analysis and system inspection); professionalism (training and culture; effect measurement; and monitoring) and co-operation (harmonisation and transfer of tasks; e-inspectorates; municipalities and other regulators; interaction with policy; and company operations).

Compliance Strategy

7.12 The Netherlands’ Inspectorate for Housing, Spatial Planning, and the Environment (“VROM Inspectorate”) is responsible for enforcing compliance with 600 pieces of environmental legislation.

7.13 The Inspectorate has developed a Compliance Strategy, based on risk and compliance indicators, as well as knowledge of reasons for non-compliance, to enable prioritisation and a “smart” approach to compliance enforcement. Compliance enforcement is focused on changing the behaviour of the regulatee so that they will comply with requirements.

7.14 The “Table of Eleven”¹² is a broadly accepted and used list of reasons for non-compliance in the Netherlands, the principle being that when compliance behaviour and the reasons for non-compliance are known, it is possible for inspectors to enforce compliance in a smart way.

¹² See www.inece.org/conference/7/vol1/15_Vand%20Der%20Schraaf.pdf for a fuller explanation.

7.15 The Strategy identified all relevant environmental legislation and the regulatees for each piece. For each regulatee, the current risk status and compliance behaviour were identified and classified according to risk and compliance indicators.

7.16 There are four classes of compliance gap-indicators, based on expert knowledge, which provide a measure of the necessary compliance efforts the Inspectorate has to make. These are: good, sufficient, intermediate, bad.

7.17 Risk indicators were developed in the same way: risks were estimated in several expert workshops for each piece of environmental legislation and for each regulatee. The estimates were based on risks to public health, safety, sustainability and social factors if compliance is not enforced. There are four classes of risk indicators: very high, high, intermediate, low.

7.18 A 2 x 2 matrix of the risk and compliance indicators creates a tool for prioritisation. Intermediate / low / bad are indicated as high risks/high non-compliance; high / very high / good / sufficient as low risks and low non-compliance.

Netherlands: Inspection holiday

7.19 As flagged in the 2010 Netherlands Coalition agreement, an ‘inspection holiday’ was introduced for enterprises in January 2011. Provided self-regulation (certification) is reliable, fewer inspection visits per enterprise will be made. No further information was available.

Quality standards for environmental inspectorates’ activity

7.20 Nineteen quality standards have been established, along with guidance on their application. The standards are applicable regardless of the inspectorate’s focus, although performance in each field of activity may be assessed separately to determine whether quality standards are met.

Information-driven monitoring and enforcement

7.21 “Information-driven inspection and enforcement” was developed by the DCMR and launched in summer 2008.

7.22 This is a methodology for managing inspections within an extensive network of partners. The network includes the DCMR, Seaport Police, Tax Authority (including Customs), environmental and building departments of municipalities, Labour Inspection, the National Reporting Point for Waste (LMA), the Rijkswaterstaat, the Environment Ministry and the Transport and Water Management Inspectorate. Information (e.g. regarding waste, emissions, accidents) is made available and shared across the network, thus picking up subtleties not addressed by risk-based monitoring.

7.23 The goal is to take a broad approach to addressing environmental risks: identifying bottlenecks, structural violation behaviour, criminal behaviour and undesirable

developments as early as possible so that the enforcement process may be better controlled. Regulated companies should also face less inspection time because analytical work is undertaken prior to visits, with the inspector gathering information from partner inspectorates.

7.24 Several projects are ongoing, including one to investigate and challenge the illegal removal of asbestos, and another comprising research on the risk of safety and environmental violations at companies that clean tank containers.

Research project on compliance

7.25 In 2008, the research institute of the Ministry of Justice was reported to be examining the general level of compliance in a project called “The state of compliance”. The project, expected to conclude in 2009, was considering how to measure or estimate compliance; what the extent of compliance was; what causes non-compliance; and what were the differences and similarities in non-compliance within target groups and policy areas. There was no further evident information available in English.

8. SIMPLIFYING AND EASING PERMIT REQUIREMENTS

8.1 One of the most striking features of the information available about each country's actions were the comprehensive efforts to reduce the regulatory burden by easing and simplifying permit requirements – explored in this section. There have been initiatives in both Sweden and the Netherlands to increase the number of less hazardous activities which have a simple notification requirement rather than an obligation to have a permit. The Netherlands has additionally introduced a single permit to replace 25 licences and permits, and has speeded up the permitting process by expanding the scope of activities for which automatic issuing of a permit is allowed.

*Sweden: Easing requirements for environmental permits*¹³

8.2 In Sweden the “FMH project” (an acronym for the relevant statute), implemented in January 2008, mainly concerned permitting for environmentally hazardous activities and was targeted to reduce the administrative burdens for companies, including SMEs.

8.3 The Swedish system divides environmentally hazardous activities in a three-tier system (A, B and C) according to size of organisation and environmental impact. The requirements of the permit and the tier of government responsible for regulating are proportionate to the tier. Permits are determined on a case-by-case basis taking into account the availability of technology and what is the best / most reasonable approach for each particular business.

8.4 In 2006/07 the Swedish Environmental Protection Agency undertook a review of provisions relating to the necessity of permits / notifications for environmentally hazardous activities was undertaken. Its aim was to ensure that rules and regulations were not more demanding and complicated than required to protect the environment and human health. The review resulted in changes to the basis on which different activities should be categorised - 1,350 of 6,000 installations saw their permit requirements replaced with an obligation to notify.

8.5 The annual cost reduction for benefiting enterprises was estimated to be SEK95m (€10m). The annual cost reduction for courts and other authorities was estimated at SEK30m (€3.2m).

*Netherlands: Reducing licence systems / the Single Environmental Permit (“WABO” – acronym for implementing Act)*¹⁴

8.6 The Ministry of Economic Affairs launched a project in 2005 to develop an inventory of licences, documenting around 1,100 different licence systems with an annual flow of 2.7m individual licences (to citizens and business). Different permits were issued by different authorities and different levels of Government so obtaining them was time-consuming and confusing for companies.

¹³ Main case study sources: BEST report, IMPEL report, Swedish Presidency examples of better regulation.

¹⁴ Main case study sources for all Netherlands examples in this section: IMPEL report, BEST report, OECD report *Ensuring Environmental Compliance*, ACTAL Annual Report 2009.

8.7 The main purpose of the “WABO” project was therefore to establish a single, straightforward procedure and a single competent authority for citizens or businesses seeking permission for activities which affect the physical environment.

8.8 The resulting Environmental Licensing (General Provisions) Act “WABO” introduced major changes to the permitting system in July 2010. It created a “land use and development” permit integrating 25 existing licences and permits, including the environmental licence and the building permit, as well as provincial and municipal licences. It also provided for EIA, when required, to become part of the permitting procedure. The new permit is issued by provincial or municipal authorities although the permit for discharges into water bodies, while put under the same cover as the integrated permit, remains in the competence of the Water Boards.

8.9 Citizens and businesses start the procedure with a digital standard form at a digital front office, they get one (integrated) permit and there is only one procedure for appeal.

8.10 WABO and other related measures reduce the number of systems by 22 per cent (mainly through ICT tools e.g. data re-use, and by scrapping obsolete / overlapping systems) – equivalent to an annual administrative burden reduction of €85m for businesses and €11m.

Netherlands: Expansion of use of general binding environmental rules for companies

8.11 The aim of the General Bindings Rules (GBR) initiative was to reduce the number of enterprises required to have individual environmental permits. This was achieved through the General Activities Act (2008), under which sector-specific GBRs were replaced by comprehensive, cross-sectoral, activity-based GBRs which integrate environment and water-related conditions and rely heavily on self-monitoring. (One exception is agriculture: farms are regulated under a separate Environmental Agriculture Decree, which could be integrated with the General Activities Act in the future.)

8.12 There are three types of private companies / organisations under the Act:

- Type-A companies. This group, with little or no negative impact on the environment, has a ‘light regime’, which means that these companies have no obligation to report their business to the environmental authority and that they do not need a permit.
- Type-B companies. Companies with a reporting obligation under the GBR.
- Type C companies. These are the companies that still are duty-bound to apply for an environmental permit, because the probability of negative consequences for the environment of their business activities is high.

8.13 The new Act reduced the administrative burden by reducing the number of enterprises that are required to have simple General Binding Rules (GBR)-based permits (with additional requirements set by the competent municipality) from 100,000 to 40,000 and expanding the number of activities covered by GBR (requiring a simple declaration of conformity with the GBR), with no reduction in the level of environmental protection. This

is estimated to save business €329 million. In total, about 350,000 companies are subject to GBR.

Netherlands: Broader application of “lex silencio positivo” principle

8.14 Application of the *lex silencio positivo* (silent consent - LSP) principle in the Netherlands ensures that the government reaches a decision on permit applications in time. In layman’s language: if you apply for a permit in the Netherlands, the authorities have to take a decision by a set deadline. If they fail to meet this deadline, the principle of LSP may be applied, which means that the permit will be issued automatically.

8.15 The result is that decisions are taken faster, and with fewer complaints from applicants. There are downsides – for example it is not possible to grant an application on a conditional basis – and risks attached – the risk of great or irreversible damage or harm to an interested party. This means that it does not apply to all permits.

8.16 Acting on recommendations from the better regulation watchdog Actal, further work by the Ministry of Economic Affairs looking at broadening the application of LSP examined all nationally generated licence systems:

- Exploring whether LSP was legally technically possible (e.g. no conflicting EU Directives);
- Making transparent for each permit system what the size and nature of risk of damage or harm could be;
- Taking into account the degree of irreversibility, and
- Considering how damage or harm could be mitigated by withdrawing an automatically-issued permit.

8.17 In 2008, the Netherlands decided to introduce LSP on an additional 24 licences.

Germany: Simplified emission reporting¹⁵

8.18 This national German initiative reduced the administrative burden for operators of industrial installations subject to permitting requirements under the Federal Act on Immission Control by simplifying the monitoring and reporting of emissions under the 11th Emission Control Ordinance. The initiative also made use of IT tools and electronic systems. Simplification was achieved by combining several reporting obligations and using a uniform reporting format. It also made use of IT tools and electronic systems.

¹⁵ Source: BEST report.

9. JOINING UP TO REDUCE THE BURDEN OF INSPECTION

9.1 The “domain” approach in the Netherlands’ Inspection Reform Programme, explored in brief in paragraphs 7.7-11 above, is one example of methods used to join up compliance and enforcement. This section explores in more detail how that Programme is also taking specific steps to reduce the burden of inspection, as well as initiatives with similar goals in Sweden and Germany. The available evidence suggests that the Netherlands may be far ahead of other member states in the sophistication of its approach.

*Sweden: Co-ordinated inspections*¹⁶

9.2 In Sweden the relevant supervisory body is responsible for determining how inspections should be planned and executed to meet the body’s environmental regulatory responsibilities. There is no route by which central authorities can require inspections to be carried out in a particular way. In response, a number of approaches have been developed to co-ordinate and exchange experiences that will guide and assist the process of inspection. This has included setting up networks between supervisory authorities such as Environmental Co-ordination Sweden and the Enforcement and Regulation Council.

9.3 Another example is the “Seveso” inspection, which in Sweden is a task for several inspecting authorities. Co-ordinated inspection is undertaken with participation of inspectors from the different inspecting authorities; there is also co-ordination on general issues concerning Seveso inspection via networking, conferences and joint training.

*Netherlands: Coordination of inspections of different inspectorates / policy fields (part of the Inspection Reform Programme)*¹⁷

9.4 Within each domain the leading inspectorate (in general the inspectorate with the greatest inspection burden) is responsible for stimulating and co-ordinating the development of more effective and efficient inspections.

9.5 One goal is to reduce the burden of inspection for businesses by co-ordinating visits from different inspectorates, particularly where comparable information is to be sought. Where possible, one inspectorate is given the task to visit, taking with it the questions for the other inspectorate(s). The others only participate in the visit if expert knowledge of the particular sphere is required.

9.6 One example is the coordination of questions / inspections of the VROM Inspectorate in the domain of recreational industries that deal with the use of pesticides for gardening and the use of recycling of CFC-using equipment. The VROM Inspectorate developed a questionnaire for the Labour Inspectorate, which has the largest interest in the recreational domain, to take along with them when visiting. The VROM Inspectorate also provides briefings for the relevant Inspectors. The Labour Inspectorate is also tasked with a VROM Inspectorate questionnaire for inspection visits relating to REACH.

¹⁶ Main case study source: IMPEL report.

¹⁷ Main case study source: OECD – *Ensuring Environmental Compliance*.

9.7 In 2009/2010 it was planned to investigate whether or not the inspectorate burden within the different domains had reduced as a result of the programme. No relevant follow-up information was available.

Germany: One stop shop: “permit pilot”, Schleswig-Holstein¹⁸

9.8 A “permit pilot” (“Genehmigungslotse”) is named as the expert single point of contact for permit-related questions at each of the Industrial Association of Schleswig-Holstein and at the Schleswig-Holstein Ministry for Agriculture, the Environment and Rural Areas. The permit pilots can be called upon to arbitrate in difficult situations during complex approval procedures. They give advice to applicants, share information between the two organisations and help to conclude the approval procedure speedily and appropriately. By providing a single focus for business, this approach eases the administrative burden.

¹⁸ Main case study source: BEST report.

10. MIX OF INSTRUMENTS AND MEASURES USED TO ACHIEVE AIR QUALITY OUTCOMES

10.1 This section explores and compares the different approaches deployed in the five target countries to achieve air quality outcomes, including requirements under the EU National Emissions Ceilings Directive. It focuses on Sweden, the Netherlands and Germany (for whom the most comprehensive information was available, summarised at **Annex H**) bringing in case studies from Spain and Hungary where relevant.

10.2 Judging by the available evidence; while air quality has improved in Sweden, the Netherlands and Germany over the past 20 years, all continue to struggle in particular with concentrations of nitrogen dioxide and particles, and there is an increasing emphasis to tackle transport pollution. All three countries have a similar policy aim, as epitomised by Sweden's "air must be clean enough not to represent a risk to human health or to animals, plants or cultural assets". Each country appears to have a policy framework based on air quality standards and emission targets.

10.3 Sweden, Spain and Hungary appear to be most open to using taxes and charges to tackle industrial emissions. Sweden introduced a Sulphur Dioxide Tax and a Nitrogen Oxide Charge on Energy Production in the early 1990s: in combination with other measures, these have both had a strong incentive effect to reduce emissions, as evidenced by the case studies below. The autonomous community of Galicia, Spain, also introduced a Nitrogen Oxide Tax in the mid 1990s, and much more recently, Hungary has introduced an Environmental Load Charge. There is no evidence available of the efficacy of either, but further details are included below.

Sweden: Sulphur Dioxide Tax¹⁹

10.4 Sulphur dioxide emissions were originally subject to a command and control approach via permits for individual stationary sources. In 1991 the Sulphur Dioxide Tax was introduced as an additional measure to speed up compliance with targets in a faster, more cost effective way. Its core purpose was to reduce further the maximum sulphur content of coal and fuel oils.

10.5 The tax applies to the sulphur content of heavy fuel oils, coal and peat and is levied at a rate of SEK30 per kg of sulphur content (around €3.32). This is relatively high compared with taxes in other OECD countries. While revenues are not hypothecated, the tax can be refunded if sulphur is removed from exhaust gases and emissions have been reduced through use of other techniques. Financial support programmes are also in place to stimulate innovation.

10.6 While it is difficult to evaluate the tax's performance owing to the other policy instruments in place for fuel use, Sweden estimates that annual sulphur emissions from 1989 to 1995 were reduced by 19,000 tonnes due to the tax, representing 30 per cent of the total emissions reduction in that period for which the tax is responsible. Nearly 60 per

¹⁹ Main case study source: www.economicinstruments.com.

cent of manufacturing industry's reduction in sulphur emissions may be attributed to the tax. It is said that the tax has worked mainly by inducing technological progress on the demand side and by enhancing technological progress on the supply side.

Sweden: Nitrogen Oxide Charge on Energy Production²⁰

10.7 As with sulphur dioxide pollution, policy was originally based on a command and control approach, with permit conditions tightened over time. To achieve a more rapid reduction in emissions and to incentivise cost-effective emissions reductions without distorting the competitiveness of industry, a refunded charge on nitrogen oxide emissions from energy generation at combustion plants was introduced in 1992.

10.8 The level of charge - SEK40 per kg of emitted nitrogen oxide (about €4.4) – was based on engineering data on the expected effectiveness and costs of abatement investments at power stations and district heating plants. The charge is applied to measured emissions, or to presumptive emissions levels if the operator does not wish to install measuring equipment, and has remained the same since its introduction. Monitoring required as part of the charge is considerably more extensive than the monitoring stipulated by the EU 2001 Directive on Large Combustion Plants. It is administered by the Swedish Environment Protection Agency.

10.9 High monitoring costs made it economically feasible to include only large combustion plants: by 2007, around 260 plants (responsible for under 10 per cent of Sweden's nitrogen oxide emissions) were subject to the charge, comprising heating and power plants, waste incineration plants, pulp and paper industry, chemicals industry and the metals industry.

10.10 Less polluting plants are given a competitive advantage because revenue from charges paid by liable operations is redistributed among plants in proportion to their energy production minus 0.7 per cent for administration. This encourages targeted plants to reduce their emissions of nitrogen oxide per unit of energy to lowest possible level. Energy production plants range from making a net payment of SEK10m, to earning a net income of SEK14m.

10.11 A report to the OECD global forum on eco-innovation, November 2009, in Paris found that the charge had acted as a strong incentive for emission reduction - attained by setting a high charge level and combining it with mandatory continuous monitoring of emissions. "The NOx charge has turned out to be a very effective instrument for reducing NOx emissions per unit of energy produced from stationary combustion plants in Sweden." "Emission intensities have been cut by half, which can be considered a substantial reduction for a pollutant like NOx that is usually technically difficult to reduce."

Spain, Galicia: Nitrogen Oxide Tax²¹

²⁰ Main case study sources: www.economicinstruments.com; International Institute for Sustainable Development, www.iisd.org; Swedish Environment Protection Agency; OECD global forum on eco-innovation, November 2009, Paris.

²¹ (Main case study source: www.economicinstruments.com .)

10.12 Galicia's Nitrogen Oxide Tax was introduced in 1995. The tax applies to emissions in excess of 1,000 tons, with a slightly higher charge for emissions in excess of 50,000 tonnes. It is calculated through direct measurement of emissions or through the use of emission factors supplemented by some form of inspection.

10.13 Around five per cent of total revenues are dedicated to a special fund for environmental restoration to deal with the negative effects of the emissions while the rest goes to the main regional budget.

10.14 According to an Ecotec study in 2001, the tax is seen mainly as a means of raising revenue for the region. Little is known about what effects it has had, if any, on emissions so it is not possible to say whether the tax has had any abatement effect. It was not possible to track down more recent information.

Hungary: Environmental Load Charge²²

10.15 Hungary introduced a new environmental load charge in 2004, applying to air emissions, waste water discharges, municipal and packaging waste. It is levied on households as well as businesses.

10.16 The air element applies to emissions of main air pollutants from stationary sources. The charge is set at a specific unit rate for different pollutants, based on the previous year's emission volume.

10.17 The water element applies to all activities that require a permit, e.g. waste water companies. The charge co-exists with pollution fines for discharges in excess of permit, with a quasi exemption if measures are taken to reduce the pollution load.

10.18 Economic sanctions may be applied when emission and discharge standards are exceeded. Revenue goes to environmental funds, particularly the Central Environmental Protection Fund (CEPF), and to local authorities, which use the revenue to finance pollution abatement measures.

10.19 It is felt that the relatively low rates of charge, exemptions and rebates offered may hinder its effectiveness.

10.20 The Netherlands, Germany and Sweden were all part of early road-charging efforts through the HGV "Eurovignette" scheme; Germany has subsequently replaced this with an HGV road tax (it is not clear whether Sweden is also a part of this). While the Netherlands has reportedly introduced "Environmental Zones" in ten cities which ban the most polluting classes of truck to combat air pollution from transport, Germany appears to have gone furthest with Low Emission Zones. Case studies are set out below.

Germany: Road user charge for HGVs / Heavy Vehicle Tax²³

²² (Main case study source: OECD – Environmental Performance Review – Hungary - 2008.)

²³ Main case study source: www.economicinstruments.com .

10.21 The road-user charge (Eurovignette) for HGVs was a joint programme with the Netherlands, Luxembourg, Denmark and Sweden launched in 1995. The charge was based on the number of axles, weight and distance travelled.

10.22 In 2005 the Eurovignette was succeeded by a heavy vehicle tax (at least in Germany; not clear what other countries have done). This relies on satellite and mobile phone technologies to communicate with on-board units without the need for roadside transponders.

10.23 The charge is calculated according to the estimated maintenance, upgrading and renewal costs for the motorway system attributable to trucks and applies to both domestic and foreign HGVs. It is explicitly intended to provide an appropriate financial environment for inter-modal competition for freight between road and rail.

10.24 The initial rate was 1.5 times the previous Eurovignette charge per km, differentiated according to the emission level of the vehicle and number of axles.

Germany: Low Emission Zones (LEZs)²⁴

10.25 The first LEZs were launched in January 2008 in Berlin, Cologne and Hannover with several other cities following suit later in the year. In 2011, more cities are expected to implement LEZs. The legal basis is the 2007 Ordinance on the issue and amendment of provisions on marking of low-emissions motor vehicles.

10.26 Their purpose is to mitigate air pollution caused by fine particles, and their designation may be an important step towards meeting new air quality standard limit values. All drivers are required to purchase an emission sticker when passing through an LEZ. Different coloured stickers correspond to the level of particulate emissions. Drivers without a sticker are fined €40 and awarded a point in the Traffic Offences Register.

10.27 In certain “green zones”, entrance is completely forbidden to vehicles with higher particle emissions (red and yellow stickers); access to the LEZ in many cities was tightened in January 2011.

²⁴ Main case study sources: www.economicinstruments.com ; UBA website.

11. MIX OF INSTRUMENTS AND MEASURES USED TO ACHIEVE WASTE MANAGEMENT OUTCOMES

11.1 This section explores and compares the different approaches deployed in the five target countries to achieve waste management outcomes, including requirements under the Waste Framework Directive, Landfill Directive, Waste Incineration Directive and Packaging Directive. It focuses on Sweden, the Netherlands and Germany (for whom the most comprehensive information was available, summarised at **Annex I**).

11.2 Waste management policy in both Sweden and the Netherlands is described as having been influenced by public opposition to landfill and incineration in the 1980s; energy policy in Sweden – which is the strongest proponent of energy from waste – is a more recent driver, and Sweden has a particular policy interest in driving up biological treatment.

11.3 While Sweden and Germany do not face geographical constraints on landfill to nearly the same extent as the Netherlands, the three countries collectively share top place for the lowest landfill rates in Europe – landfilling between 1 and 3 per cent of municipal solid waste in 2008.

11.4 The three countries' policy approach adheres to the waste hierarchy enshrined in the Waste Framework Directive. Each country has set a range of targets. Sweden's focus on recycling and recovery, the Netherlands also look to limit waste production. Germany has the most challenging policy aim in place: for full recovery of municipal solid waste by 2020.

11.5 Each of the three countries has adopted a slightly different mix of instruments to tackle the same central challenges – reducing landfill, promoting energy from waste solutions, giving effect to producer responsibility for packaging recycling and recovery and driving up recycling.

11.6 Sweden and the Netherlands both have a landfill tax and ban in place; Germany relies on a landfill ban alone. To promote an appropriate balance between landfill and incineration, Sweden has adopted an incineration tax, whereas the Netherlands has opted for an incentive approach. All three countries have mature producer responsibility systems, each of which is supported by a mandatory deposit refund system (Hungary has implemented a voluntary system). The Netherlands' and Sweden's take-back and recycling systems are largely covered by product charges levied on the consumer; Germany's "Green Dot Scheme" covers costs through a licence fee levied on producers which is passed on to consumers.

11.7 To drive up recycling, Sweden has promoted voluntary measures to improve waste handling and imposed an early waste separation obligation on householders. In the Netherlands, municipalities are required to collect certain waste streams separately, supported by voluntary schemes, government grants and performance benchmarking. All three countries use variable waste charging of householders as an additional mechanism to promote recycling.

*Sweden: the waste management instrument mix*²⁵

11.8 Sweden introduced a **landfill tax** in 2000, which now stands at E40/tonne. This was coupled with a **ban on landfilling** sorted combustible waste (from 2002) and, later, all organic waste (from 2005).

11.9 Sweden's district heating network has guaranteed a market for the heat produced by **incineration**. To further encourage materials recovery (especially of plastics), reduce CO₂ emissions and encourage combined heat and power generation, in 2006 Sweden introduced a tax on incineration of the "fossil" component of household waste. The tax is based on an assumed fossil content – currently 12.6 per cent of the waste stream. Waste incineration facilities with only heat generation pay SEK 444 per tonne of waste; facilities generating power as well pay a lower rate.

11.10 "**Extended Producer Responsibility**" (EPR) requires producers to meet statutory targets for recycling. It is up to producers how they meet the targets, and in most cases they rely on bring systems. Collection and processing costs are passed onto the consumer in product prices. Since 2008, producers have been liable for establishing incentive structures and collection facilities that facilitate collection and recycling. Producers are to be held to account if the system fails to encourage consumers to recycle their waste. To help facilitate these changes, the government appointed a negotiator to help identify better co-operative waste handling solutions between municipalities and producers for the recycling of glass and paper. In 2009 this led to a new agreement on waste recycling between municipalities, county councils, recycling companies and manufacturers of recyclable paper and packaging, e.g. an increase in the number of available recycling stations. The EPR system is described as being largely successful although its implementation is criticised by some as being over-complex.

11.11 Implementation of producer responsibility is coupled with a mandatory **deposit-refund system** for aluminium and plastic beverage containers. A voluntary system is in place for glass bottles. It was estimated in 2006 that the schemes cover 460m glass bottles and 70m plastic bottles, achieving return rate of over 90 per cent.

11.12 Producer responsibility for **WEEE** was introduced in 2001 alongside "Elretur": co-operation between producers and municipalities. El-Kretsen (the industry's service company) manages a nationwide WEEE collection and recycling system (the only nationwide collection system in Sweden): municipalities manage and fund collection points where people may leave WEEE without charge; El-Kretsen manages and funds transport of WEEE for pre-treatment and recycling. The kg per capita collection rate, at ~16kg, is one of the highest in the world.

11.13 A **voluntary commitment to reduce biogas plant emissions** is in place, led by Avfall Sverige, the Swedish waste management trade association. At the start of 2008, 17

²⁵ Main case study sources: OECD – Environmental Performance Review – Sweden 2004: www.avfallsverige.se; Swedish Environment Protection Agency; www.ilsr.org; European Commission – Environmental Performance Review - 2008.

biogas and 15 biogas upgrading plants had committed to measure their methane emissions every three years and draw up action plans to deal with any emissions that cannot be eliminated immediately.

11.14 Householders have since 1994 been required by law to **separate waste** to facilitate collection under EPR. In addition, **variable municipal waste charges** are fixed so that waste management is self-financing. Municipalities are allowed to charge according to the volume of waste produced, weight or frequency of collection. Many municipalities also require households to separate compostable and combustible waste; others charge more for unsorted waste to stimulate source separation. Most householders can get reduced waste charges for composting or accepting lower frequency collections.

11.15 A study in the early 2000s reported on the weight based system of variable charging for household waste introduced in Bjuv in Sweden. This is said to have resulted in a 20 per cent reduction in residual waste in the first year, and an estimated further reduction of 15 per cent in the second year. The study highlighted that a large part of the change was likely to be due to the introduction of more comprehensive kerbside services.

*Netherlands: the waste management instrument mix*²⁶

11.16 The Netherlands **landfill tax** stood at €107.49 in 2010. To supplement the tax, in 1995, a **ban on landfill** was introduced for 35 categories of waste if it is possible to re-use, recycle or incinerate. The ban includes a prohibition on landfilling household waste except if there is a temporary shortage of incineration capacity.

11.17 The landfill tax is set high to enable incineration to compete (plants are expensive to build and run in the Netherlands); there are concurrent government-imposed constraints on incineration capacity (government owns nearly all of the country's incineration plants) to prevent incineration from competing with recycling.

11.18 To encourage investment in incineration for recovery (rather than for disposal), the **Environmental Quality of Electricity Production Incentive Scheme** makes subsidy payments for electricity production based on waste. In 2007, the subsidy was 2.9 eurocents per kw/hour of electricity supplied by power plants or equivalent that use biomass for auxiliary firing or co-incineration and have an energy yield of more than 26 percent. Heat is also included in determining the yield threshold. This is supported by the **Platform for Secondary Fuels** set up in the early 2000s between the Environment Ministry and the business community. Participants include energy companies, waste incineration companies, ministries and provincial authorities. Working groups study obstacles (e.g. relating to fuel quality, sales of fuel, financial costs) to production of secondary fuels and incineration of waste streams with a high calorific value.

11.19 **Voluntary packaging covenants** were introduced in the Netherlands in 1991 and 1997. While the Environment Ministry has the power to make these binding on the whole sector, it has only done so for end-of-life vehicles, paper and cardboard.

²⁶ Main case study sources: OECD – *Instrument mixes* – 2007; Ministry for Infrastructure and Environment; Europa website; Wikipedia; *Waste Management World* December 2010.

11.20 Operations are often funded through the introduction of a **waste management fee**, paid into a common fund by producers or importers for each new product placed on the market: in almost all cases, producers have set up collective systems to meet their obligations.

11.21 **Product charges** included in the price of certain goods including vehicles, packaging, batteries, white and brown goods pass on waste management costs from the producer to the consumer – although it is noted that this is not necessarily an incentive to improve product design as there is no differentiation in the additional charge to the consumer on the basis of recycling performance.

11.22 Recycling of packaging is facilitated by **deposit-return systems** for beer bottles and drink containers. The deposit is returned by automatic machines at supermarkets.

11.23 Municipalities are obliged **collect three types of waste separately** – compostable (since 1994), recyclable and mixed. Compostable and mixed waste must be collected at the kerbside. There is almost total participation by municipalities in voluntary schemes for separate collection of paper, cardboard, glass, metals, textiles and small chemical wastes, mostly at the kerbside and with some bring facilities.

11.24 Municipalities are free to determine how to fund their waste management service – the use of **waste collection charges that vary with waste amounts** is increasingly common, but far from universal: by 2000, around 20 per cent of Dutch municipalities had implemented pay per kg, bag or waste bin. An additional 40-60 per cent pay a collection charge related to the number of persons in the household.

11.25 In 2004, one study estimated that the impacts on total waste amounts of charging systems based on collection frequency / volume of collection bin were relatively modest – 21 per cent and 6 per cent respectively. A bag-based collection charge for unsorted and compostable waste was found to have almost the same impact on total waste amounts as a weight-based system – a reduction of 36 per cent.

11.26 **Monitoring and benchmarking** is used by the provinces to stimulate and facilitate municipalities in the area of waste prevention and separation. The Environment Ministry promotes separation by co-ordinating national activities, collecting and disseminating information and through research, monitoring and benchmarking.

11.27 **Government policy** is felt to have been a critical factor in giving companies confidence that awareness of the need for change in waste management would be translated into legislation, regulations and fiscal measures. The Dutch regulatory framework has given rise to manufacturing industry based around techniques such as sorting and composting. For example:

- The recycling company VAR is a leader in waste recycling technology;
- In the centre of cities, many above-ground containers have been replaced by pillar boxes developed by Bammens for separation of paper, glass, plastic containers and

PET bottles. These are more hygienic, more aesthetically pleasing, and larger so are emptied less frequently. The latest ones have electronic devices whereby the user is given a pass to access the system and is taxed depending on how often he puts waste in the container;

- Vista-Online provides a tool to simplify assessment of compliance with requirements for the condition of public spaces – inspectors are given a smart phone to report the condition of the site in real time. Data are sent to a server, appears on a website to which customers (e.g. municipalities) are given a special access code. Data are immediately available and clearly organised; time-consuming collation of findings is not necessary, and there is no need for the customer to set up their own ICT system.

*Germany: the waste management instrument mix*²⁷

11.28 Germany has no landfill tax but in 2005 introduced a **ban on the landfilling of untreated biodegradable matter and municipal solid waste containing organic material**. The main difficulty with implementation of the policy is the lack of pre-treatment facilities for commercial waste, which has led to a significant requirement for interim storage (often in landfill).

11.29 Germany places a strong emphasis on **energy from waste**, and in 2008, 67 incineration plants were operational in the country. There was no evidence of any regulatory instruments to manage their role in the waste management mix.

11.30 Germany's developmental work for a **national waste prevention programme** has resulted in a Federal Environment Ministry project report published in December 2010: "Development of scientific and technical foundations for a national waste prevention programme"²⁸.

11.31 The Packaging Ordinance 1991 has played a pioneering role in reducing **packaging material** in marketed products and increasing the proportion of material recovered from packaging waste. Its overall aims are to ensure that packaging is environmentally compatible and is made of easily recoverable material, and that generation of packaging waste is avoided as far as possible.

11.32 The Ordinance requires **producers and retailers to take back** and recycle a certain percentage of products. It also establishes a minimum requirement for refillable beverage containers and a provision: if use of refillable containers falls below 72 per cent, a mandatory deposit-refund system covering all other beverage containers is established.

11.33 Liable producers met their obligations by setting up Duales System Deutschland (DSD) – to work in co-operation with municipalities to organise collection and sorting of used sales packaging.

²⁷ (Main case study sources: OECD – Environmental Performance Review – Germany – 2001; Federal Environment Ministry; www.zerowasteurope.com; www.perchards.com.)

²⁸ www.umweltdaten.de/publikationen/fpdf-k/k4044.pdf

11.34 DSD operates the **Green Dot Scheme** (Der Grüne Punkt) - a not-for-profit organisation, separate from local municipal recycling schemes, which recovers and recycles packaging put into circulation in Germany on behalf of its licensees. A company wishing to sell its consumer products in Germany must apply to DSD for a licence and in return is permitted to print a Green Dot on its packaging, thereby indicating that it meets the requirements of De packaging regulations (membership is compulsory for obligated companies). The cost of recycling and recovery is met through licence fees – the level of which is dependent on the material, weight, volume or area of packaging - which are, in turn, passed on to the consumer.

11.35 The green dot indicates to householders that the packaging should be placed in separate yellow bags or bins for collection and emptying by DSD vehicles and recycling in DSD facilities. This pick-up is run in parallel to existing municipal waste collection systems.

11.36 It is understood that there is now more than one dual system provider in Germany.

11.37 In 2001 there were questions around the cost efficiency of the dual system – said to suffer from diseconomies of scale - and whether targets were obscuring environmental protection goals. That said, between its introduction in 1990, and 2004, there was a 14 per cent reduction in per capita consumption of packaging (although it is not clear how much of this may be attributed to the dual system). The system is licensed to a number of other EU member states.

11.38 The mandatory one-way **deposit-return system** foreseen in the Packaging Ordinance was triggered in 2003 when the refillable quota fell below 72 per cent for the first time. Its proponents hold it to have been a great success with the highest return rate (98.5 per cent of refillable bottles returned by consumers) in the world. It is also said to have led to zero littering and helped remove 1-2bn containers from bins and streets. On the other hand, when it was introduced, German supermarkets were already set up to accept bottle returns because 65-89 per cent of bottles were packed in refillable bottles. Roland Berger estimated in 2008 that the additional cost of collecting each beverage container through the system was 5.7 eurocents, i.e. 2.5 times the cost of collecting through normal kerbside arrangements.

11.39 Households pay **waste management charges** based on local authority fee scales reflecting the actual cost of treatment and disposal.

12. MIX OF INSTRUMENTS AND MEASURES USED TO ACHIEVE WATER QUALITY OUTCOMES

12.1 This section explores and compares the different approaches deployed in the five target countries to achieve water quality outcomes (particularly to reduce contamination of groundwater and surface water with minerals such as phosphate and nitrogen), including to meet requirements of Water Framework Directive and Nitrates Directive. It focuses on Sweden, the Netherlands and Germany (for whom the most comprehensive information was available, summarised at **Annex J**).

12.2 It proved challenging to pull together a single story to tell on countries' regulatory efforts to achieve water quality outcomes: there were generally two strands of information, one addressing implementation of the Nitrates Directive, and another covering the Water Framework Directive. Nowhere was there a comprehensive account of policy goals and regulatory measures taken to achieve these – although the story on diffuse pollution from agriculture was clearer than others. Most disappointing was that, despite a wealth of literature on the principles of “integrated water resources management” and plenty of examples of approaches taken elsewhere (e.g. Australia, US, Canada), and anecdotal indications of such approaches in the EU, it did not prove possible to identify any easily accessible material in English.

12.3 It is evident that Sweden, the Netherlands and Germany have all taken action since the 1980s to reduce the environmental impact of agriculture on groundwater and surface water by reducing the amount of agricultural inputs used (especially nitrogen and phosphorus). However nitrogen surpluses remain a problem for all three countries.

12.4 Sweden, like other Scandinavian countries, has a long-standing tax on pesticides and on nitrogen fertilisers; the current focus of its additional efforts, as targeted through Sweden's Baltic Sea Action Plan, strengthen implementation of the Nitrates Directive and includes limits to application of livestock manure; prohibition on the application of fertilisers within a certain distance of watercourses; ban on spreading organic and mineral fertilisers during winter; extension of areas where farmers may be granted payments when cultivating catch crops / using spring cultivation; or where planting riparian zones alongside watercourses.

12.5 The Netherlands has no current tax on nitrogen fertiliser but took a comprehensive, staged approach from the mid 1980s which started with measures to prevent animal production from growing further, moved on to place limits on application of manure, and in 1998 introduced a levy imposed on farmers based on the “farm-gate” balance between nitrogen and phosphorus inputs and outputs. This was discontinued in the mid 2000s and replaced with a system of application standards for nitrogen and phosphorus. The focus of the Netherlands' current Action Plan on the Nitrates Directive reflects many of the same measures as in operation in Sweden.

12.6 Germany and the Netherlands have a long-standing waste water charge. Germany's is levied on a “damage unit” (equivalent to pollution generated by one individual); similarly, the Dutch charge is based on “pollution equivalents” that are in the

particular discharge, where one pollution equivalent is standardised to the amount of effluent that an individual produces. Hungary introduced a charge through its Environmental Load Charge in 2004, and Spain's first water tax was introduced by the Basque autonomous community in 2005: the Basque wastewater ecotax charges all water users a flat rate of 6 eurocents per cubic metre to "compensate for the environmental impact of water extraction".

12.7 There is evidence that Sweden and Germany have long coupled their economic measures to reduce diffuse pollution from agriculture with voluntary, collaborative approaches between authorities and farmers. Research on the Netherlands revealed plenty of Dutch literature on the principles of collaboration and, in particular, catchment-based management, but concrete examples were almost impossible to come by.

*Sweden: the water quality instrument mix*²⁹

12.8 Sweden has operated both a pesticide tax and a nitrogen fertiliser tax since the 1980s.

12.9 The **pesticide tax** was implemented in 1986 as part of the National Pesticide Action Plan – the simplest pesticide tax across Scandinavia. The tax is based on amount of active ingredient. In addition, producers pay a yearly charge corresponding to 2.6 per cent of the sales value of the product, and are charged when registering new products or changing existing registrations.

12.10 As a result of the Action Plan (which also included voluntary and collaborative measures, see below), pesticide usage in Sweden dropped by 63 per cent between 1985 and 1997. However, the success of the plan was attributed to the voluntary measures rather than the tax. The Swedish Environment Protection Agency concluded that the pesticide tax was too low to cause farmers to change their behaviour and reduce their use of pesticides. It has been estimated that the tax resulted in only a 2 per cent reduction pesticide use (the remaining 61 per cent reduction is believed to be due to the advice services and research done on pesticide use, as well as evolutions in the pesticide market, including newer pesticides effective at lower doses).

12.11 The **environmental tax on nitrogen fertiliser** was introduced as a levy in the 1980s, aimed at reducing the use of fertilisers in agriculture and forestry. Since 1994, when it was re-introduced as a tax, it has been set at a fixed rate of 20 per cent of the price of fertiliser (i.e. about 3 per cent of the farmer's income).

12.12 The revenue generated from the levy between 1984 and 1994 were used for research and environmental projects, including investment in fertiliser management units, advisory services and special information and research programmes in the agricultural and

²⁹ (Main case study sources: OECD – Environmental Performance Review – Sweden – 2004; www.economicinstruments.com; *Pesticide taxes in Scandinavia* – Schou and Streibig; Women in Europe for a common future – *Pesticide taxes – national examples and key ingredients* (based on 2004 work by PAN Europe); www.sweden.gov.se)

forestry sectors. Since then only a small proportion of the revenue has been channelled into environmental projects.

12.13 Although the tax has led to a 10 per cent reduction in fertiliser use by farmers, it is said to have played a relatively small role in the strategy for dealing with nitrogen leaching from agriculture in Sweden.

12.14 The current range of measures to reduce the nutrient load, as enshrined in the **Baltic Sea Action Plan for Sweden** includes measures including:

- Improving nitrogen treatment in municipal wastewater treatment, and use of technology for on-site treatment for single homes, small businesses and scattered settlements;
- Limits for application of livestock manure;
- Ban on application of fertiliser to agricultural land adjacent to watercourses or lakes or where the slope of the land towards water exceeds 10 per cent;
- Ban on spreading manure, other organic fertilisers and mineral fertilisers between 1 November and 28 February;
- Extension of areas where farmers may be granted payment when cultivating catch crops / using spring cultivation; or where planting riparian zones alongside watercourses etc.

12.15 Alongside the pesticide tax, the 1980s National Pesticide Reduction Plan included the establishment of **local advisory groups** by unions. These provided farmers with advice on how to fulfil their regulatory obligations, e.g. working out complex calculations such as the effect that wind-drift could have on buffer zone distance between the area of application of pesticides and the watercourse.

12.16 **Current advisory services** include forecasting and warning services, demonstration trials and information on how to reduce dosage rates, supported by **research** on needs-based crop protection, spray techniques and organic methods. Swedish farmers are required to attend a 3-day **training course** and there is a **voluntary programme for testing of spray equipment**.

*Netherlands: the water quality instrument mix*³⁰

³⁰ Main case study sources: OECD – *Environmental Performance Review – Netherlands* – 2003; OECD – *Instrument mixes* – 2007; Ministry of Economics, Agriculture and Innovation; Wikipedia; OECD discussion paper: *Application of the polluter pays principle to water pollution from agriculture*.)

Sources of potential further information (not accessible in the timeframe for this project) include:

- *Water Policy in the Netherlands: Integrated Management in a densely populated delta (the RFF press water policy series) Ed. Stijn Reinhard and Henk Folmar*. How analytic tool of integrated management is necessary to meet current demands of water governance and to optimise water system.

Journal of the American Water Resources Association (JAWRA) – Water Policy – the Netherlands by Richard H McCuen, vol 46 issue 2, April 2010: wide-ranging, includes estimating non-priced benefits and costs, integration of water management, land use planning and “space for water”.

12.17 Between 1984 and 2006, the Netherlands' policy towards **manure disposal** went through four phases, working with a range of instruments to address nutrient run-off from agricultural land.

12.18 In the first phase (1984-90) there were attempts to **stop growth in animal production**, with a ban on further growth of the pig and poultry sectors. **Limits were set for the application of manure to agricultural land**, based on the amount of phosphate in manure. The 1986 Manure Act required each farm to calculate an annual reference level of manure production in phosphate terms, and also made it illegal for farms to produce more manure per year than that which would result in a manure-to-land ratio of 125kg phosphate per ha. Farms producing manure in excess of this ratio were taxed.

12.19 The second phase (1990-98) saw **reduced application limits** for animal manure, restrictions on the timing of manure application and measures to decrease ammonia emissions to air. Subject to extensive restrictions, trading was introduced to the manure quota system in 1994.

12.20 The third phase (1998-2005) introduced a more comprehensive **nutrient accounting system** (MINAS – the Minerals Accounting System) which marked a policy shift from regulation to economic stimulation. MINAS involved registration of nitrogen and phosphorus inputs and outputs at farm level. Where the difference between inputs and outputs exceeded specified levels, farmers had to pay a levy per unit above a levy-free level (which was lowered over time), thus incentivising lower inputs. MINAS proved to be unpopular, complex, and expensive; it was also of doubtful efficacy given the lack of a direct relationship between nitrogen and phosphorus surpluses, and nitrogen and phosphorus losses from agriculture.

12.21 MINAS was not compatible with the requirements of the Nitrates Directive, so in 2006, the Netherlands' manure policy moved into a fourth phase, now enshrined in the Fourth Action Programme on the Nitrates Directive 2010-13. This has seen the introduction of a **system of application standards** for nitrogen and phosphorus, restrictions on manure spreading in certain periods, increased storage capacity for livestock manure, extension of the manure-free zone along watercourses in the higher parts of the Netherlands; animal production rights for pigs and a milk quota system for cattle, and development programmes to make agriculture more sustainable, including through innovation.

12.22 The Netherlands introduced a **waste water levy** in 1971; revenue from which has been recycled to support the development of municipal sewage treatment plants and to support in-house pollution abatement in industry. In the early years of the scheme, it assisted several of the most polluting industries in curbing their emissions.

12.23 Households pay a flat rate, small firms pay a fixed rate; medium-sized firms pay according to non-measured factors (but can choose to pay according to direct measurements), and large firms pay according to direct measurements. The charge is based on "pollution equivalents" that are in the particular discharge, where one pollution equivalent is standardised to the amount of effluent that an individual produces.

12.24 The levy applies to discharges of organic material, nitrogen, mercury, cadmium, copper, zinc, lead, nickel, chromium and arsenic, and is imposed on all direct discharges to surface waters as well as on all indirect discharges.

12.25 In the early 1990s a study demonstrated that the Dutch water pollution control policy was comparatively more efficient than similar programmes in neighbouring countries, because of the levy system and the emphasis on cleaner technology measures, many of which were promoted by subsidies from the levy.

12.26 There is increasing evidence of **local-level integrated water resources management**. A recent development is collaboration between municipalities (responsible for spatial planning) and the local Water Boards responsible for drainage and waterway management. This flows from the reaction to floods on the rivers Rhine and Meuse, following which different levels of government pledged closer integration of policies in the document “Water management for the 21st century”.

12.27 The new policy is based on a three-stage approach: retention – storage – discharge. Integration brought tensions between policy for main river management (national ministry, provinces, water board) and policy for spatial planning (different ministry, although now amalgamated, provinces, municipalities) and forced the local water boards and municipalities to work more closely together. Cities like Nijmegen and Groningen have made huge strides towards improved water management based on the principles of multi-stakeholder participation (with a support base evolving through interaction between different stakeholders).

Germany: the water quality instrument mix³¹

12.28 A key instrument in tackling diffuse water pollution from agriculture in Germany has been the designation of thousands of **water protection zones** (WPZs) for groundwater and surface waters. Measures within WPZs are driven by compulsory regulations or agreements between water companies and farmers. Within WPZs water resources are given the highest protection and priority is given to WPZs over all other land use. Activities such as intensive fertiliser use are prohibited and landowners must permit regulatory activities such as water sampling. Compensation to farmers is provided under certain conditions. WPZs are designated into three main zones based on the movement of pollutants to reach a water body, and the dilution and decay that takes place along the way.

12.29 The state of Baden-Wurttemberg in Germany has two main **environmental programmes** to drive a reduction in **diffuse pollution from agriculture**: the Market Release and Conservation programme (MEKA) and the Regional Regulation for Water Protection Zones (SchALVO). MEKA is a voluntary scheme and SchaALVO is compulsory.

³¹ Main case study sources: OECD – *Environmental Performance Review – Germany – 2001*; Baudoux et al 1998; Range and Osterburg 2007; Federal Environment Ministry; www.economicinstruments.com .

12.30 The **Regional Regulation for Water Protection Zones** (SchALVO) has been in operation since 1988, and restricts the application of fertilisers in water protection zones to prevent nitrate and pesticide pollution of groundwater. Farmers receive compensation for land that is taken out of productivity as a result, financed by a tax on the purchase of water in Baden-Wurtemberg. Nitrate concentrations on farms are monitored by the agricultural authorities, and if the measured concentration exceeds a standard in a particular soil depth, farmers have to repay the compensation money. While SchALVO is considered to be efficient in reducing nitrate content in seepage and surface water, there was no reported statistical evidence on its success.

12.31 The Market Release and Conservation programme (MEKA) project is an agri-environmental project under the accompanying measures of the CAP. Its purpose is to improve environmental quality. Participating farmers commit to contractual obligations for a minimum of five years. Farmers again receive a compensation payment for taking part and are awarded points depending upon the different environmental management practices applied. A review of the project found that premium payments were necessary to motivate farmers to agree to voluntary measures, with the added benefit that the voluntary scheme was viewed more positively by participating farmers.

12.32 Lower Saxony has around 20 years' experience in **co-operation for groundwater protection** in water protection zones for drinking water. The goal is to develop win-win solutions in a round-table approach that brings together all concerned stakeholders, including the water supply company, the authorities involved (e.g. Chamber of Agriculture), and land users (agriculture, forestry and horticulture). The co-operation committees develop possible water protection concepts for each drinking water catchment, dependent on the soil, land use, agriculture structures and groundwater quality.

12.33 The solutions differ from group to group. Action-oriented water protection contracts are offered to farmers within the catchment areas using funds derived from a charge on water use. Specially-trained advisors give free advice to the farmers about groundwater protection and land use, and promote take-up of the contracts. Farmers' commitment has increased steadily and there are now 115 cooperatives throughout Lower Saxony, involving over 6,000 farmers and representing a total area of about 300,000 hectares.

12.34 While there is reported evidence of positive achievements from farmland under contract in the drinking water catchments, the cost and manpower requirement rules this out as a solution to be applied generally to meet the requirements of the Water Framework Directive. Furthermore it has been observed that the nitrogen surplus could not be reduced as much as required, especially for highly specialised farms and farms with a high number of animals.

12.35 Lower Saxony has participated in a further incentive-based integrated approach to reducing diffuse nitrogen pollution from agricultural activities: the **Water Resources Management in Co-operation with Agriculture (WAgriCo) project**. Led by the Federal Agricultural Research Centre, this is a joint project with the UK providing data and experience from both countries to tackle diffuse agricultural pollution.

12.36 The aim is to reward farmers for improvement of nutrient management at farm level, with the reward based on farm-gate balance. Pilot areas representing a range of different land uses were designated to test a range of agri-environmental measures; most of those selected in Lower Saxony were WPZs.

12.37 WAgriCo looks to define, select and develop cost-effective measures or measure combinations which have a high impact on reducing the nitrate load to groundwater and can easily be integrated into farming processes. Given budget limitations, efficiency implies maximisation of positive environmental effects at a given level of public funds.

12.38 In 2006-07, 49 farmers in Lower Saxony signed an agreement to participate in WAgriCo water protection measures. All farm land in target areas with a high nitrogen surplus. Farmers were invited to sign contracts for up to eleven action-oriented measures that target green cover crops over winter and the use of improved techniques. The same farms were also subject to a results-oriented approach, calculating nitrogen-efficiency – the relation between nitrogen inputs (mineral and organic) and nitrogen output from plant production. Farmers who improve the nitrogen efficiency of their land – or maintain high standards of efficiency - receive a reward payment of up to €40 / ha.

12.39. By 1983, all west German Lander had in place a **waste water tax**. The purpose of the tax was to make dischargers, private and municipal, comply with prescribed standards, and it is effectively a penalty tax for non-compliance with standards. Industry and municipalities are charged on direct discharges into rivers, lakes, the sea and groundwater; indirect discharges are addressed through the ordinary wastewater user fee.

12.40 The tax is levied on a 'damage unit' for each substance, based on a formula broadly equivalent to the pollution generated by one individual. By 1997, the tax had been increased to 70DM per damage unit. The resulting revenue is spent by the Länder authorities on municipal sewage treatment and on Länder administration of water quality programmes. The practice varies from Länder to Länder, but in the main, the revenue is recycled for support in investments in municipal sewage treatment plants.

12.41 The main impact of the tax lies in its impact on compliance with standards. A secondary effect is a more general incentive to reduce discharges liable to the tax. Ex ante evaluation suggested “three-quarters of the private enterprises and two-thirds of the municipalities surveyed had increased, accelerated or modified their abatement-measures for water pollution in anticipation of the charge,”, and of these respondents, two fifths were acting solely in response to the charge

12.42 The OECD found that disadvantages with the system include a “lack of systematic ecological rationale for the relative levels of charge applied to different substances, and the lack of regional differentiation in the charge, to reflect differences in the ecological vulnerability of different areas”. The system does not drive cost-minimisation due to the dual operation of charges and permits; there is the possibility of distorted competition between direct and indirect dischargers; the use of revenue to subsidise abatement measures may not be necessary in all cases and some firms may initiate abatement without the incentive of a subsidy, and “the reduction in the charge applicable to

enterprises which 'overcomply' with the permit requirements reduces the tax burden on residual units of pollution, thus weakening the dynamic incentive function of the charge".

13. HOLISTIC, CO-OPERATIVE AND EDUCATIONAL APPROACHES

13.1 This section draws together information gathered on holistic, co-operative and educational approaches (including those which seek to engage at grassroots level) to achieving regulatory outcomes. In many cases it proved difficult to identify any substantive case studies in the available English-language literature. The areas covered are:

- Multi-stakeholder approaches;
- Voluntary approaches to drive behaviour change;
- Civic engagement, and
- Environmental education.

Multi-stakeholder approaches

13.2 Examples of multi-stakeholder approaches were surprisingly difficult to identify. Only two were found (both documented more fully in paragraphs 8.1.94-95 and 8.1.100-103).

13.3 First, the Netherlands, driven by significant flooding incidents, encourages integrated water resources management at a local (e.g. city) level through multi-stakeholder participation. A key achievement in this has been to bring together local water boards (responsible for policy on river management) with municipalities (responsible for spatial planning). Some cities are reported to have made “huge strides” through this approach.

13.4 Second, Lower Saxony, in Germany, has a long-standing co-operative approach to groundwater protection. This brings the water company, relevant authorities and land users together in a “round table” to develop mutually beneficial drinking water protection measures in their area. However, while successful, this approach is considered to be too resource-intensive to be applied routinely as a measure to facilitate compliance with the Water Framework Directive.

13.5 There may be further relevant information in:

Stakeholder involvement in agri-environmental policy making – learning from a local- and a state-level approach in Germany : Prager, Freese in the Journal of Environmental Management vol. 90, February 2009.

Water Policy in the Netherlands: Integrated Management in a densely populated delta - ed. Stijn Reinhard and Henk Folmar (the RFF press water policy series) - how integrated management is necessary to meet current demands of water governance and to optimise water system.

Voluntary approaches to drive behaviour change

13.6 Evidence of voluntary approaches to drive behaviour change were also difficult to identify in the target countries for the target policy areas – probably in large part because

information was not made available on the internet either by administrative authorities or by the academic sector. Some potential sources of further information were identified but not accessible in the time frame.

13.7 Two behaviour change examples were identified in Germany designed to tackle pollution reduction from farming (both are documented in section 8.1 above): the MEKA and WAgriCo projects. Both of these encourage farmers to commit to contracts to undertake specific measures to improve environmental quality, and both provide an incentive for doing so. The difference is that, while the MEKA project provides financial compensation to farmers simply for taking part (with points awarded for taking particular steps – i.e. for following a process), the WAgriCo project provides rewards only to those farmers who meet specified goals (i.e. for achieving outcomes). No evidence was available as to the efficacy of either of these, beyond the comment that the MEKA compensation payment was vital to encouraging farmers to sign up.

13.8 As regards behaviour change initiatives in Sweden (described as a “forerunning country” in this area), the book *Environmental policy and household behaviour: Sustainability and everyday life* ed. Patrik Soderholm, August 2010 may be a helpful source of further information. The second part of the book is made up of in-depth Swedish case studies examining three main types of household behaviour: waste and recycling; consumption and labelling; transportation choices. Contributors examine which policy initiatives have worked and which have not, and the role of values and constraints in those processes.

13.9 In the Netherlands, the only easily accessible information³² concerns the Eco-Teams programme – which is already well known in Defra since the UK also has an eco-teams scheme – under the auspices of Global Action Plan (GAP) in the Netherlands. The Dutch scheme started in the 1990s. Each Eco-Team meets once a month for eight months with a set monthly topic. Participants (drawn from a local community) are provided with information packs and workbooks and have access to a trained facilitator or similar. Participants weighed rubbish and took meter readings to monitor reductions in energy use. These were recorded in an individual log book and submitted to GAP who provided feedback about the group’s reductions. The approach has been extensively assessed in a longitudinal study of 153 households through questionnaires and measurement of energy, waste and water use (although it was not possible to track down a definitive view on its success).

13.10 The OECD planned to publish *Greening Household Behaviour: the role of public policy* in spring 2011. It may contain material of interest on the Netherlands and Sweden.

Civic engagement

13.11 Only one example of civic engagement was identified: Sweden’s Hammarby model³³, which focuses on integrated waste, water and energy management. For many

³² *Reducing household energy use and carbon emissions* – paper given at conference May 2010 by Institute of Energy and Sustainable Devt, De Montfort University: www.iesd.dmu.ac.uk.

³³ www.eurocities2009.eu

years Stockholm's largest urban development project, it provides comprehensive opportunities for citizens to take an active part in environmentally-friendly living. On-site sewage works treat sewage and waste, the heat is recovered and nutrients are extracted for use as farmland fertiliser. Food waste is converted into biogas and combustible waste is used to generate heat in a renewable fuel district heating plant in the area.

13.12 An academic paper was also identified which may contain useful case studies (it did not prove accessible in the timeframe for this project): *Landcare in Australia and Germany: comparing structures and policies for community engagement in natural resource management* : Prager, Vanclay in *Ecological Management and Restoration* vol. 11, December 2010.

Environmental education

13.13 Useful information was gathered about the framework for environmental education in Sweden³⁴, the Netherlands³⁵ and Hungary³⁶. Both the Netherlands and Hungary have – or had – specific national environmental education programmes, supported by organisations with a voluntary or non-profit element that exist to promote environmental education. It is possible that Sweden also makes use of such approaches – it is described (in a 2010 academic article³⁷) as a “world leader in initiatives for ‘education for sustainable development’ promotion”.

13.14 **Sweden's** system of environmental education very well developed, from pre-school day care to adult education. Such education is seen as a way to provide people with knowledge and awareness about environmental issues so they can make responsible choices as citizens to maintain and improve the quality of their own lives and that of future generations.

13.15 The School Education Act makes teaching sustainable development compulsory throughout a child's education – and it must be combined with other subjects rather than taught on its own. To help support implementation, sustainable development is emphasised in new-teacher training programmes and ongoing professional development. There is a Green School Award for schools that excel in environmental teaching.

13.16 Environmental education for adults is provided in courses administered by local authorities, in study circles arranged by local education associations and in the workplace by enterprises. It focuses mainly on the effects of different lifestyles on the environment, public health and community development.

13.17 As long ago as 1993, an article in *The Environmentalist*³⁸ noted that “Schools and higher education institutions in Sweden have developed a wide range of innovative and

³⁴ Main case study source: OECD – *Environmental Performance Review – Sweden – 2004*.

³⁵ Main case study sources: www.ivn.nl; www.nme.nl.

³⁶ Main case study sources: OECD – *Environmental Performance Review – Hungary – 2008*.

³⁷ Environmental education research vol. 16 issue 1 Feb 2010: *The progressive development of environmental education in Sweden and Denmark* – S Breitling, P Wickenberg.

³⁸ *The Environmentalist* vol. 13 no. 3: *Environmental Education in Sweden* – E S Martin et al, 1993.

demanding curricula to meet the objectives of Sweden's environmental policy. ... there is a strong emphasis on practical work developed through projects based on contemporary environmental issues and their resolution. The development of environmental education has been well supported by a substantial input of new resources, especially materials developed by the Swedish Environment Protection Agency and industry”.

13.18 The **Dutch government** established its first environmental education programme in 1988. This was replaced by a new programme “Learning for sustainability” in 2000. While this is still ongoing, its broader perspective is said to have led to the decline of “pure” environmental education. To remedy this, in 2009 the government established a companion programme aimed specifically at environmental education, known as “Choose, learn and participate”, supported by the Ministries of Economic Affairs, Agriculture and Innovation; Infrastructure and Environment, and Education, Culture and Science. Its main goal is to bring together the broad range of activities and knowledge offered by environmental education organisations, and the needs of end users (teachers, pupils, citizens). It also aims to give environmental education a secure place within local government policy making.

13.19 One example of a Dutch environmental education organisation is IVN (www.ivn.nl). This comprises 100 professionals and 18,000 volunteers throughout the Netherlands who share a joint mission to “contribute to a sustainable society by connecting people with their nature and their environment”. Professionals develop educational methods and training programmes, running around 700 projects annually. There are branches in all twelve provinces led by professional consultants who co-ordinate, advise and support regional and local groups, schools, educational organisations and authorities.

13.20 According to its website, IVN is currently leading a programme known as “Schools for sustainability”. This involves secondary pupils as active actors in sustainable development, through contact with representatives of companies, national and regional government, social and cultural organisations.

13.21 In **Hungary** an Environmental Education and Communication Programme Office ran between 1999 and 2005 (under the auspices of the Ministry of Environment and Waste and the Ministry of Education). Its goal was to increase citizens’ “knowledge, awareness and responsibility for their environment with a view to promoting proactive interest in environmental sustainability”. The Programme led to the creation of an Environmental Educational and Communication database which contains data, publications and programmes of organisations that carry out environmental education activities. It is not known whether there is, or has been, a successor Programme.

13.22 In 2004 Hungary introduced a national Network of Green-Point Offices. This is a non-profit organisation which covers the whole country, providing uniform information accessible to all citizens on environment and nature protection and water management using a uniform format and content. The Network’s responsibilities include to receive and resolve public complaints, establish and implement conditions of simplified administration,

provide information about environmental data and collect and manage data and make them available, to organise public events related to “green days” and participate actively in these.

14. IMPLEMENTATION OF VOLUNTARY STANDARDS - GREEN PUBLIC PROCUREMENT

14.1 This section explores how each of the five target countries has responded to the EU's voluntary standards for green public procurement (GPP).

14.2 Sweden and the Netherlands have the most advanced and mature approaches to GPP, each with a comprehensive national scheme in place supported by robust management structures. On the face of it, Sweden is slightly ahead of the Netherlands as measured by the number of product groups accompanied by environmental criteria although it was difficult to compare their performance in terms of outcomes. Germany's ambitions to articulate a comprehensive national approach to GPP have not been made easier by its federal system (which also makes national progress monitoring a greater challenge). Spain and Hungary's National Action Plans for GPP have a much narrower focus.

14.3 Goals for national schemes are articulated according to output (number of product groups covered) and outcome (the proportion of contracts procured sustainably) and both Sweden and the Netherlands have sophisticated monitoring arrangements in place.

14.4 Both Sweden and Germany note the importance of political support in driving GPP; as evidenced by Sweden and the Netherlands, this is also benefited by robust management structures. The available evidence underlines the importance of effective dissemination – through a variety of methods - and training.

14.5 If the examples of Barcelona and Budapest are typical, there is strong potential to achieve good results through targeted local or regional GPP initiatives. With this in mind, it was disappointing that it did not prove possible to identify a case study in Germany.

*Sweden: Green Public Procurement scheme and supporting initiatives*³⁹

14.6 Sweden is considered to be an international leader on GPP, having taken its first steps in 1998. Sweden's current national GPP objective is to get authorities at government, municipality and county levels to issue environmental requirements in the public procurement process. The aim was to develop criteria documents for 60 product groups by 2010 (it is not clear whether this was met). The 2007-10 GPP scheme is said to have enjoyed strong political support; this was considered essential to its chances of success.

14.7 A comprehensive management structure is in place: the Swedish Environment Protection Agency is responsible for developing and monitoring the National Action Plan and monitoring it. The Swedish Environmental Management Council (SEMCo) is responsible for implementing most of the Plan, the Competition Authority has provided

³⁹ Main case study source: *Assessment and Comparison of National Green and Sustainable Public Procurement Criteria and Underlying Schemes* – AEA's Final Report to the European Commission November 2010

legal guidelines and the National Financial Management Authority is responsible for educating procuring authorities.

14.8 Key elements of the scheme are to provide procuring authorities with guidance and an easy-to-use tool for establishing environmental criteria, and to increase and secure GPP skills among procurers, as well as involving politicians at a local and regional level.

14.9 Development of product criteria was focused around the 16 national environmental quality targets, e.g. reduced climate impact, clean air and a non-toxic environment. The goods, services and contracts with the greatest quantitative adverse environmental impact were prioritised. The full criteria setting process usually takes between six and twelve months, and it is intended that they will be updated at least every three years, underpinned by a survey on how the criteria have been used during the programme period.

14.10 Promotion of the GPP and environmental criteria is achieved through regional roadshows aimed at municipal and county-level policy- and decision-makers; annual open conferences on a range of GPP themes, aimed at procurers, purchasers and suppliers, and the Confederation of Swedish Enterprises announces new and revised criteria and distributes information about criteria to all its member organisations.

14.11 The Swedish EPA has monitored the extent to which environmental requirements are specified in public procurement in 2004, 2007 and 2009. The figures for 2009 (and 2007) showed:

- 82 (78) per cent of organisations say they have a policy or guidelines for incorporating environmental concerns in procurement procedures.
- 55 (47) per cent say that the organisation has targets for environmental concerns in procurement procedures.
- 57 (57) per cent say that they always or usually specify environmental requirements in procurement procedures.

14.12 SEMCo personnel deliver GPP training to around 3000 individuals annually. Online training courses for procurement officials have been created for individuals to complete in their own time. These cover an introduction to GPP and procurement law, life cycle costing and how to set up effective criteria, as well as guidance on how to increase energy efficient procurement. In addition a phone and email helpdesk is available and a toolkit of training materials was in preparation in late 2010 to allow internal training courses to be delivered within government departments.

14.13 Since 2008, SEMCo has issued two annual awards: one to a supplier (“Excellent Green Supplier”) and one to a purchaser (“Excellent Green Purchaser”) that can demonstrate the most forward-looking and environmentally effective solutions. The awards aim to highlight good examples to inspire others. The winners receive a trophy and the right to use a prize symbol in their marketing.

14.14 In collaboration with local authorities, county councils and the business sector the Swedish government developed the “EKU Tool”⁴⁰ for ecologically sustainable procurement, launched in 2001. The tool offers guidance on how to integrate environmental criteria into public procurement for 20 different product groups, and is now the responsibility of SEMCo.

*Netherlands: Sustainable Public Procurement scheme*⁴¹

14.15 The aim of the Netherlands’ Sustainable Public Procurement scheme (SPP) was for the national government, together with regional and local authorities, to stimulate the market for sustainable products by purchasing sustainable goods and services.

14.16 Policy on SPP, and adoption of criteria, are owned by the new Ministry of Infrastructure and the Environment. The NL Agency, formerly known as SenterNovem, develops and maintains the green criteria. Implementation is achieved in close cooperation with the umbrella organisations for municipalities (VNG), provinces (IPO) and water boards (UvW) and the public procurement officers of each Ministry.

14.17 In 2005, the Dutch parliament adopted a target to achieve 100 per cent sustainable procurement by 2010 within central government, with municipal authorities aiming for 75 per cent by 2010 and 100 per cent in 2015. The provincial authorities and water boards committed to at least 50 per cent sustainable procurement by 2010 and 100 per cent in 2015.

14.18 The current, voluntary, Dutch SPP scheme runs for five years 2006-11. It is based on a political commitment by parliament (for central government and its agencies) and the umbrella organisations for decentralised government. Individual government departments commit to statements of participation. Since the scheme’s inception, new target groups have joined, including universities and colleges. The scheme aims to stimulate the larger middle part of the market to improve its products, services and works. Award criteria are meant to reward market frontrunners (i.e. the top 25 per cent).

14.19 Potential product groups were prioritised according to their impact on the environment and potential for innovation. By mid 2009, environmental criteria had been developed for 52 product groups, with the intention to add social criteria in the near future. Relevant criteria are, where available, derived from an LCA approach, using, if possible, elements of ecolabel systems.

14.20 National priorities are used to select the environmental criteria, with input from stakeholders, however there must also be sufficient market supply to fulfil the demand from all government bodies. Market supply is assessed through establishing indications on market spend and what proportion was from government.

⁴⁰ www.eku.nu/eng

⁴¹ Ibid. and www.agentschapnl.nl/sustainableprocurement

14.21 New criteria are developed, and existing criteria updated, in partnership with stakeholders, including suppliers, purchasers and NGOs. The intention is that the time taken from the start of the process to final criteria should not exceed six months.

14.22 The Ministry of Infrastructure and the Environment monitors the progress of SPP every two years through questionnaires and random visits to assess how the approach is embedded in an organisation's structure and policy. The assessment in 2008 reported the volume of sustainable purchases in central government to be over 50 per cent (in a number of contracts, up to 65 per cent).

14.23 In 2009 a further survey was carried out via an internet questionnaire, in-depth interviews and a workshop, considering the wider impact of SPP on the environment and market place. The main conclusions with regards to changes in the markets included:

- Interest in sustainable procurement from private companies has increased, especially if they supply to government;
- Government buying, at 7 per cent of GDP, is not enough to create substantial change, so it is important to get the private sector on board, and
- The criteria lead to sustainable procurement but do not stimulate innovation.

14.24 Various methods are employed to disseminate information about SPP, ranging from letters, newsletters and brochures to target groups; via a face-to-face and electronic network for discussion of issues and information exchange, to an online learning tool which public authorities can use to measure their achievement in the field of SPP and receive advice on how to improve it.

*Germany: Approaches to Green Public Procurement at federal, regional and local level*⁴²

14.25 While the federal aims for green public procurement are set out in the National Sustainable Development Strategy, Germany's federal system means that there is no nationwide GPP plan, nor a monitoring or reporting scheme. Regional and local governments have developed a number of different approaches to GPP, including Action Plans.

14.26 The best available information on GPP uptake is provided by a 2009 European Commission study which established that 30 per cent of contract value can be considered "green", or 46 per cent on the basis of contract numbers (it is not clear whether this figure is for all procurement or for public procurement only).

14.27 Existing GPP approaches in Germany include the Blue Angel Ecolabel criteria. Blue Angel is the German national environmental labelling programme, owned by the Federal Environment Ministry (BMU) and since 1978 awarded by the independent "Jury Umweltzeichen" - a group of 13 people from environment and consumer protection groups, industry, unions, trade, media and churches. Around 10,000 products (industrial and consumer goods) in 80 different product categories carry the label, which is awarded to

⁴² Ibid.

products that take into account all aspects of environmental protection (including use of raw materials) without significantly reducing their fitness for use or impairing their safety.

14.28 In 2009, an Alliance for Sustainable Procurement was established with a political mandate to develop challenging product criteria and to promote exchange of experience between federal, state and local authorities in the field of sustainable procurement with the overall intention of promoting green and sustainable purchasing in the public sector.

14.29 As a first step towards a national GPP scheme, four product groups which have a high level of market demand will be considered: ICT, transport, eco-electrical and wood products from sustainable forests.

14.30 German public authorities that have successfully implemented GPP say that it is fundamental to have political backing, and a central department coordinating implementation. The central department should then be supported by other specialists, for instance, experts on legal matters. Cooperating more effectively with regional suppliers of green products, and informing the market in time about new GPP requirements, have been raised as strategies that can dramatically affect results. One of the main conclusions of a short training series run by ICLEI was that training in this area should form part of the internal training programmes of cities, and in the curricula of the training academies for civil servants.

*Spain: National Action Plan for Green Public Procurement and a city case study*⁴³

14.31 Spain's National Action Plan for green public procurement was published in 2008. Little information is available in English, but its main targets were to have drafts of codes of good practice available before 2010, and levels of green purchase between 25 and 100 per cent according to the type of product and the stage green public procurement has reached for that product. Quantitative goals were defined for a set of services and supplies such as: energy, works, transport, paper, office equipment, furniture, cleaning, events.

14.32 Barcelona City Council's Green Office Programme launched a campaign in 2001 for the "Environmentalisation of contracts with local authorities". The goal was the inclusion of environmental criteria in public procurement to reduce environmental impacts and stimulate more sustainable production. In 2006, the Council modified the administrative part of all procurement procedures to include environmental clauses throughout local authority contracts.

14.33 The Council's "+Sustainable City Council Programme" provides an internal advisory service to deal with specific enquiries and to provide training sessions and specific information on inclusion of environmental aspects in local procurement. This is aimed at procurement directors as well as suppliers and companies.

⁴³ Main case study source: OECD – *Environmental Performance Review – Spain – 2004 and 2008*. Further information about Barcelona's approach is available at www.bcn.es/agenda21/ajuntamentsostenible/english.

*Hungary: National Action Plan for Green Public Procurement and a city case study*⁴⁴

14.34 The scope to include environmental requirements in Hungarian public procurement procedures was introduced in 2003, and the first National Action Plan for green public procurement ran 2007-10. The Action Plan is understood to have followed EU recommendations, determining targets and deadlines for five product groups and services – IT and office equipment, stationery, cleaning services, construction, vehicles.

14.35 The second Plan, covering the period 2010-12, focuses on 3 product groups – office IT equipment, copying and graphic paper, vehicles. The NAP defines target percentages for GPP in the three product groups which are obligatory in central government purchasing and in municipal procurement. The aim is 90 per cent green procurement for office IT and vehicles, and 67 per cent for paper.

14.36 In July 2006 the General Assembly of Budapest approved a “green public procurement regulation”, the first such in Hungary. It is based on the “Green Procurement Manual for Local Authorities (2002) produced by environmental NGO the Centre for Environmental Studies (an environmental NGO). The Procurement Department of Budapest municipality expects at least 40 per cent of the calls for tender (the share recommended by the EU) to include environmental criteria. To achieve this, environmental aspects must as a rule be incorporated into all procurement deals, except where the urgency of the project or the excessive (>20 per cent higher) price of environmentally friendly alternatives make it impossible.

⁴⁴ Main case study source: OECD – *Environmental Performance Review – Hungary – 2008*

15. SUPPORT FOR BUSINESS INNOVATION - NANOTECHNOLOGY

15.1 Nanotechnology is an emerging policy area as yet almost unregulated by the EU. This section explores how the target countries are working to address the challenges they all face – to understand and manage the risks at the same time as promoting business opportunities and engaging the wider public in an awareness-raising dialogue. There was some information available in English regarding the approach taken in Sweden⁴⁵, the Netherlands⁴⁶ and Germany⁴⁷. Judging by the available evidence, Germany has the most advanced nanotechnology strategy. There was no evidence of any proactive initiatives in either Spain or Hungary.

Context

15.2 Of the three countries, Germany appears to have the most advanced nanotechnology sector – it is reported to be among the top countries in patent applications and for nanotechnology-related publications; in 2005 had the third largest public research and development programme (€301m) behind the USA and Japan.

15.3 Little evidence was available regarding the Dutch context for nanotechnology, however references to the existence of nanotechnology “enterprise clusters” in Twente and Delft, and acknowledgement of Dutch good practice on public engagement in nanotechnology suggests that the Netherlands also has a relatively mature approach.

15.4 In 2008, VINNOVA (Sweden’s innovation agency) noted that nanotechnology had been “highlighted as a potential growth area for Swedish industry [but] despite this, Sweden lacks a strategy for nanotechnological development”. Sweden has a small nanotechnology sector which is said so far to have failed to attract the scale of public and private investment seen elsewhere in the world. Swedish innovation in nanotechnology is considered to be at an early stage, centred on research and the creation of knowledge with activity run by companies, universities and institutes. There is great uncertainty regarding regulations and markets, and generally no standards, specialised workforce or strong industrial organisations.

Key players

15.5 The national or federal government appears to take the lead in the Netherlands and Germany, with the Swedish approach more devolved.

15.6 In Sweden there appear to be three key current national players:

- VINNOVA (tasked with promoting sustainable growth in Sweden by funding needs-driven research and the development of effective innovation systems;

⁴⁵ Main case study sources: www.vinnova.se; www.nanopatentsandinnovations.blogspot.com; www.kemi.se

⁴⁶ Main case study sources: OECD report on a *Conference on outreach and public engagement in nanotechnologies* 2008; Infrastructure and Environment Ministry.

⁴⁷ Main case study sources: Federal Environment Ministry; www.un.org .

- The Royal Swedish Academy of Engineering Sciences (IVA) which in 2005 was tasked with laying the groundwork for the development of a national strategy for nanotechnology in Sweden, and
- Keml (the Chemicals Inspectorate) which focuses on the safe use of nanomaterials.

15.7 There is also a proposal to establish a Swedish “Nanotechnology Council” to facilitate sharing of knowledge, take an overview of developments, and advise the government on nano issues.

15.8 The Netherlands have already established a small but broadly representative and powerful “temporary Commission for Social Dialogue on Nanotechnology”, with the science role led by the Rathenau Instituut (part of the Royal Netherlands Academy of Sciences) has also taken an interest in nanotechnology under its objective to “stimulate political and public debate on social and ethical aspects surrounding science and technology”.

15.9 In Germany, while the Federal Ministry of Education and Research is in the lead, at least six other federal ministries take an active interest: the Federal Ministry of Labour and Social Affairs; the Federal Environment Ministry; the Federal Ministry of Food, Agriculture and Consumer Protection; the Federal Ministry of Defence; the Federal Ministry of Health and the Federal Ministry of Economics and Technology. Germany’s efforts are also supported by a broad-based NanoCommission.

Action

15.10 Germany appears to have been first off the mark with a substantive “NanoInitiative Action Plan 2010” launched in 2006 by the Federal Ministry of Education and Research with support from the other Ministries listed above. The Action Plan provided a framework for cross-government action. Elements of the Action Plan include:

- Public engagement: the NanoDialogue 2006-08 supported by the NanoCommission. The purpose of the Dialogue was to “promote sustainable and future-oriented development and use of nanotechnologies, with a focus on nanomaterials”. It involved representatives from the scientific community, specialist federal authorities, trade and industry and environmental and consumer associations, and
- Research strategy: 2007 saw publication of a joint research strategy into the “health and environmental risks of nanomaterials” drawn up by the Federal Ministries for the Environment; Labour and Social Affairs; Food, Agriculture and Consumer Protection, and Education and Research (this published a 2009 report into the “Responsible use of nanotechnologies”, and a 2010 legal feasibility study on the introduction of a nanoproduct register).

15.11 The Netherlands was not far behind, publishing a government “vision paper on nanotechnology” entitled “From Small to Great” in 2006. This foresaw the establishment of a “broad-based Commission to identify the unwanted / hazardous consequences of nanotechnology” and action to kickstart public dialogue, identifying various ways to engage public on nanotechnology. The subsequent Nanotechnology Action Plan 2008

committed the temporary Commission to organise a broad public nanodialogue. In parallel, the Rathenau Instituut has published a report “Ten lessons for a nanodialogue”.

15.12 Action in Sweden appears to have kicked off in 2005 with the Royal Swedish Academy of Engineering Sciences’ project. In 2006, this recommended “the creation of a collaboration of key actors within research funding to finance the development of nanoscience and nanotechnology”. It appears that VINNOVA was subsequently tasked with preparing a national strategy, and in January 2010 published (in Swedish only, on the VINNOVA website) a “national strategy for nanotechnology”. Keml has been working in parallel, in 2010 publishing a report “Safe use of nanomaterials – the need for regulation and other measures”.

Strategic direction

15.13 The best articulation available in English was of the German strategy. The Federal Environment Ministry’s website notes that “BMU feels its task lies in recognising and promoting the opportunities of nanotechnology and nanomaterials for environmental and resource protection as well as the protection of human health and at the same time studying potential risks for health and environment as precautionary action ... the BMU wants to address these questions together with other federal ministries and stakeholders from the scientific community, industry and associations.”

15.14 Goals in the German NanoInitiative Action Plan 2010 reflect this approach:

- Speed up implementation of the results of nanotechnology research through innovation;
- Introduce nanotechnologies to more sectors and companies;
- Eliminate obstacles to innovation by means of early consultation in all policy areas, and
- Enable intensive dialogue with the public about the opportunities offered by nanotechnologies but also taking possible risks into account.

15.15 The Action Plan itself comprises a list of measures for meeting the challenges that arise when attempting to successfully exploit the benefits of nanotechnology:

1. Opening up future markets – introducing new sectors (e.g. through branch-level industrial dialogues); leading innovation (strategically created research co-operations to trigger optimum leverage effect for growth and employment along the value-added chain); promoting networking; supporting SMEs.
2. Improving general conditions: need for qualified employees, a positive attitude towards technology, an active commercial base, established standards and testing strategies.
3. Behaving in a responsible manner: government to evaluate the effects of nanomaterials as part of a comprehensive strategy.
4. Informing the public: discuss both potential benefits and risks.
5. Identifying future demand for research.

15.16 Germany has also conducted a legal feasibility study into the introduction of a nanoproduct register. The purpose of such a register and a corresponding mandatory reporting requirement would be to provide authorities with an overview of nanoproducts produced or put on the market in Germany to prevent the emergence of human health and environmental risks (it is not clear if, or how, this 2010 study is being implemented).

15.17 The Netherlands' main emphasis is on engaging the public in a dialogue about nanotechnology. The temporary Commission has been invited to involve citizens in drawing up a political agenda for nanotechnology to decide which issues should be prioritised; its final report is anticipated in 2011, but there was no accessible information in English.

15.18 Sweden's 2010 National Strategy for Nanotechnology is reported to include proposals to:

- Form a Nanotechnology Council comprising representatives from government, industry, academia and the relevant expert authorities. Its role will be to facilitate sharing of knowledge, take an overview of developments, and advise the government on nano issues;
- Create a policy that makes risk assessment an integrated part of the process, and
- Identify areas for thematic efforts to increase use of nanotechnology in society. Public actors are encouraged to work actively to connect nanotechnology with overarching goals relating e.g. to the environment, energy, health care.

15.19 Sweden's Keml's 2010 report on the safe use of nanomaterials recommended:

- Agreement on an internationally accepted definition of nanomaterials;
- Introducing a requirement to notify products containing nanomaterials in the EU;
- To conduct a review of the rules in REACH and CLP Regulations and if necessary adapt them to facilitate their application to nanomaterials, and
- To regulate the use of nanomaterials as additives in biocidal products.

(There was no information available in English on the comparable German 2009 study.)

16. CONCLUSIONS AND RECOMMENDATIONS

16.1 This review has provided an overview of better regulation programmes and the approach to environmental regulation in the five target countries – Sweden, the Netherlands, Germany, Spain and Hungary. Through case studies, it has also drawn out high level trends in the instrument mixes chosen to tackle specific environmental challenges in the management of air quality, water quality and waste, as well as examples of holistic, co-operative and educational approaches. Finally, it has taken explored how individual countries have responded in two specific areas – the EU’s voluntary standards for Green Public Procurement (GPP), and to the challenges and opportunities posed by the emerging area of nanotechnologies.

16.2 The swift literature approach has been relatively successful in identifying trends, but has been somewhat constrained by the limited availability of material in English. If Defra has an appetite to take the work further, this will need to be shaped through expert consideration of the information contained in this report in the context of Defra’s strategic aspirations and policy and implementation challenges.

16.3 The scope for action to further expand Defra’s knowledge of other countries’ approaches to environmental regulation is threefold:

- a) **Broaden knowledge of EU approaches** in other i) policy areas and/or ii) countries.
- b) **Deepen knowledge of EU approaches** covered by this report.
- c) **Explore non-EU approaches** (e.g. other OECD countries).

A mix-and-match approach might be taken, incorporating some or all of the three options outlined.

16.4 Option a) would involve applying the same methodology to i) other policy areas or ii) other EU member states. Decisions on option a)i) will be dependent on Defra establishing whether there are additional policy areas where it is thought that the UK has significant scope to learn from other EU member states. IHPR is not in a position to take a view on this, although it is worth noting that there appears to be substantial information available on approaches to nature conservation – not least in the OECD country reports.

16.5 IHPR has seen no compelling evidence that much value would be added by researching the same subject areas through the same methodology in other EU member states (option a)ii) – in the course of our research, we came across no indicators of radically different and more advanced approaches elsewhere in the EU. The difficulties in accessing material in English (beyond the standard European Commission and OECD reports) would render the benefits even more marginal.

16.6 Option b) (deepening Defra’s knowledge in selected subjects covered by this report) will only be worth doing if it is tailored to Defra’s specific needs. IHPR suggests that, if there is appetite to explore particular areas in more depth, this could usefully be pursued through targeted engagement with some or all of the following:

- Country contacts known to the Better Regulation Executive;
- UKRep and the relevant FCO country desks;
- Commission working groups;
- British academics;
- EU representative organisations;
- Sector experts (e.g. consultants who work across the EU);
- Business sector representative organisations with EU contacts, and
- Businesses with a UK presence which operate across the EU.

16.7 A starter list of contacts is at **Annex A**. Such research would ideally involve, or at least be informed by, Defra and Defra Network experts with a full understanding of the UK / England context to help ensure that the work is tailored as closely as possible to areas of genuine interest to the Department.

16.8 If the material in this report proves of substantial interest and use to Defra, IHPR considers that there is a good case for pursuing option c) and extending the literature review to non-EU OECD countries. In researching this report, it became clear that there is a large body of potentially useful English-language material available, notably in relation to water quality regulation. References to the US, Canada, Australia, New Zealand and Japan came up time and time again.

16.9 IHPR therefore recommends that this report is used as the basis for dialogue within Defra and with the Environment Agency and Better Regulation Executive as to the usefulness and applicability of the information it contains and, in light of this, whether the Better Regulation Programme wishes to pursue further research under any of the three options suggested above.

The more Defra can define its needs, the more effective any further research will be.

IHPR considers that the most fruitful avenue would be option c) – exploring the same or similar subject areas in non-EU OECD countries. Depending on the view of Defra experts, it may also be worth probing particular subjects covered in this report in more detail (option b)).

ANNEX A: INTERNATIONAL APPROACHES TO ENVIRONMENTAL REGULATION: SCOPING PAPER

Purpose of scoping paper

1. The purpose of this paper is to set out the rationale for the project – a short piece of research bringing together readily accessible material - and options for its focus. Interested Defra Network colleagues are invited to comment and challenge; your feedback will then be built into a full specification for the (first stage of the) research. The paper is underpinned by brief background reading and conversations with selected expert colleagues. The assumptions it makes therefore need to be rigorously tested, first through readers' responses, and then during the full research phase of the project.

Questions for consideration

2. In commenting on the paper, you are invited to respond in particular to the following questions:

- i) Do you agree this project is worthwhile? How could it be most useful to you?
- ii) Do you have any comments on / additions to the "context" section below (paras 7-10)?
- iii) Do you have any views on the proposed target a) countries, b) policy areas, c) questions to address (paras 11-24)?
- iv) Methodology: all suggestions for contacts and written sources of information (Annexes A and B) are welcome.

Background and project rationale

3. Defra's Better Regulation Programme has instituted a suite of projects designed to develop the evidence base in a way that will nurture the Department's better regulation culture and support the further development of policy teams' capacity. Projects range from development of a catalogue Defra's existing regulatory stock and research into alternatives to regulation, to social research on microbusinesses' needs and how enforcement might be tailored to different types of business.

4. As part of this suite, IHPR has been invited to undertake a short research project on international approaches to environmental regulation. **Starting from a very low knowledge base, the project's aim is to provide initial building blocks to help inform Defra's future strategic direction. It will achieve this by identifying innovative approaches to environmental regulation adopted by other countries that, if developed in the UK, could help enhance our competitiveness at the same time as supporting our aspirations for a green economy.** It is anticipated that findings may assist policy development in individual areas.

5. Initial discussions with expert colleagues suggest that the premise for the project - that the UK can learn from other countries' approaches to environmental regulation - is correct, even if there is likely to be only limited potential to make changes with a discernible positive impact on the UK's competitiveness, owing to other factors' (e.g. labour laws and pay rates) much greater influence on overall competitiveness⁴⁸.

6. Assuming sufficient information can be accessed, the study should help inform the UK's further development of a proportionate, innovative approach to environmental regulation – a framework that meets legal obligations, achieves the optimal balance between regulatory and non-regulatory measures, tackles environmental problems to achieve the best possible environmental outcomes and that works to achieve the UK's ambition to be the greenest economy in the world, at same time as enhancing competitiveness, stimulating investment and the market for environmentally responsible / friendly industry, manufacturing and products.

Regulatory context

7. In order to understand what we could learn from other countries in the field of environmental regulation, it is important to understand the range of different approaches and the factors that drive decision making.

8. Obvious factors that influence regulatory variation include:

- Spatial and geographical constraints: size of country and population density (with implications for the visibility and therefore relative significance of pollution); degree to which environmental problems are spatially dependent;
- Environmental legacy and problems: specific national environmental challenges which needed / need to be addressed;
- Historical context and legacy: past political leadership and the resulting legal and governance framework, including the degree of centralisation / devolution of decision-making and enforcement; structure of the economy and its maturity;
- Regional and global relationships: commitment to regional and global conventions and participation in a regional legal framework (e.g. the EU);
- Current socio-political framework: political profile of environmental issues; balance between environmental protection and economic investment (where these are not aligned) and the scope for (perhaps regionally based) flexibility in implementation to achieve the best possible outcomes; the relationship between the state and the business community; the prevailing compliance culture; national aspirations for the green agenda, and expectations and perceptions of environmental regulation and the wider economy; the role and significance of lobbying forces, including the media.

9. The resulting different regulatory models display a number of key features, the most obvious of which may be characterised as follows. These may affect competitiveness and

⁴⁸ Another potential avenue for research would be other types of regulation that share features in common with environmental regulation, such as health and safety, food hygiene, and policing.

the scope for innovation, as well as extent of achievement of the desired environmental outcomes:

- Centralised, standards-based, prescriptive, inflexible vs. flexible, permissive, devolved approach;
- Degree of political or economic bias in selection of interventions;
- Balance between different interventions: regulatory, fiscal, voluntary, behaviour change;
- Thresholds for acceptable behaviour / acceptable degree and scale of environmental damage;
- Degree of segmentation between different types of business / body subject to regulation;
- Compliance and enforcement: spatial scale and balance between carrot and stick.

10. Approaches to environmental regulation appear to develop and change over a relatively long time-frame. It is possible to identify a number of key trends:

- Simplification: an interesting question here is how you secure genuine simplification as opposed to replacing one intervention with another;
- Deregulation: how (quickly) does the state respond to increased maturity of regulated sectors and manage the transition from stick to carrot, including developing a new approach to engagement and a new balance between trust and monitoring;
- Segmentation of different types of business and sector, potentially enabling a variable / responsive approach to intervention and enforcement taking into account factors such as different reasons for non-compliance;
- Intellectual approach: a shift from the assumption that regulation is a technical, legal matter, to the development of a range of different perspectives, e.g. economic, socio-political, business / supply chain, potentially encouraging innovation.

Proposals for project targeting

11. Global environmental regulation is an impossibly large subject; the remit for this work is a short research project. It is therefore crucial to ensure that expectations match what can realistically be achieved, and that effort is tightly focused on areas of greatest interest to Defra. There are three key parameters where decisions are needed:

- Which countries should the project focus on?
- Which policy areas should the project focus on?
- What questions should the project address?

Country focus

12. The key axes here, building on the context section above, are EU vs. non-EU and, simplistically speaking, countries similar or dissimilar to the UK, in terms of their regulatory framework, language, culture, stage of economic development and challenges faced.

13. Given that most UK environmental regulation stems from the EU, a study of other member states is likely to have most immediate relevance. It could identify how other member states do things differently and help to capture and share Defra's institutional knowledge, with potential negotiating benefits if a closer relationship can be forged with others who share UK concerns. By comparison, a study looking beyond the EU could be targeted to feed into and influence upcoming European Commission initiatives; starting from a lower knowledge base, could deliver greater potential gains, and could identify different and more radical approaches to achieve the same goals.

14. The advantages of focusing on countries similar to the UK are that information is likely to be more easily accessible, and solutions more realistic to implement. Countries less similar to the UK could generate more radical ideas and more optimal solutions (e.g. approaches adopted by newer EU member states) but information may be less accessible and ideas may be harder and more costly to implement. Moreover if the challenges faced are markedly different to our own (e.g. those faced by emerging economies), the resulting regulatory approaches are likely to be of limited relevance to the UK.

15. Bearing this in mind, **it is recommended that** the work is split into two projects. **Project 1 would focus on the EU**, in particular Germany, Hungary, the Netherlands, Sweden and Spain, with the choice of countries designed to achieve a geographical spread, and a mix of centralised vs. federal and prescriptive vs. flexible approaches. There will need to be sufficient flexibility to allow for case studies of specific areas in other EU member states which are "rapid improvers" against key indicators, or which are recommended for their innovative or best practice approach in a specific area.

16. If resources permit, **it is recommended that project 2 focuses on non-EU countries**. A list of countries follows, with a short rationale (the same requirement for flexibility to include other case studies would apply):

- US: interest includes how the US maintains a tough Environment Protection Agency and yet has a flourishing enterprise culture apparently based on a low regulatory burden;
- Canada: known to be interested in the burdens imposed by environmental regulation;
- New Zealand: known for legislative innovation;
- Australia: known for interesting approaches;
- Japan: different compliance culture which could hold interesting lessons for the UK.

Policy areas

17. It is recommended that the project focuses on the following five areas:

- Air pollution and quality;
- Water availability and quantity;
- Waste management and prevention;
- Chemicals and nano-materials usage;
- Sustainable products.

18. The first three are areas of mature regulation on which countries are likely to face broadly similar challenges. Chemicals and nano-materials is an emergent area so most countries are tackling the same issues and may be more interested in sharing learning. Sustainable products is also a newer area, with a stronger focus on business benefits and a potential first-mover advantage.

19. Should a larger-scale project be considered worthwhile, two other areas which would merit inclusion are: adaptation to climate change, and biodiversity and the planning system.

Questions to address

20. **It is recommended that** the projects focus on gathering the following:

- A solid but not overly detailed base of factual information on the environmental regulatory framework and context in selected countries, and
- Specific ideas, approaches and case studies with practical relevance to Defra.

21. This will need to be set against the UK regulatory context for the specified policy areas, drawn from the related project on Defra's regulatory baseline. Since the intention is to identify good practice in implementation and achievement of outcomes, the study will set aside any domestic prejudices about particular countries' record on implementation. The paragraphs below set out the information which the study would ideally identify; it remains to be seen what can actually be easily accessed.

22. **It is recommended that** the contextual overview for each target country aims to gather easily accessible, basic information on:

- What is regulated and why (for EU member states, this will only need to cover areas of domestic competence);
- How are policy goals achieved (by regulatory or other means) and who is responsible for enforcement;
- Compliance, enforcement and sanctions;
- Costs and benefits;
- Trends over time.

23. Should resources allow, **it would be beneficial** to include a pen picture setting out easily accessible information on geography and demography, environmental legacy and problems; historical context and legacy; regional and global relationships and the current socio-political framework (para. 8 above).

24. The following specific areas **are recommended** for emphasis as being of particular interest to Defra, with a presumption that ideas need to be cost effective and theoretically practicable in the UK context:

- Relationship between regulator and regulated: the balance between carrot and stick, the extent of guidance, the amount of proactive contact;

- Degree of regulatory responsiveness: responsiveness and flexibility in compliance requirements and approaches to enforcement, and how this is linked to outcomes; information on any segmentation of different types of business and different reasons for non-compliance;
- Joined up regulation: examples of approaches which join up compliance and enforcement at the customer end (e.g. where a business is subject to regulation in a number of areas, each with its own compliance regime, finding a way to send one inspector rather than 5);
- Alternatives to regulation: including examples of successful deregulation or simplification (and whether these are genuine achievements or simply replacing one intervention with another); behaviour change initiatives;
- Best practice: areas of innovation, and areas of rapid or significant improvement in outcomes.

Methodology, sources and outputs

25. **It is recommended that** further work is split into two projects: project 1 (EU) and, if resources permit, project 2 (non-EU). Each project will have two phases. Phase 1 will be literature-based, to establish the extent of available information and sound out key contacts, concluding with an interim report setting out findings and making recommendations on the scale of phase 2. Phase 2 will involve a series of interviews with contacts to fill in gaps and explore detail, and then follow up further leads, concluding with a final report.

26. The rationale for deferring most engagement with expert contacts until phase 2 is the need to research the subject before deciding how to target interviews (given the huge range of potential interviewees), and the need to have a certain level of knowledge in order to be able to learn effectively from interviewees.

27. The table below sets out a tentative time frame for the scoping phase (under way) and phase 1 of the EU project.

Task	Number of days
1. Project preparation.	4
2. Preparation of scoping paper, assimilation of comments and preparation of phase 1 spec.	4
Sub-total	8 (6 completed to date)
3. Literature review and analysis.	6-8
4. Initial engagement with contacts.	2-4
5. Preparation of interim report.	3
6. Presentation / feedback on interim report; preparation of spec for next phase.	2
Sub-total	13-17
Total to end phase 1 EU project	21-25

28. **Annexes A and B** list contacts and sources identified to date.

Conclusion

29. You are invited to consider the questions at para. 2 and provide feedback to Suzie Daykin (suzie.daykin@dft.gsi.gov.uk; GTN 3533 6385).

Annex A – Potential contacts

Type of contact	Expertise	Name
Defra Network	Policy (air)	Mike Etkind
	Policy (water)	Jill Thatcher
	Policy (waste)	TBC
	Policy (chemicals)	Ian Dalton
	Policy (nano)	TBC
	Policy (sustainable products)	Kay Williams?
	Legal	Alistair McGlone and colleagues
	Analytical	TBC, including Tim Everett and Jon Travis
	International	David Steele
	Environment Agency	Pete Bailey
OGDs	BIS - BRE	Kemi Saka
	BIS – other, including UKTI	TBC
	FCO – desk officers, UKRep, in-country attaches if needed	TBC
Academics	LSE Centre for Risk and Regulation	Prof? Bridget Hutter and Julia Black
	King's Centre for Risk Mgt, KCL	Dr Henry Rothstein
	Professor of Environmental Risk Management and Head of Sustainable Systems Dept, Cranfield University	Prof Simon Pollard
	3 other academics with relevant work are Bob Lee (Cardiff), Kagan (Berkeley), Sparrow (Harvard); Blackburn Group at Midd'x have done work on regulation of SMEs	
UK professional / business organisations	CBI	TBC
	Environmental Industries Commission	
	Environmental Protection UK	
	IUAPPA (International Union of Air Pollution Prevention organisations)	
	UK Environmental Law Association	
Multinationals	Suggestions welcome – Mike Etkind has provided a list for air quality; BRE should be able to help	
EU / international bodies	European Commission	TBC
	OECD	
	IMPEL	
	Network of European Environment Agencies	
	EU trade associations	
	EU environmental lawyers'online network	

Annex B – Suggested documentary resources

UK government

The culture of regulation in a comparative perspective – EA 2009, unfinished

EU and international organisations

IMPEL 2005 *Benchmarking on Quality Parameters for Environmental Inspectorates*, IMPEL workshop in Copenhagen 8 - 9 September 2005

IMPEL 2005 *Benchmarking on Quality Parameters for Environmental Inspectorates*

INECE - OECD 2004 *Measuring What Matters Part 1-3*

BRIG 2009 *How do Environmental Regulators target their efforts to improve environmental performance of business?*

European Commission 2006 *Streamlining and simplification of environment related regulatory requirements for companies*

Europa website

DG Enterprise http://ec.europa.eu/enterprise/policies/sustainable-business/policy-integration/best-projects/simplifying-implementation/index_en.htm

[Publications by European Network of Environment Agencies]

OECD 2008 *Environmental Compliance Assurance Systems - A Cross-Country Analysis*

OECD 2009 *Ensuring Environmental Compliance - TRENDS AND GOOD PRACTICES*

[OECD country studies]

Academic publications

Escaping the Regulatory Net: Why Regulatory Reform Can Fail Consumers – Prof. Henry Rothstein, 2005

Kagan, R.A. (1994) *Regulatory Enforcement* in D. H. Rosenbloom and R. D. Schwartz (eds) *Handbook of Regulation and Administrative Law*, New York: Marcel Dekker

<http://www.law.berkeley.edu/php-programs/faculty/facultyPubsList.php?facID=62>

Bridget Hutter *Compliance: Regulation and Environment* 1997, Clarendon Press

<http://www2.lse.ac.uk/researchAndExpertise/Experts/b.m.hutter@lse.ac.uk>

[Environment Agency has also provided a resource pack on academics / publications in this area.]

ANNEX B: EUROPEAN APPROACHES TO ENVIRONMENTAL REGULATION: PROJECT PROGRESS AND NEXT STEPS

Introduction

1. The purpose of this paper is to:
 - summarise the key points made by Defra and Network colleagues in brief conversations designed to identify where they thought it would be most fruitful to probe activity in other EU Member States, and
 - set out next steps.

Methodology

2. On the basis of advice from Defra's Better Regulation team and from IHPR colleagues who have recently worked on Defra regulatory matters, a short list of contacts was identified with specialist knowledge of, and an interest in, EU approaches to environmental regulation in the target policy areas⁴⁹. I then approached each of these for a brief (average 15 minute) telephone conversation about where they felt this study could most usefully focus. In many cases, my initial contact had either already liaised with colleagues, or suggested I speak to one or more additional people to capture a wider range of knowledge. A list of the full range of contacts who have contributed to date is at **Annex A**. The only area where I have not been able to secure expert input is waste, where other pressures have prevented colleagues from engaging.

Key messages: context and areas to focus on

3. The following bullet points summarise the key contextual issues raised by Defra and Network colleagues:
 - **UK** perceived to be a strong regulator, playing a lead role in the EU on compliance and enforcement and ahead of the game in many policy areas, not least thanks to working on the basis of excellent science and a top class evidence base. Growing interest in holistic approaches to regulation, effective stakeholder engagement, and cultivating engagement with grassroots.
 - Of the **targeted Member States**⁵⁰, the UK probably has most to learn from (and most in common with) Germany and the Netherlands; Sweden and other Scandinavian countries also strong on innovation; less known about Spain (and not much positive on the enforcement and compliance front) but some interest in learning how they achieve outcomes at low cost; nothing known about Hungary.
 - Most fruitful to focus on **newer Directives and Regulations** which offer most scope for innovation, for non-regulatory approaches and which are generally implemented in a

⁴⁹ Air quality, chemicals and nanotechnology, sustainable products, waste management, water quality and availability.

⁵⁰ Germany, Netherlands, Sweden, Spain, Hungary.

more collaborative manner. Implementation of older, more prescriptive Directives often focuses on avoiding infraction and can lead to more costly approaches which do not deliver commensurate environmental benefits.

- Three **prerequisites for changing Defra's approach** identified:
 - set aside “this is how we do things” mindset, focus on “what do we want to achieve” and build the rationale for change;
 - address cultural pre-disposition to strong regulation which makes it harder to look to non-regulatory solutions, and
 - identify, accept and tackle potential contradictions within Defra's aims (and potential opportunities to regulate more effectively across the historic agriculture – environment divide).
- Two **alternative approaches** identified:
 - could learn from other Member States to improve relationship management with the European Commission and focus transposition efforts on what will satisfy the Commission (this may not deliver better regulation achieving more efficient and effective environmental protection, but would reduce effort to address infractions);
 - promote competitive edge by identifying and providing support to emerging technologies sponsored by Defra that could contribute to green growth.

4. The following is a consolidated list of areas of particular interest to Defra that builds on the material in October's scoping paper. The list is not intended to dictate the direction of research, but to inform it and ensure it is alive to where it can be most useful:

- Holistic and co-operative approaches: integrated approaches that bring regulatory tools together to work towards shared, mutually beneficial goals, and / or that incorporate strong stakeholder engagement / stimulation of grassroots activity (a particular interest in how to enable integrated local decision-making).
- Relationship between regulator and regulated: the balance between carrot and stick; how to provide sufficient information without overloading; the amount of proactive contact.
- Degree of regulatory responsiveness: responsiveness and flexibility in compliance requirements and approaches to enforcement, and how this is linked to outcomes; any segmentation of different types of business and analysis of different reasons for non-compliance.
- Joined up compliance and enforcement: detail and pros and cons of approaches which join up compliance and enforcement at the customer end (e.g. where a business is subject to regulation in a number of areas, each with its own compliance regime, finding a way to send one inspector rather than 5).
- Alternatives to classic regulation: including examples of successful deregulation or simplification (and whether these are genuine achievements or simply replacing one intervention with another); voluntary approaches; behaviour change initiatives; whether and how different cultural and educational approaches influence policy outcomes.
- Best practice in policy-specific areas: areas of innovation, and areas of rapid or significant improvement in outcomes.

Detail: issues of most interest, by policy area

5. **Annex B** summarises, for each of the five target policy areas, the regulatory framework⁵¹, compares what is known about approaches in the UK and the other target EU Member States, and identifies areas to probe. It is based on discussions with relevant policy colleagues and is therefore patchy. Some colleagues were able to provide fuller information, including about global trends. This information provides the start of a framework which will be filled out through the literature review. Figure 1 below sets out the areas of particular interest by policy area.

Figure 1 – Areas worth probing, as identified by each policy area

Policy area	Areas to probe
Air quality	<ul style="list-style-type: none"> Enforcement of EU Directives and the degree of variability between and within Member States. How do other EU Member States ensure they provide enough information without overloading? Have other EU Member States tried to simplify the environmental permitting regime; if so, how? Is it genuine simplification or smoke and mirrors?
Chemicals and nanotechnology	<ul style="list-style-type: none"> Given UK's leading role, there is probably not much we can learn from how other Member States implement EU requirements. There may be some potential to support nano-industry (e.g. via a state subsidy) to give the UK a competitive edge in this sector in the longer term; BIS have expressed interest here, although it is not thought to be a priority for them.
Sustainable products	<ul style="list-style-type: none"> How is Germany trying to improve sustainable procurement? Do they do anything additional to increase general awareness of sustainable procurement / purchasing? Little known about Hungary's approach to sustainable procurement; interested in any intelligence. Useful to know if Sweden's rigidity / adherence to fixed approaches is cultural. Question how, if they are adamant that they are right and in the lead, they can be open to new blood and new ideas. Interested in how Spain is handling the fact that sustainable procurement is more expensive than standard procurement. What are the economics of moving to sustainable procurement when money is short? How does Spain go about encouraging different consumption patterns? Could be things to learn from forward-thinking Netherlands on sustainable procurement. What are other Member States doing at the non-regulatory end of the spectrum to nudge, facilitate and secure responsibility deals? Is there good practice on voluntary approaches that we can learn from? What tools and methods are they giving to business, and how do they encourage take-up? What effort to other Member States put in to compliance and enforcement?
Waste management	<ul style="list-style-type: none"> No information provided.
Water quality and availability	<ul style="list-style-type: none"> <u>Economic regulation</u>: can we learn anything from lighter-touch regulation in other Member States? <u>Urban wastewater treatment</u>: Defra policy colleagues would welcome any evidence that could contribute to UK's efforts to persuade the European Commission to review the Urban Wastewater Treatment Directive (we are already

⁵¹ Drawn from IHPR's earlier 2010 projects for the Better Regulation Programme.

	<p>working with the Netherlands and Spain, and hope to work with Germany and France soon).</p> <ul style="list-style-type: none"> • <u>Approaches to diffuse pollution</u> (from sources that cannot be controlled by water companies): the wider range of potential polluters necessitates different approaches to achieving the policy objectives, including by going beyond classic regulation. Linked to this, interested to know how mis-connections are handled, as usually the only way to address these is through co-operation. • <u>Co-operation and civic engagement</u>: how do other countries with a longer history of co-operation engage the grassroots in holistic catchment management? Are there any comparative studies of the outcomes delivered by a regulatory vs. co-operative approach? Would appreciate taking a closer look at existing comparative studies of different approaches to (stakeholder engagement in) river basin management, including different approaches to abstraction control. • <u>Culture and education</u>: is our perception of better public and business understanding / improved engagement through the education system elsewhere in the EU correct? Is it delivering? Is the UK missing a trick?
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Next steps

6. The next step is to undertake a literature review to build a more comprehensive picture of the regulatory framework for each of the five target EU Member States in each of the five policy areas. With one eye on the areas of particular interest highlighted in paragraphs 4 and 5 above, this will cover:

- Over-arching policy goals;
- The legislative framework;
- Other regulatory and non-regulatory measures;
- Compliance and enforcement framework;
- Costs and benefits;
- Trends over time.

7. Work will focus on easily accessible material (**Annex C** lists the bibliography gathered to date, although this does not include obvious sources such as the websites of relevant Government departments) and will be steered by Defra's request for a high-level summary. It will be written up as a report summarising key information and sign-posting potential subjects for more detailed research. This report will provide the basis for consideration with Defra of whether, and, if so, what, further research might be undertaken, potentially involving direct contact with organisations and expert individuals.

8. Ten project days have been worked so far. I aim to spend no more than ten further days on the literature review, and around three days on the write-up. This means that the literature review should be completed by end January 2011 at the latest, with the report following soon after. I will provide a fortnightly progress update, with the first on Thursday 23 December.

Suzie Daykin
IHPR
13 December 2010

Annex A – Defra / Network expert contacts

Policy area / interest	Contact(s)
Air pollution and quality	Mike Etkind
Water quality and availability	Ed Beard Claire McCamphill Stuart Kirk Rory Wallace
Waste management and prevention	John Galvin (no substantive input as yet)
Chemicals and nano-materials	Ian Dalton
Sustainable products	Kay Williams Bob Ryder Davide Minotti
Legal	Alistair McGlone (input at scoping stage)
Analytical	Tim Everett Jon Travis (no substantive input yet)
EU and International relations	David Steele (input at scoping stage)
Environment Agency	Pete Bailey (input at scoping stage)
Better Regulation Executive	Michael Amaning

Annex B – detailed information by policy area

Air quality

The regulatory framework

EU requirements	Domestic measures	Compliance and enforcement
<ul style="list-style-type: none"> • Ambient air quality and cleaner air for Europe Directive • Pollutants from large combustion plants • National Emissions Ceilings Directive • Emissions of heavy metals • Petrol Vapour Recovery Directive • Paints Directive • Sulphur Content of Liquid Fuels Directive • Solvents Emissions Directive <p>(Also relevant to water and waste)</p> <ul style="list-style-type: none"> • Integrated Pollution Prevention and Control <p>(Also relevant to chemicals)</p> <ul style="list-style-type: none"> • Ozone depleting substances • Persistent organic pollutants 	<ul style="list-style-type: none"> • Local air quality management system sets targets and requires action planning • Permits for certain less-polluting industrial installations controlling emissions to air only • Measures to limit grit, dust and smoke from furnaces, boilers and industrial plant • Prohibition of smoke in smoke control areas • Codes of practice aimed at reducing emissions from agriculture and construction 	<ul style="list-style-type: none"> • Environment Agency and local authorities (Environmental Permitting Regime) • Local authorities (local air quality monitoring and management)

Comparative analysis

Distinguishing features of UK approach

- Legal framework with guidance.
- Different levels of regulation – air emissions addressed by IPPC, LAPC, Clean Air Act and statutory nuisance; backed up by air controls coming through non-regulatory mechanisms such as voluntary measures, ecolabels, environmental management systems.

Distinguishing features of other Member States' approaches

- Germany applies prescriptive limits.
- Countries with a federal approach and therefore different regional enforcing authorities, e.g. German Lander and Spanish regions, may experience variability / inconsistency in enforcement.

Areas to probe

- How EU Directives are enforced and the degree of variability between and within Member States, e.g. how many prosecutions / inspections / what is the compliance regime looking for?
- How do other EU Member States ensure they provide enough information without overloading?

- Have other EU Member States tried to simplify the environmental permitting regime; if so, how? Is it genuine simplification or smoke and mirrors?

Chemicals and nano-materials usage

The regulatory framework

EU requirements	Domestic measures	Compliance and enforcement
<ul style="list-style-type: none"> Plant protection products: authorisation of products and active ingredients, and setting of legal limits and statutory sampling regime REACH: registration of all substances supplied to the EU market; authorisation / restriction of uses of chemicals of concern Sustainable Use Directive (adopted 2009): minimum standards for pesticides use <p>(Also relevant to air)</p> <ul style="list-style-type: none"> Persistent organic pollutants (POPs) Ozone depleting substances 	<ul style="list-style-type: none"> Voluntary agreements with industry Authorise products using active ingredients covered by EU legislation 	<ul style="list-style-type: none"> Environment Agency Health and Safety Executive Local authorities

Comparative analysis

EU framework

- All relevant law is EU and UN driven; there is no domestic competence.

Distinguishing features of UK approach

- UK is a leader in implementation and enforcement – flowing from our strong Health and Safety Executive and because we're an island nation and so have a long history of effective border control.
- UK is ahead of other Member States in terms of its engagement with stakeholders on nano-materials. This is probably why nano industry in the UK has a much more positive image than elsewhere.

Distinguishing features of other Member States' approaches

- All EU MS implement de minimis provisions in exactly same way; some choose to gold plate, but not clear that there's anything we would wish to learn from this.

Areas to probe

- Given UK's leading role, there is probably not much we can learn from how other Member States implement EU requirements.
- There may be some potential to support nano-industry (e.g. via a state subsidy) to give the UK a competitive edge in this sector in the longer term; BIS have expressed interest here, although it is not thought to be a priority for them.

Alternative approaches

- Not strictly within the remit of the EU approaches study, but relevant to the question of competitive edge. Defra's Strategy and Evidence Group is considering the role of emerging technologies in green growth. Individually these may have a small financial impact but collectively, the emerging technologies under Defra sponsorship could be worth several £bn to the UK economy over the next twenty years. Should Defra do more to identify the emerging technologies likely to be of most relevance to the Dept in future and work jointly with BIS to apply the skills needed to support them?

Sustainable products

The regulatory framework

EU requirements	Domestic measures	Compliance and enforcement
<ul style="list-style-type: none"> • Energy-Using Products Directive • Energy Labelling Directive • Eco-Design for Energy Using Products Directive • Voluntary standards for Green Public Procurement (GPP) 	<ul style="list-style-type: none"> • Government Buying Standards (GBS) implementing the voluntary EU standards for GPP • Voluntary agreements / labelling schemes with retailers (e.g. lightbulbs, televisions) – ahead of EU 	<ul style="list-style-type: none"> • Buying Standards: OGC • Directives: National Measurement Office (NMO) – Agency of BIS

Comparative analysis

EU framework

- Work under EU framework Directives – Energy-Using Products, Eco-Design and Energy Labelling. Are three formats for implementation: EU Regulations, daughter directives, voluntary agreements.
- Now implement through Regulations and voluntary agreements. Commission looking at voluntary agreement on set-top boxes (voluntary agreement needs to be more than would happen anyway, not just an industry promise).
- Member States are happy with the voluntary agreement approach – find it strikes right balance, has industry and civil society support, although there is a risk that the process of working up voluntary agreements can be used as delaying tactic (e.g. imaging equipment industry has identified two proposals, but the Commission and Member States have concluded that these simply represent what would have happened anyway).
- Sustainable products policy is supported by measures right across the regulatory – non-regulatory approaches spectrum.
- There is a trend for Member States to share information on their enforcement measures.

Distinguishing features of UK approach

- Voluntary approaches underpinned by sectoral engagement are gathering pace in UK as means to implement the three sustainable products Directives. UK is generally ahead of the Commission and other Member States in developing voluntary agreements, mainly with retailers (because we don't have manufacturers), e.g. on lightbulbs. The EU has picked this up and is pursuing, although UK approach will continue to have swifter implementation, which we will retain. For example in March 2010 we reached a voluntary agreement with 8 major retailers to promote a national endorsement label for TVs.
- So UK is quite smart compared with other Member States and other areas of regulation. The approach may look high cost, but the cost-benefit ratio is also high, and costs are not retained by the industry but are passed on to consumers, who in turn benefit from reduced energy bills.

- UK leads the EU on compliance and enforcement: we have done lots of work to make enforcement more effective and less burdensome, e.g. by introducing civil penalties rather than criminal legal approach.
- UK takes a more risk-based approach than some other Member States.
- For the most part, industry has preferred having standards as this makes the market more secure.

Distinguishing features of other Member States' approaches

Sustainable procurement

- Germany has very decentralised approach to procurement which causes data problems, think they already purchase more sustainably than we do.
- Sweden is quite good on sustainable procurement but has very fixed approaches and is inflexible and uncompromising in EU discussions (e.g. want to ban all hazardous chemicals regardless of any value these may have).
- In Spain, aware of pockets of good practice on sustainable procurement at local authority level.
- Netherlands are good at leading, have good, forward-thinking ideas on sustainable procurement.

Single market powers

- Expect transposition of EU requirements is similar across the board but with very different approaches to compliance and enforcement (perception that other Member States don't place so much emphasis here).
- Sweden, Denmark, Germany, Netherlands have worked on a variety of approaches, using the single market powers to achieve results, engaging at the voluntary end. Netherlands traditionally very good, has framework of commitments of varying strength.

Areas to probe

- How is Germany trying to improve sustainable procurement? Do they do anything additional to increase general awareness of sustainable procurement / purchasing?
- Little known about Hungary's approach to sustainable procurement; interested in any intelligence.
- Useful to know if Sweden's rigidity / adherence to fixed approaches is cultural. Question how, if they are adamant that they are right and in the lead, they can be open to new blood and new ideas.
- Interested in how Spain is handling the fact that sustainable procurement is more expensive than standard procurement. What are the economics of moving to sustainable procurement when money is short? How does Spain go about encouraging different consumption patterns?
- Could be things to learn from forward-thinking Netherlands on sustainable procurement.
- What are other Member States doing at the non-regulatory end of the spectrum to nudge, facilitate and secure responsibility deals? Is there good practice on voluntary

approaches that we can learn from? What tools and methods are they giving to business, and how do they encourage take-up?

- What effort to other Member States put in to compliance and enforcement?

Waste management and prevention

The regulatory framework

EU requirements	Domestic measures	Compliance and enforcement
<ul style="list-style-type: none"> • Waste Framework Directive (as revised) • Landfill Directive • Waste Incineration Directive • Packaging and Packaging Waste Directive • Batteries Directive • Waste Electronic and Electrical Equipment Directive • Restriction of Hazardous Substances Directives • End of Life Vehicles Directive • Hazardous Waste (Basel Convention) • Waste Shipment Regulation • Radioactive Waste Shipment Regulation • Disposal of PCBs • Waste Mineral Oils • Minerals Extraction • Waste from Titanium Dioxide Industry • Waste from Ships <p>(Also relevant to air and water)</p> <ul style="list-style-type: none"> • Integrated Pollution Prevention and Control 	<ul style="list-style-type: none"> • Fly tipping measures • Waste collection • Some aspects of waste production • Specific requirements of waste operators • Levels of inspection and compliance assessment • Financial incentives to encourage development and take-up of renewable energy and waste management technology • WRAP advice and support • Voluntary agreements (e.g. Courtauld Commitment; Halving waste to landfill) 	<ul style="list-style-type: none"> • Environment Agency (Environmental Permitting, Producer Responsibility Regulations including producer recycling obligations) • Local authority Trading Standards (Packaging regulations) • VCA (monitors batteries take-back obligations; elements of end-of-life vehicle legislation) • DVLA (elements of end-of-life vehicle legislation)

Comparative analysis

No information secured from policy colleagues.

Areas to probe

No information secured from policy colleagues.

Water quality and availability

The regulatory framework

EU requirements	Domestic measures	Compliance and enforcement
<ul style="list-style-type: none"> Water Framework Directive Nitrates Directive Drinking Water Directive Bathing Water Directive Urban Waste Water Directive Water suitable for fish breeding (superseded by Water Framework Directive in 2015) Shellfish Directive: quality of shellfish waters Detergents Regulation Discharge of Dangerous Substances Mercury Water abstraction – requirement in Environmental Impact Assessment Directive Sewage Sludge <p>(Also relevant to air and waste)</p> <ul style="list-style-type: none"> Integrated Pollution Prevention and Control 	<ul style="list-style-type: none"> Voluntary agreements, including labelling scheme for bathroom appliances, targets for water efficiency Support and grant funding through England Catchment Sensitive Farming Delivery Initiative and Environmental Stewardship 	<ul style="list-style-type: none"> Environment Agency (environmental regulator – Water Abstraction Licensing; Environmental Permitting) Ofwat (economic regulator)

Comparative analysis

Global trend:

- Integrated Water Resources Management (IWRM) which is about holistic catchment management and improved stakeholder engagement.
- Water quality trading, i.e. paid ecosystem services. Is a shift away from polluter pays; challenge is to set a firm regulatory baseline and incentivise improvements. Lots of other countries working hard at it, e.g. New York is using payments not regulation to protect drinking water; Australia has a new water trading system.

EU framework:

- Older, prescriptive Directives offer very limited scope for innovation, and difficulties arise where Member States interpret rigid requirements in different ways.
- Over time, implementation of some EU requirements is getting more and more costly without necessarily delivering commensurate environmental benefits.
- Newer Directives, e.g. Water Framework Directive and Bathing Waters Directive, take a new approach to regulation and offer more scope for innovation.
- Water Framework Directive sets standards and it is up to individual Member States to decide how these are achieved. Member States agree a common approach to implementation, then work together to solve problems and find ways to comply with requirements.

Distinguishing features of UK approach:

- UK implements EU requirements based on the best science and evidence: we have one of the most sophisticated approaches in the world.
- But because we take implementation seriously, undertaking Impact Assessments which identify high costs and difficulties in implementation, and result in late transposition and honesty about shortcomings, the UK faces multiple infraction proceedings.
- Additional perception that the Commission often requires us to implement prescriptive elements of Directives which are not the most efficient way to achieve outcomes, because it looks harder at what we do than what others do (perhaps because our material is all available in English?).
- Privatised water companies have meant UK has to regulate more heavily, through Ofwat, than would be the case with state-owned provision.
- UK does more than most other countries to implement sensible environmental controls relating to water. Most other EU Member States don't have anything approaching the size or strength of the Environment Agency. But because our culture is based on a strong regulatory approach, a change in mindset is often required to enable us to innovate and move beyond classic regulation.
- A lot of better regulation is about doing the right thing in the right place. The UK has different mechanisms: floods budget, RDPE, Natural England, all independently funded and targeted.
- Bathing Waters Directive implemented through EPR 2010 but because bathing waters are impacted by other sources, e.g. agriculture, there are other supporting approaches including the Catchment Sensitive Farming scheme.
- UK is ahead of the game in some areas and other Member States look to us: England tested stakeholder engagement in catchment management, with a big project in Ribble catchment looking at how catchment management could be made to work better for all the different groups, potentially by integrating different systems for diffuse / point pollution and flood management.
- LAs working with water companies and others to tackle mis-connections.
- New UK Government keen to work more with stakeholders, trying to stimulate grassroots activity, i.e. moving towards the model adopted in other Member States.

Distinguishing features of other Member States' approaches:

- UK has good relationship with Netherlands and Germany.
- Netherlands and Germany also strong on technical expertise, but other countries transpose fast based on little evidence concerning protection of ecosystem resources. E.g. resulting in over-abstraction in Spain.
- A stronger co-operative, as opposed to classic regulatory, approach, especially where countries share river catchments, e.g. in the Danube catchment, co-operative groups bringing together water companies and LAs have been working jointly for 20 years. This can be beneficial, but also risks embedding vested interests.
- Some Member States have already adopted a more integrated approach to management of the water environment: the Netherlands has combined its water-facing functions and funding mechanisms; decisions are made in a way that is

designed to achieve shared goals (e.g. with reference to flooding, biodiversity, farming).

- Other Member States, without a strong Environment Agency, often manage through a cascade of national to regional regulators then to local authorities. This means very few other countries provide the level of care / protection to water resources, e.g. monitoring abstraction licences, to achieve better results in a very densely populated country.
- Cultural differences and differences in education system mean that public more generally aware of, and feel more connected to, water issues, and water issues are more effectively represented in formal education. This means businesses are better informed, resulting in fewer minor pollution incidents.
- Scandinavian countries are working on nutrient balances. Both Denmark and the Netherlands have limits for nutrient use by farms, or an equivalent. In the Netherlands, a tax on pesticides funds an advisory service.

Areas to probe

- Economic regulation: can we learn anything from lighter-touch regulation in other Member States?
- Urban wastewater treatment: Defra policy colleagues would welcome any evidence that could contribute to UK's efforts to persuade the European Commission to review the Urban Wastewater Treatment Directive (we are already working with the Netherlands and Spain, and hope to work with Germany and France soon).
- Approaches to diffuse pollution (from sources that cannot be controlled by water companies): the wider range of potential polluters necessitates different approaches to achieving the policy objectives, including by going beyond classic regulation. Linked to this, interested to know how mis-connections are handled, as usually the only way to address these is through co-operation.
- Co-operation and civic engagement: how do other countries with a longer history of co-operation engage the grassroots in holistic catchment management? Are there any comparative studies of the outcomes delivered by a regulatory vs. co-operative approach? Would appreciate taking a closer look at existing comparative studies of different approaches to (stakeholder engagement in) river basin management, including different approaches to abstraction control.
- Culture and education: is our perception of better public and business understanding / improved engagement through the education system elsewhere in the EU correct? Is it delivering? Is the UK missing a trick?

Alternative approaches

Could learn from other Member States to manage relationship with the Commission better. This would involve adopting different tactics, including transposing more quickly to demonstrate compliance with Directives and discourage the Commission from examining our approach more closely – but this would not necessarily result in better regulation achieving more efficient and effective environmental protection.

Annex C – Information sources to explore

UK government

The culture of regulation in a comparative perspective – EA 2009, unfinished

Routes to better regulation: a guide to alternatives to classic regulation, Better Regulation Task Force, December 2005

EU Member States examples of Better Regulation, Better Regulation Executive, unpublished, January 2010

Netherlands Factsheet – Better Regulation Executive, unpublished, 2010

EU and international organisations

IMPEL 2005 *Benchmarking on Quality Parameters for Environmental Inspectorates*, IMPEL workshop in Copenhagen 8 - 9 September 2005

IMPEL 2010: Report on the *practical application of better regulation principles in the efficiency and effectiveness of environmental inspection authorities*

<http://impel.eu/projects/practical-application-of-better-regulation-principles-in-improving-the-efficiency-and-effectiveness-of-environmental-inspection-authorities>

INECE - OECD 2004 *Measuring What Matters Part 1-3*

BRIG 2009 *How do Environmental Regulators target their efforts to improve environmental performance of business?*

European Commission 2006 *Streamlining and simplification of environment related regulatory requirements for companies*

(DG Enterprise http://ec.europa.eu/enterprise/policies/sustainable-business/policy-integration/best-projects/simplifying-implementation/index_en.htm)

Europa website

[Publications by European Network of Environment Agencies]

OECD 2008 *Environmental Compliance Assurance Systems - A Cross-Country Analysis*

OECD 2009 *Ensuring Environmental Compliance - TRENDS AND GOOD PRACTICES*

[OECD country studies]

[Publications by Ecologic Institute] www.ecologic.eu

Academic publications

Escaping the Regulatory Net: Why Regulatory Reform Can Fail Consumers – Prof. Henry Rothstein, 2005

Kagan, R.A. (1994) *Regulatory Enforcement* in D. H. Rosenbloom and R. D. Schwartz (eds) *Handbook of Regulation and Administrative Law*, New York: Marcel Dekker

<http://www.law.berkeley.edu/php-programs/faculty/facultyPubsList.php?facID=62>

Bridget Hutter *Compliance: Regulation and Environment* 1997, Clarendon Press

<http://www2.lse.ac.uk/researchAndExpertise/Experts/b.m.hutter@lse.ac.uk>

Environmental Law, Regulation and Governance: shifting architectures – Neil Gunningham, BRASS, Cardiff University (in the *Journal of Environmental Law* 21:2 (2009))

[Environment Agency has also provided a resource pack on academics / publications in this area.]

The Netherlands

Dutch administrative burden reduction programme: <http://www.administrative-burdens.com/default.asp?page=289>

BRE Netherlands country fact sheet 2010

Nanotechnologies

Draft report by Foresight Horizon Scanning Centre “Technology and innovation futures: UK growth opportunities for the 2020s”

Water

Application of the polluter pays principle to water pollution from agriculture, OECD discussion paper, November 2010

Water quality trading in agriculture, OECD discussion paper, November 2010

Tackling diffuse water pollution from agriculture, bibliography attached to an MSc thesis

Summary report from Environment Agency Director Tricia Henson, Summer 2010, covering her findings on how other MS are implementing, and what approaches are used in other countries. Based on her tour of EU in early summer 2010.

Air quality and pollution

Information from Environmental Industries Commission (lobbies for environmental technologies sector, keen on environmental regulation as a driver, likely to be able to show how little environmental regulation affects competitiveness).

Environmental Protection UK – published a book in mid-90s looking at who did what on (air quality?) regulation around the world.

Information from IUPPA (International Union of Air Pollution Prevention organisations)

[For further down the line, the policy lead has provided a range of personal contacts in a selection of large and smaller multinational companies who may be able to advise on innovative approaches elsewhere.]

Sustainable procurement

Europa's green public procurement website (contains country action plans and notes on working groups, so may say more about different countries' positions).

ICLEI case studies?

Waste management

IEEP response to Defra Review of Waste Policies call for evidence

ANNEX C – BIBLIOGRAPHY AND CONTACTS

UK Government reports

The culture of regulation in a comparative perspective – Environment Agency 2009 (unfinished, unpublished)

Routes to better regulation: a guide to alternatives to classic regulation – Better Regulation Task Force, December 2005

EU Member States examples of Better Regulation – Better Regulation Executive, January 2010 (unpublished)

Netherlands country fact sheet – Better Regulation Executive (unpublished)

OECD

Guiding principles for regulatory quality and performance – OECD 2005

Environmental Compliance Assurance Systems – a Cross-Country Analysis – OECD 2008

Ensuring Environmental Compliance – Trends and Good Practice – OECD 2009

Application of the polluter pays principle to water pollution from agriculture – OECD discussion paper, November 2010

Water quality trading in agriculture – OECD discussion paper, November 2010

Instrument mixes addressing non-point sources of water pollution – OECD 2007

Tradeable permits: policy evaluation, design and reform – ed. Tietenberg and Johnstone, OECD

Report on Conference on outreach and public engagement in nanotechnology, 2008, held in Netherlands - OECD website

Innovation effects of the Swedish NOx charge, Lena Hoglund-Isaksson, Thomas Sterner - OECD global forum on eco-innovation, November 2009, Paris

Better Regulation in Europe – Sweden – OECD 2010

Better Regulation in Europe – Netherlands – OECD 2010

Better Regulation in Europe – Germany – OECD 2010

Better Regulation in Europe – Spain – OECD 2010

Sweden Environmental Performance Review – OECD 2004

Netherlands Environmental Performance Review – OECD 2003

Germany Environmental Performance Review – OECD 2001

Spain Environmental Performance Review – OECD 2004 (and update 2008)

Hungary Environmental Performance Review – OECD 2008

Regulatory Reform in Hungary: Government capacity to assure high quality regulation- OECD 2000

EU and international organisations' reports

Smart Regulation in the European Union – European Commission communication, October 2010

Better regulation: presentation of practical examples on sharing good practice – Swedish Presidency of the EU, 2009

Benchmarking on Quality Parameters for Environmental Inspectorates, IMPEL workshop in Copenhagen 8 - 9 September 2005

Report on the practical application of better regulation principles in the efficiency and effectiveness of environmental inspection authorities - IMPEL 2010

Measuring What Matters Part 1-3 - INECE - OECD 2004

How do Environmental Regulators target their efforts to improve environmental performance of business? - BRIG 2009

Streamlining and simplification of environment related regulatory requirements for companies – Final report of the [European Commission's] BEST project expert group, May 2006

Environment Policy Review - EU Commission 2008 and 2009

Response to Defra Review of Waste Policies 2010 – Institute for European Environmental Policy, 2010 (not published)

Academic and other research publications

Regulatory Enforcement - Kagan, R.A. (1994) in D. H. Rosenbloom and R. D. Schwartz (eds) Handbook of Regulation and Administrative Law, New York: Marcel Dekker

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Environmental Law, Regulation and Governance: shifting architectures – Neil Gunningham, BRASS, Cardiff University (in the Journal of Environmental Law 21:2 (2009))

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Water quality trading: an international overview – Selman et al, 2009

The Dutch nutrient quota system: past experience and lessons for the future – Wossink, 2004

Assessment and Comparison of National Green and Sustainable Public Procurement Criteria and Underlying Schemes – AEA's Final Report to the European Commission November 2010

The Environmentalist vol 13 no 3: *Environmental Education in Sweden* – E S Martin et al, 1993

Environmental education research vol 16 issue 1 Feb 2010: *The progressive development of environmental education in Sweden and Denmark* – S Breitling, P Wickenberg

Pesticide taxes in Scandinavia, J Schou and J Streibig

Pesticide Taxes – national examples and key ingredients - Women in Europe for a Common Future

Modelling the impact of household charging for waste in England – Eunomia 2006

Reducing household energy use and carbon emissions – paper given at conference May 2010 by Institute of Energy and Sustainable Devt, De Montfort University

On-farm effects and farmer attitudes towards agri-environmental programmes. A case study in Baden-Wurtemberg - Baudoux, P., Kazenwadel, G. & Doluschitz, R., 1998

A results-oriented approach to reward N-efficiency improvements - Range, T. & Osterburg, B., 2007 - Federal Agricultural Research Centre, Institute of Rural Studies

Trade and other publications

Waste Management World December 2010

Websites

www.actal.nl – Dutch Advisory Board on Administrative Burdens

www.administrativeburdens.com

www.agentschapnl.nl/sustainableprocurement - Dutch government agency

www.avfallsverige.se – Swedish waste management trade organisation

www.bcn.es/agenda21/ajuntamentsostenible/english - sustainable procurement in Barcelona

www.bmu.de - German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

www.dcmr.nl/en - Rijnmond Environment Protection Agency

www.earth911.com

www.ecologic.eu - Ecologic Institute

www.economicinstruments.com

www.eic-uk.co.uk - Environmental Industries Commission

www.eku.nu/eng - Swedish sustainable procurement tool

www.epanet.ew.eea.europa.eu - Network of the Heads of Environment Protection Agencies

www.eurocities2009.eu

www.europa.eu

www.iclei.org – Local Governments for Sustainability

www.iisd.org - International Institute for Sustainable Development

www.ilsr.org – Institute for Local Self-Reliance

www.inece.org

www.internationallawoffice.com

www.iuappa.com - International Union of Air Pollution Prevention Organisations

www.ivn.nl – Dutch Association for Environmental Education

www.kemi.se – Swedish Chemicals Inspectorate

www.kvvm.hu – Hungarian Environment Ministry

www.miljomal.se – Swedish Environmental Quality Objectives

www.nanopatentsandinnovations.blogspot.com

www.naturvardsverket.se – Swedish EPA

www.nme.nl – nature and environmental education in the Netherlands

www.perchards.com – specialist public affairs consultancy

www.rijksoverheid.nl – Dutch government web portal

www.sweden.gov.se – Swedish government web portal

www.tillvaxtverket.se – Swedish Agency for Economic and Regional Growth

www.umweltbundesamt.de – German Federal EPA

www.umweltdaten.de – German environmental data

www.un.org

www.vinnova.se – Swedish Innovation Agency

www.vm.gov.hu – Hungarian Ministry of Rural Development

www.wikipedia.org

www.zerowasteurope.com

Contacts

See “Annex A” to each of **Annex A** and **Annex B** to this project report (pages 7 and 13 respectively) for a list of individuals already involved in this project or suggested for inclusion in any further phases.

ANNEX D – RELEVANT EU DIRECTIVES AND REGULATIONS

This Annex sets out the EU Directives and Regulations relevant to each of the five target policy areas – based on the research done by IHPR for the 2010 “Environmental Regulation Baseline” project. Key Directives and Regulations addressed by measures described in this report are in **bold text**.

Air quality

EU requirements
<ul style="list-style-type: none"> • Ambient air quality and cleaner air for Europe Directive • Pollutants from large combustion plants • National Emissions Ceilings Directive • Emissions of heavy metals • Petrol Vapour Recovery Directive • Paints Directive • Sulphur Content of Liquid Fuels Directive • Solvents Emissions Directive <p>(Also relevant to water and waste)</p> <ul style="list-style-type: none"> • Integrated Pollution Prevention and Control <p>(Also relevant to chemicals)</p> <ul style="list-style-type: none"> • Ozone depleting substances • Persistent organic pollutants

Chemicals and nanotechnology

EU requirements
<ul style="list-style-type: none"> • Plant protection products: authorisation of products and active ingredients, and setting of legal limits and statutory sampling regime • REACH: registration of all substances supplied to the EU market; authorisation / restriction of uses of chemicals of concern • Sustainable Use Directive (adopted 2009): minimum standards for pesticides use <p>(Also relevant to air)</p> <ul style="list-style-type: none"> • Persistent organic pollutants (POPs) • Ozone depleting substances

Sustainable products

EU requirements
<ul style="list-style-type: none"> • Energy-Using Products Directive • Energy Labelling Directive • Eco-Design for Energy Using Products Directive • Voluntary standards for Green Public Procurement (GPP)

Waste management

EU requirements
<ul style="list-style-type: none"> • Waste Framework Directive (as revised) • Landfill Directive • Waste Incineration Directive • Packaging and Packaging Waste Directive • Batteries Directive • Waste Electronic and Electrical Equipment Directive • Restriction of Hazardous Substances Directives • End of Life Vehicles Directive • Hazardous Waste (Basel Convention) • Waste Shipment Regulation • Radioactive Waste Shipment Regulation • Disposal of PCBs • Waste Mineral Oils • Minerals Extraction • Waste from Titanium Dioxide Industry • Waste from Ships <p>(Also relevant to air and water)</p> <ul style="list-style-type: none"> • Integrated Pollution Prevention and Control

Water quality and availability

EU requirements

- **Water Framework Directive**
- **Nitrates Directive**
- **Drinking Water Directive**
- Bathing Water Directive
- **Urban Waste Water Directive**
- Water suitable for fish breeding (superseded by Water Framework Directive in 2015)
- Shellfish Directive: quality of shellfish waters
- Detergents Regulation
- Discharge of Dangerous Substances
- Mercury
- Water abstraction – requirement in Environmental Impact Assessment Directive
- Sewage Sludge

(Also relevant to air and waste)

- **Integrated Pollution Prevention and Control**

ANNEX E – MODELS OF GOVERNMENT, ADMINISTRATIVE STRUCTURES AND DIVISION OF RESPONSIBILITIES FOR ENVIRONMENTAL PROTECTION

Sweden

The Swedish model of government is characterised by small policy-making ministries and a much larger network of several hundred government agencies responsible for the implementation of government policy (some horizontal, but most sector-specific).

There is also a highly autonomous municipal level of government. Local governments are entrusted with a large number of complex tasks, reflecting an emphasis on local democracy and the need to match the provision of services to local preferences.

This “centralised decentralisation” means that higher level agencies do not generally give orders to lower agencies but work through advice, guidelines and sometimes funding. “Administrative pluralism” (characterised by both central and local authorities being quite powerful) generates strong co-ordination promoting homogeneity across the different levels while protecting local autonomy.

It is a challenge to reconcile this principle of decentralisation and municipal autonomy with the principle of homogeneity in living conditions across the Swedish territory. In the same way, significant independent powers of taxation are mitigated by a tax equalisation scheme to even out inequalities. Regulatory effects on local governments can be contradictory as a result, with a mix of detailed regulation from the centre for some areas, and no central direction in other areas.

The Ministry of Environment is small – only 160 staff in 2004 - and deals only with policy issues. There are thirteen agencies under its control responsible for implementation. The main agency is the Swedish Environmental Protection Agency, with 550 staff in 2004.

The Ministry is supported by:

- The Environmental Objectives Council was established in 2002 to promote consultation and co-operation in implementing the EQOs adopted by Parliament. It consists of representatives of central government agencies, county administrative boards, local authorities, NGOs and the business sector.
- The Environmental Advisory Council: the Swedish government’s advisory body on environmental matters since 1968. Its composition and tasks have varied over time. In 2008, it was remodelled to include the Delegation for Sustainable Cities – a national arena for sustainable urban development. It plays an important role in helping the government to develop positions on tackling environmental issues. Its current membership includes representatives from several ministries; academics, national professional associations, and municipalities.

There are currently 20 elected County Councils (the *Landsting*) and 290 elected municipalities. The central government is also represented at regional level, via 21

County Administrative Boards. These Boards ensure that “national decisions have the best possible effects in each county”. They have certain supervision powers in relation to local government, some environmental responsibilities (issuing permits for some environmentally harmful activities), and they are a forum for appeal against certain municipal decisions. Regional government is also represented by the *Landsting*, which are directly elected at the county level.

The fundamental decisions about how to “use land and water” are made by the municipalities. A number of permits and licences are required from the municipalities, another key interface with business. These include: building permits; excavation permits; licences for some environmentally harmful activities; permits to have an own sewage system.

Netherlands

The Netherlands is a decentralised unitary state with three tiers of government. The Ministry of Housing, Spatial Planning and the Environment (VROM), succeeded by the Ministry of Infrastructure and the Environment in Oct 2010 and now incorporating responsibility for transport, public works and water management, co-ordinates and oversees national environmental policy.

There are twelve provinces and 443 municipalities. There are significant differences in size and culture between municipalities. The “big four” cover the four main cities of Amsterdam, Den Haag, Utrecht, and Rotterdam. These interact directly with central government ministries. The Association of Netherlands Municipalities (VNG) speaks on behalf of the smaller municipalities.

Each province and municipality has its own council, elected by popular vote. Provincial and municipal authorities have important implementation and enforcement (including inspection) functions, especially in physical and environmental planning, and in licensing, based on regulations laid down by central government.

Responsibility for enforcement on the ground is shared by national inspectorates and municipalities.

Germany

The Federal Republic of Germany is a parliamentary federal democracy. The federation is composed of sixteen federal states (*Länder*). Each has its own constitution, parliament, government, administrative structures and courts.

Germany’s institutional and legal system rests on a longstanding and strong tradition of “legal state” (*Rechtsstaat*) and co-operative federalism.

There are three levels of government (federal, *Land* and local). The sixteen *Länder* are states in their own right, exercising state authority in the areas set out in the Basic Law. The municipalities comprise 12,200 cities and communities, and 301 rural districts. While

they are an integral part of the *Länder* structure, municipalities have some of their own residual responsibilities and a certain independence.

The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) is responsible for environmental protection policy at national level. The Federal Environment Agency (Umweltbundesamt), established in 1974, is the central scientific authority for environmental protection in Germany. Working under the jurisdiction of the BMU, the Umweltbundesamt is responsible for protecting the environment and human well-being from adverse environmental hazards. The Agency advises governmental institutions on environmental matters and informs the general public on almost every kind of question concerning environmental protection.

Environmental protection is an area of “concurrent competence”, i.e. one which is allocated to the Lander until the federation legislates. Where the federation does legislate, informal pre-consultation rounds (with the *Länder*, municipalities and associations) are the norm at an early stage in the process before a bill is drafted. The results are fed into the drafting, and the same parties are consulted a second time. Consultation thus takes the form of institutionalised negotiation and bargaining with key stakeholders and is driven by a search for consensus.

The municipalities and counties have had self-governing rights in all local community matters under their responsibility within the framework of the laws. The Basic Law stipulates that they must be given the opportunity “to regulate all local affairs on their own responsibility, within the limits prescribed by the laws”. This right of self-administration specifically covers public local transport, public road-building, water, gas and electricity supplies, sewage disposal services and town planning.

They implement almost three-quarters of federal and *Länder* legislation. The functional (though not rule making) importance of local governments in Germany is therefore significant.

Municipalities and counties may initiate their own projects and policies to improve enforcement, within the framework of local self-administration. They grant licences, implement procedures, draw up plans etc. Over 800 local utilities cover activities such as electricity, gas and water services, many of which are partly or wholly owned by the municipalities. Within the framework of municipal self-government, supervision of the *Länder* is limited to the legality of the administrative procedures used.

Spain

Spain has been going through a period of continuous devolution / decentralisation since 1978 (when new Constitution agreed).

Policy responsibility for environmental protection is held by the Ministry of the Environment and Rural and Marine Affairs, created in 2008 to bring together the former MAFF and Ministry of Environment. The new Ministry’s strategic aim is to fight against climate change and encourage a model of sustainable development integrating territory and

biodiversity protection on the one hand and, on the other, protecting the agriculture, forest and fishing industries.

The Directorate-General for Environmental Quality and Assessment (responsibilities: development of policy for prevention of pollution, and environmental control, quality and assessment; co-ordination of plans and programmes on waste, polluted soils, air pollution and environmental impact; EIA; development of environmental indicator systems; risk evaluation for chemical products) under the Secretariat of State for Climate Change is the national focal point of the European Environment Agency. There is no national Environment Agency.

Spain is divided into 17 Autonomous Communities (ACs) and two Autonomous Cities. These have developed a strong sense of regional and political identity, effectively autonomous in their areas of acquired competence. Each AC has a competent organisation for environmental matters and has the ability to create its own Environment Agency or similar. Each AC comprises one or several provinces totalling 50 across the national territory. In turn, each province is divided into a variable number of Municipalities totalling 8,111 overall.

Hungary

The Local Self-government Act LXV of 1990 established a two-tier system: a lower tier of 3,172 municipalities and a higher level of 19 counties and Budapest.

Municipalities have broad administrative powers in many policy areas, which they exert with considerable independence from the central administration. In general terms, the municipalities are responsible for public policies at local level in environmental quality, local development, and economic infrastructure.

The role of the 19 counties is mainly as a provider of services to municipalities. The 1990 Act reduced considerably the authority and competence of this thousand-year-old institution. In practice, municipal decisions and agreements define the counties' functions. The main areas of activity are environmental protection, tourism, regional employment and professional training.

The first Ministry for Environment was created in 1987; subsequently reshaped as the Ministry of Environment and Water, responsibility for environmental protection has recently been assumed by the Ministry of Rural Development (MARD).

Environmental competences are shared between administrations at central, regional, county and municipal levels.

At national level the Ministry is supported by the National Inspectorate for Environment, Nature and Water (permitting, inspection and enforcement) and the Central Bureau of Water and Environment (asset management).

The National Inspectorate is supported by ten Regional Inspectorates for Environment Nature and Water. These are based in county capitals and their territorial jurisdiction is based on water catchment areas.

The Central Bureau is underpinned by Regional Environmental and Water Directorates.

Municipalities manage local environmental services, e.g. drinking water supply, sewerage, urban waste collection and treatment.

ANNEX F – BETTER REGULATION PROGRAMMES

Country	Aim / purpose of programme	Targets	Programme detail	Context
Sweden	<p>“To bring about a noticeable, positive change in the day-to-day operations of businesses including reducing administrative cost”.</p> <p>The basic aim of the policy extends well beyond the reduction of administrative costs. It is to design rules, processes and procedures so that they are better adapted to business conditions and reality. Waiting and processing times as well as service to and treatment of businesses at authorities constitute key components of the work. Rules that irritate businesses are also addressed.</p>	<p>National net reduction of 25% by 2010 of business administrative costs stemming from compliance with Information Obligations (IOs) in legislation, as defined by application of the Standard Cost Model for measuring administrative burdens.</p>	<p>Action Plan for Better Regulation is the centrepiece of the government’s strategy 2006-10.</p> <p>Built around drivers: push for stronger growth, need to sustain international competitiveness, need to create jobs, to help prevent social exclusion.</p> <p>All Ministries and tens of government agencies have contributed to rolling Action Plan updated annually to track measures planned, underway and implemented. 2009 update comprised some 940 actions (460 of which had been implemented), involving 12 ministries and 44 government agencies. Better Regulation Council established as autonomous external oversight body.</p> <p>Two-pronged approach to identifying actions for regulatory simplification:</p> <ul style="list-style-type: none"> • Simplification proposals collected from business community/other stakeholders. • Zero base measurement established and updated annually to take account of new administrative burdens; serves as key source of ideas for actions. 	<p>Regulatory simplification dates back to 1970s, with goal to limit the cost-generating effects of regulations in both the public and the private sectors.</p> <p>Sweden active in use of different processes aimed directly at ensuring that regulatory stock remains clean and clear, including codification, the enactment of a guillotine rule in the 1980s (nullifying hundreds of agency regulations that were not centrally registered by a due date, after the government found that it was unable to compile a list of regulations in force due to the accumulation over time of regulations issued by agencies). Registry also had indirect effect of slowing the rate of growth in new regulations; by 1996, net number of regulations had dropped substantially.</p> <p>Sweden has moved from emphasis on deregulation associated with 1990s market liberalisation to improvement and simplification of rules (same pattern as other EU countries). Policy also broadened from simplification and cost reduction to a renewed interest in making <i>ex ante</i> impact assessment work. Key focus throughout has been on needs of enterprises.</p> <p>In 2002, the Rijksdag passed resolutions asking the government to review business regulations in their entirety to eliminate</p>

Country	Aim / purpose of programme	Targets	Programme detail	Context
				<p>unnecessary and burdensome regulations, and to set a quantitative target to reduce administrative costs, with a view to creating better working conditions for small businesses and hence to promote economic growth.</p> <p>Until 2006 Action Plan, Sweden was slipping behind in Better Regulation (and was aware of a growing gap compared with some of its European neighbours).</p>
Netherlands	<p>Reduction programme for business consists of a mix of quantitative and qualitative targets focusing on three objectives: less, easier, noticeable.</p> <p>Less – admin burden, compliance costs, inspection burden.</p> <p>Easier – better, faster and more transparent services to companies related to legislation, e.g. by offering integrated information for sectors.</p> <p>Noticeable – targets formulated regarding perception of burden by entrepreneurs.</p>	<p>Reduce admin burdens by 25% over period 2007-2011: expected to realise 20-22% in 2011.</p> <p>Admin and regulatory burdens on business must be 10% lower in 2012 than in 2010.</p> <p>After 2012 administrative burdens will be reduced by 5% per annum.</p>	<p>Regulatory Burden Department of Ministry of Economics, Agriculture and Innovation is responsible for regulatory reform.</p> <p>Established in 2000, the independent watchdog ACTAL (Dutch Advisory Board on Administrative Burden) has played an important role through its challenge function to government, in helping to motivate and structure regulatory reform in the Netherlands.</p> <p>Key areas for attention are risk based approach to development of regulations and to enforcement. Includes ambitious framework vision for reform of inspection and enforcement implemented through Inspection Reform Programme.</p>	<p>Netherlands an early starter on better regulation, in 1980s. Focus has been on admin burden reduction.</p> <p>Regulatory reform gathered pace in 1990s, sought new balance between “protection and dynamism” through increased competition, regulatory reform and market openness. Wanted to streamline regulation to return to what strictly necessary.</p> <p>Late 1990s second phase – growing emphasis on reducing admin burdens for business. Pioneered standard cost methodology (SCM) for reduction of admin burdens.</p> <p>During 2000s: reform of inspection and enforcements; programmes to address admin burdens on citizens; work on legal quality framework for developing new regs, including assessment of alternatives to regulation.</p> <p>Particular progress in regulatory burden reduction – 2003-07 25% net burden reduction</p>

Country	Aim / purpose of programme	Targets	Programme detail	Context
				<p>target allocated across Ministries – 22% achieved.</p> <p>The Netherlands has engaged in pioneer work to ensure that compliance and enforcement are considered at the start of the rule-making process. Efforts by the Ministry of Justice to raise awareness go back over two decades, via the Directives on Legislation, legal quality criteria and the Practicability and Enforcement Impact Assessment.</p>
Germany	Reduce administrative burdens on business and streamline administrative procedures in order to free companies up for new initiatives and more productive activities.	<p>Reduce unnecessary administrative costs resulting from information obligations from federal legislation which was in force on the baseline date (30 September 2006) by 25% by 2011 using the Standard Cost Model. (This based on Netherlands example.)</p> <p>Long-term goal is “to bring Germany back to the top” by 2020.</p>	<p>Germany started programme for measurement and reduction of bureaucracy, using the Standard Cost Model, in 2005 – in response to significant complaints from business over red tape.</p> <p>Main pillar of current federal policy on better regulation is Bureaucracy Reduction and Better Regulation programme adopted in 2006. Regulatory Control Council established, alongside a new committee of state secretaries and a Central Co-ordinator for the Reduction of Bureaucracy and Better Regulation to steer the process.</p> <p>Key features of de-regulation in Germany: sunseting; less detailed regulation (more generalised solutions); benchmarking to strengthen efficiency in administrations; avoidance of double or triple regulation or controls; e-Govt; one-stop agencies for entrepreneurs and enterprises in general;</p>	<p>A commitment to streamline the regulatory state, reduce the bureaucratic machinery and simplify the legislative environment has been a feature of German policy through successive governments over the last couple of decades.</p> <p>Not made easier by federal system – risks holding back innovation and the development of a broader view of regulatory quality.</p> <p>Most important effect of 2006 programme has been to change attitudes. Germany’s approach to law making is traditionally less concerned with the perspective of the enterprise (or citizens), seeking instead to ensure a high standard of legal clarity, coherence and comprehensiveness of the law. Programme has raised Ministries’ consciousness of the costs of regulation for external stakeholders, not least by putting a figure on those costs.</p>

Country	Aim / purpose of programme	Targets	Programme detail	Context
			<p>fixed deadlines for granting permissions and licenses by authorities.</p> <p>There is also a wide ranging programme to take forward e-Government in support of businesses and citizens (<i>"Focused on the Future: Innovations for Administration"</i>) also adopted in 2006. There is a growing interest in developing a sustainability dimension to the agenda.</p>	
Spain	<p>Three-fold aim:</p> <ul style="list-style-type: none"> • a broader approach on administrative burdens, including citizens as well as businesses; • a closer focus on the subnational levels of administration which are closer to citizens and businesses, especially SMEs; and • a stronger use of impact assessments to help decision makers. 	<p>Reduce administrative burdens on business by 30% by 2012, from a baseline of May 2007 (more ambitious target than the one set by the European Commission).</p>	<p>Since 2007, Spain has sought to catch up with other parts of Europe by establishing comprehensive Better Regulation Action Plan (no further obvious material available) aimed at revitalising business and boosting competitiveness. Plan followed European Commission's approach by targeting six priority areas including environment and public procurement.</p> <p>159 simplification measures in 15 areas adopted by Spanish Govt in 2008-09 delivering E1.174bn savings in admin burdens to companies. Also "better regulation networking" between central gov and autonomous communities / local authorities and business organisations.</p> <p>Better Regulation Project (not clear, but presumed successor to Action Plan) runs 2009- 2012. 2010 work programme included identification and proposal of specific simplification measures in 15</p>	<p>Spain relative latecomer to better regulation starting in the late 1990s with programmes for administrative simplification. Since then, the momentum has grown and a broader range of issues has gradually been tackled, including impact assessment. EU focus on better regulation has been a key driver.</p> <p>OECD view is that simplification appears difficult to achieve in the Spanish environment, and this undermines easy access to the legal stock, legal clarity and security. Issues include: laws which cover a range of different issues; rapid shifts in distribution of regulatory competences across levels of government.</p> <p>In public administration, OECD sees that a legalistic culture continues to predominate, which stands in the way of transparency and efficiency, as well as the application of a more economic perspective to regulatory management. In 2004 it was reported that</p>

Country	Aim / purpose of programme	Targets	Programme detail	Context
			sectors, and expected proposal of 300 simplification measures.	consideration of alternatives to classic regulation “tends to be a formality”. A common view is that “most laws are necessary”, despite the widespread concern over regulatory inflation. National legislation gold-plates EU legislation in transposition; further reinforced at regional level, and goes further again with local implementation. “Diamond plating” induces heavier admin burdens.
Hungary	<p>A comprehensive quality assurance system integrated in legislative procedures to:</p> <ul style="list-style-type: none"> • forecast regulatory effects with RIAs; • assure stakeholder opinions integrated; • assure effective law-making with different monitoring systems; • assure regulations generate only the necessary level of admin burdens. 	<p>Cut admin burdens by 20% by end of 2008 (not clear if met) and to create the conditions to be able to cut them by 50% by end 2013.</p>	<p>Current Better Regulation Programme put in place in 2007; aim and targets as cited but no further information available.</p>	<p>Hungary has long / strong tradition of well-developed legal frameworks, institutions, and administrative procedures, many of which are rooted in the Austro-Hungarian Dual Monarchy. Legal system retains essential structure and tradition of a civil law system, similar to those in Germany and Austria: has tended to produce extremely detailed laws as power has flowed from the administration to the legislature.</p> <p>The first steps towards better regulation taken in 1996, when the government published a regulatory policy as part of the action programme for reforming the state and the administration. This was the first phase in a long-term approach, and focused mainly on deregulation, establishing goals including:</p> <ul style="list-style-type: none"> • Review laws and regulations governing the functions and powers of the public administration; • Control the stock and flow; • Improve law enforcement and implementation of regulations through an

Country	Aim / purpose of programme	Targets	Programme detail	Context
				<p>administrative simplification programme.</p> <p>1999 incoming government presented a new programme for regulatory reform aimed at building institutional capacities for effective regulation and implementation. Revision and elimination of existing regulations takes a lower priority. Priorities included:</p> <ul style="list-style-type: none"> • Review of competences and tasks of regulatory institutions; • Review of the devolution process to match capacities with responsibilities, in particular identify how to strengthen the regional level; • Expand the adoption of new technology in the public sector.

ANNEX G – FRAMEWORK FOR ENVIRONMENTAL REGULATION

Country	Strategic aims and objectives	Policy and legislative framework	Key features of compliance and enforcement
Sweden	<p>15 ambitious, long-term Environmental Quality Objectives (EQOs) adopted by Parliament in 1999; a further objective added in 2005. These include “clean air”, “high quality groundwater”, “no eutrophication”, “a non-toxic environment”. Sector objectives developed for most business sectors.</p> <p>Goals are set on three levels:</p> <ul style="list-style-type: none"> • Generational: direction of required changes in society that need to occur in one generation to achieve EQOs; • EQOs themselves; • Milestone targets: steps on the way to achieving the EQOs and generational goals. <p>Oversight comes from All-Party Committee on Environmental Objectives comprising MPs, advisors and experts from NGOs and Ministries – was due to present an Action Plan for delivery by end 2010. Swedish Environment Protection Agency co-ordinates delivery; a government agency is appointed to lead on delivery of each objective.</p>	<p>Policy has been objective-oriented for several decades, with efforts to achieve becoming ever more systematic at both national and local level.</p> <p>In 1999 Sweden reformed its environmental legislation by adopting Environmental Code: a comprehensive framework consolidating previously fragmented legislation and transposed a number of EU Directives. Introduced framework for monitoring environmental progress. Code provides general guidelines for environmental policy including special provisions on management of land and water in specified areas of Sweden, water projects, chemicals, waste, licensing, inspection and enforcement. More detailed provisions in numerous ordinances. Founded on five fundamental principles which constitute basis of Sweden’s environmental policy: promotion of human health, preservation of biodiversity, preservation of cultural heritage assets, preservation of ecosystems’ long term production capacity, wise management of natural resources.</p> <p>Sweden makes significant use of economic instruments. Ambitious tax shift initiated – higher rates of environmental taxes and charges offset by reductions in labour taxation – estimated shift amounts to SEK 30bn 2001-10. Little use of subsidies to protect</p>	<p>Enforcement responsibilities shared between more than 90 government agencies (including 21 County Administrative Boards) and the 290 municipalities (county councils have no supervisory responsibilities), plus a few private bodies with delegated responsibility for enforcement / supervision.</p> <p>Regulations are usually enforced via inspections and administrative sanctions. Enforcement is prioritised according to environmental risk and focuses on industries/sectors that are big polluters or directly attributable to delivery of an environmental goal or to plugging a gap. Regional County Administrative Boards (CABs), to conduct a “needs assessment” on an annual basis to determine a programme of monitoring and information collection to achieve environmental outcomes.</p> <p>Environmental inspection and enforcement highly decentralised. In addition to monitoring compliance, inspections focus on verifying that self monitoring by operators complies with Environmental Code. Supervision under Code covers more than 1m point sources, farms, natural and cultural objects, polluted areas and other activities. More than 1,250 officials work on environmental inspections. One fifth of time spent on inspection and enforcement at</p>

Country	Strategic aims and objectives	Policy and legislative framework	Key features of compliance and enforcement
		<p>environment as Sweden adheres strictly to polluter / user pays principles. Swedish business plays proactive role developing environmental management systems, eco-labelling and certification, environmental reporting and other voluntary actions.</p>	<p>licensed installations.</p> <p>5 regional environmental courts deal with cases concerning permits, compensation and damage.</p>
Netherlands	<p>4th National Environmental Policy Plan [summary available in English at www.international.vrom.nl] identifies 7 key problems anticipated for 2030.</p> <p>Desired situation for 2030: “Environmental policy should contribute towards a safe and healthy life within an attractive living environment and surrounded by dynamic nature areas, without damaging global biodiversity or depleting natural resources, at present, elsewhere, and in the future.”</p> <p>-</p>	<p>Environmental policy based on 6 clear principles:</p> <ul style="list-style-type: none"> - Sustainable development - Prevention - Precaution - Prevention at source - Polluter pays - As low as reasonably achievable <p>Environmental Management Act 1993: framework legislation enabling integrated approach to environmental management. Governs the planning framework for environmental authorities, integrated permitting (licensing), compliance monitoring activities, and harmonisation with other environmental laws. EMA stipulates a co-ordinated regime for environmental, water and building licensing. Conflicts between requirements of different laws are avoided thanks to the system of issuing 3 licences. Operator must apply for all 3 in parallel, environmental licence refused if either of others not granted.</p> <p>The Facilities and Licensing Decree (1993, as amended) specifies the roles and</p>	<p>Compliance strategy in place to prioritise action and enable smart enforcement. Efforts have been made to secure joint inspections to reduce inspection burdens. All large industrial installations are required to undertake self-monitoring. 19 quality standards are in place regarding environmental inspectorates’ activities.</p> <p>There are about 400 000 environmentally regulated installations in the Netherlands, 11% of which must obtain a licence while others are regulated through general binding rules.</p> <p>Permitting and inspection functions are clearly separated within the competent authorities. QA procedures require that responsibility for individual installations change from one inspector to another at least every four years to avoid issue blindness and conflict of interest.</p> <p>Responsibility for environmental enforcement shared by 2 of the 14 national inspectorates (under parent ministries), State and regional water boards, provincial authorities and</p>

Country	Strategic aims and objectives	Policy and legislative framework	Key features of compliance and enforcement
		<p>responsibilities of the national, provincial and municipal authorities under the Act. The EMA is a framework act that is supplemented by general administrative orders, provincial and municipal regulations.</p>	<p>municipalities. State Water Board with 10 regional offices is responsible for permitting, compliance monitoring and enforcement within its area of jurisdiction. 26 regional Water Boards issue permits for wastewater discharges and conduct compliance monitoring and enforcement. Provincial authorities are responsible for the licensing, inspection, and enforcement with regard to the majority of (non-farm) IPPC installations (a small number of IPPC installations regulated by municipalities).</p> <p>26 police regional environmental teams and 6 inter-regional teams conduct investigations of environmental crimes in co-operation with the Ministry for Infrastructure and Environment and other competent authorities.</p> <p>Inspection Council is responsible for stimulating co-operation between the national inspectorates (to reduce unnecessary burdens caused by multiple inspections). The National Environmental Enforcement Cooperation Secretariat (LOM) facilitates co-ordination between about 500 authorities competent in environmental enforcement in the country. The provinces are formally responsible for the interagency co-ordination of environmental enforcement activities on their territory.</p> <p>There are a significant number of cases where municipal authorities have established</p>

Country	Strategic aims and objectives	Policy and legislative framework	Key features of compliance and enforcement
			<p><i>shared service centres</i> executing permitting and compliance assurance responsibilities on their behalf or provide information support to the municipalities. There are 26 such centres nationwide bringing together 150 municipalities. The most prominent case of such co-operation is the Rijnmond Environmental Protection Agency (DCMR) in the larger Rotterdam area in the Province of South Holland. DCMR, created in 1972 by 18 municipalities (including Rotterdam) and the provincial government, is the largest regional environmental agency in Europe with about 550 staff.</p>
Germany	Not evident.	<p>Policy guided by 3 principles: polluter pays, precaution, co-operation.</p> <p>German environmental legislation currently laid down in specific laws governing particular areas, focused particularly on the protection of individual environmental resources. It was only with 2006 federal reform (abolishing the framework legislation in Germany's basic law) that federal government secured power to regulate all aspects of environmental legislation.</p> <p>Ongoing aspiration to simplify and improve legislative framework through comprehensive Environmental Code (Umweltgesetzbuch, UGB). Intention would be to facilitate application of the law, improve the implementation of EU environmental</p>	<p>Federal Environment Agency (Umweltbundesamt, UBA) is responsible for protecting the environment and human well-being from adverse environmental hazards. In 2007 the Agency had a budget of E87m and almost 1,400 employees working at 13 locations, including seven of the Agency's air monitoring stations. It covers policy areas including air and air pollution control, chemicals policy and pollutants (including REACH), environmental awareness and sustainable consumption, waste management, water, drinking water and water protection.</p> <p>Environmental Inspectorate in each Land is responsible for preparation of technical and legal permits and for surveillance of companies subject to permitting regimes.</p>

Country	Strategic aims and objectives	Policy and legislative framework	Key features of compliance and enforcement
		<p>legislation and promote an integrated approach. Complete draft prepared in late 2000s but final agreement could not be reached between coalition parties, so not implemented. Instead, four laws (elements of original package) were implemented in 2010: removal of obsolete sections in environmental law, reform of water law, act on replacement of Federal Nature Conservation Act, act on regulation of protection from non-ionising radiation.</p> <p>For first time this has given Germany uniform nature conservation and water management legislation which is directly applicable throughout the country. Standardises Germany's fragmented legislation by making the fed govt rather than individual Lander responsible for conservation and protection of water resources.</p>	<p>Quality parameters are set to measure their performance. These include inputs:</p> <ul style="list-style-type: none"> • Inspectors' qualifications and level of motivation; • Adequacy of technical and office equipment; • Nature of employment contracts; • Effectiveness of administrative structure; • Supervision of inspectors. <p>... and outputs:</p> <ul style="list-style-type: none"> • Swift, technical and legal decisions (measured e.g. through time to grant a permit, number of successful challenges to decisions); • Sufficient surveillance; • Public information and public participation; • Level of satisfaction among companies / public.
Spain	<p>Strategic environmental policy objectives set by central authorities in co-ordination with regions. Autonomous Communities have many powers in relation to the environment, and many municipalities also have their own ordinances. But there are a number of laws and decrees at national level laying down certain requirements and environmental standards throughout Spain, e.g. environmental liability, pollution prevention and control, EIA, national plan for Waste</p>	<p>1970s major environmental legislation addressed air pollution, municipal waste management and marine pollution. Accession to EU in 1986 an important impetus as legislation brought into line with EU law. Further development of environmental legislation followed creation of Ministry of Environment in 1996. Over past 15 years environmental legislation has evolved very significantly, some regions now have very</p>	<p>State may enforce own competences through national inspection agencies (e.g. Nature Protection Service of the Civil Guard (SEPRONA) responsibilities include air, water, soil and noise pollution, hazardous waste) but more commonly delegates enforcement to the ACs.</p> <p>Where enforcement is delegated to the ACs, to oversee that it is properly done, the State</p>

Country	Strategic aims and objectives	Policy and legislative framework	Key features of compliance and enforcement
	<p>Management, waste materials, packaging and packaging waste, royal decree on limitation of organic compound emissions, two national water laws, air quality strategy.</p> <p>AC responsibility for implementing environmental policy has led to a wide range of standards on different environmental issues, responding to different physical, human, economic conditions and environmental pressures.</p>	<p>advanced environmental policies.</p> <p>Many of environmental efforts of national and regional administrations have focused on programming environmental infrastructure investment and its financing, including through EU structural financing (e.g. for water supply and waste water infrastructure).</p> <p>OECD view that environmental policy hampered by reliance on subsidies, government transfers and other forms of financial assistance. Spain makes limited use of environmental taxes and other economic instruments to influence behaviour, as it is widely believed they could affect competitiveness and employment.</p> <p>Spain is one of EU countries with greatest number of complaints concerning presumed poor implementation of EU environmental Directives, e.g. ref waste disposal sites, urban waste water treatment, water quality, incineration plants, ambient air quality, NVZ action plans.</p>	<p>relies on the so-called “peripheral administration” (<i>administracion periferica</i>). This administration employs some 100 000 officials, headed by a <i>delegado del Gobierno</i> in each of the ACs, and <i>sub-delegados</i> in the provinces. Administrative procedures (including State monitoring of the actions of the ACs through direct and indirect supervision) and political leverage are used to ensure that enforcement is effectively carried out.</p> <p>The ACs enforce their own legislation and regulations; here there is no scope for a State wide approach to oversight.</p> <p>Approach to enforcement varies significantly across the national territory and risk based enforcement has some way to go. Variations in approach, due in large part to delegated responsibilities, cause significant variations in quality of services provided, and there are no minimum standards. Efforts have been made to improve enforcement strategies, but these tend to focus on increasing controls (more inspectors, and databases) rather than adopting a more efficient risk-based approach (varying the rate of inspection to the risk of non compliance). Ministry of Environment has set up surveillance networks for air, toxic waste and sea water quality controls to help ACs to compare their performance.</p>

Country	Strategic aims and objectives	Policy and legislative framework	Key features of compliance and enforcement
			<p>According to OECD, Spanish government has not yet emphasised the need to design compliance friendly regulations. There are also recorded instances of mismanagement and corruption.</p>
Hungary	<p>National Environment Programme (NEP) 1 – 1997-2002 - set broad environmental planning goals e.g. for protection of ecosystems, decoupling environmental pressures from economic growth; improving environmental awareness and institutional co-operation.</p> <p>NEP 2 - 2003-2008 - acknowledged multi-dimensionality of environmental problems, called for cooperation among different administrative bodies at central and local levels, and for strong partnerships among public authorities, social and economic actors, including NGOs and academic institutions. 9 thematic programmes including protection and sustainable use of water, waste management.</p> <p>NEP 3 – 2009-2014 - defines main lines of environmental policy. Main fields of action: environmental education, climate change, environment and health, preservation of biodiversity, sustainable land management, water and waste management.</p>	<p>Main piece of legislation: Act LIII/1995 (as amended) which lays down general rules for environmental protection, containing fundamental principles and the basic institutional framework relating to the environment.</p> <p>2000-08 characterised by consolidation of environmental legislation mostly driven by EU env acquis (acceded 2004). Major legislative changes have occurred concerning ambient air quality, water quality, waste management.</p> <p>When Hungary joined EU, awarded transition periods regarding implementation Directives on waste shipments, packaging and packaging waste, air pollution from large combustion plants, drinking water, urban waste water treatment. Only 1 transition period, for treatment of urban waste water, remains, until 2015. Hungary now contributing to shaping development of EU policy incl. ground and bathing waters, chemicals.</p> <p>Economic instruments have been implemented, including introduction of “environmental load charge” applying to air</p>	<p>Institutional framework for environmental management has developed – gradual merger of authorities responsible for environmental protection, water quality and quantity management. Enforcement activities have increased with inspectorates acquiring licensing and enforcement responsibilities across all environmental themes; system of non-compliance sanctions significantly strengthened.</p> <p>National Inspectorate is the licensing authority where issue of national relevance (e.g. waste export or import). Regional inspectorates act as main permitting authorities for most environmental matters (e.g. air emissions, effluent discharges, waste treatment) with direct involvement of municipalities. Regional inspectorates also the main monitoring and enforcement authorities. Responsible for monitoring of ambient air, groundwater and surface water quality. IPPC operators carry out self-monitoring and report to regional inspectorates.</p> <p>In 2000, inadequate enforcement was a major concern in part due to severe budget</p>

Country	Strategic aims and objectives	Policy and legislative framework	Key features of compliance and enforcement
		<p>emissions and waste water discharges, charges for municipal waste, revision of product charges on packaging wastes.</p> <p>Economic sanctions may be applied when emission and discharge standards are exceeded. The revenue from charges and fines goes to environmental funds, particularly the Central Environmental Protection Fund (CEPF), and to local authorities, which use the revenue to finance pollution abatement measures. These economic instruments, together with fiscal measures, contribute to the financing of environmental investments. Eco labelling and green public procurement are being promoted.</p>	<p>constraints. System of sanctions significantly strengthened since then – new environmental fines for waste management, groundwater, sewerage, waste water, nitrate pollution. Determined on basis of severity, recurrence and duration of non-compliance. Inspectorates have some flexibility in defining amount of fine. Collection is responsibility of tax authorities, who have stronger enforcement powers. Environmental crimes punishable by detention (up to 8 years).</p> <p>Inspections carried out on regular and ad hoc bases. Some sectoral laws define frequency of inspections (e.g. surface water and air emissions) and at least one annual on-site inspection for IPPC installations is mandatory. Ad hoc inspections in case of complaints, pollution levels above limit values (recorded by automatic monitoring stations), environmental remediation works and accidents. But regional inspectorates spend much of time on technical support to other authorities and private operators, leaving little time for inspections (10% in some inspectorates). A high rate of non-compliance and non-payment of environmental charges is estimated among SMEs.</p>

ANNEX H – COMPARISON OF MIX OF INSTRUMENTS / VOLUNTARY MEASURES TO ACHIEVE AIR QUALITY OUTCOMES, INCLUDING REQUIREMENTS UNDER EU NATIONAL EMISSIONS CEILINGS DIRECTIVE

Country	Domestic environmental issues	Domestic policy aims	Economic instruments	Legislative requirements	Voluntary and other measures
Sweden	<p>Air quality has improved over past 20 years. Swedish soil more vulnerable to acidification than in other countries. NOx and SO2 emissions are responsible. Only a minor part of depositions emanate from Swedish pollution sources. Most from Central Europe and UK.</p> <p>Elevated concentrations of air pollutants, above all nitrogen dioxide, particles and ground level ozone, are still causing significant damage to human health, vegetation and cultural heritage. Pollution levels in urban areas of Sweden have tended to fall in recent years, but it is too early to say whether this favourable trend will be maintained.</p> <p>Transport is a major</p>	<p>Clean air: “Air must be clean enough not to represent a risk to human health or to animals, plants or cultural assets”. This objective is intended to be achieved within one generation.</p> <p>Interim targets in place for sulphur dioxide (now met), nitrogen dioxide (very difficult to achieve), ground level ozone (very difficult to meet), VOCs (now met), particles (very difficult to meet) and benzo(a)pyrene (achievable).</p> <p>Natural acidification only: “the acidifying effects of deposition and l and use must not exceed the limits that can be tolerated by soil and water. In addition, deposition of acidifying substances must no increase the rate of</p>	<p>Nitrogen oxide charge on energy production: refunded charge on NOx emissions from energy generation at combustion plants introduced in 1992. Charge of SEK 40 per kg of emitted NOx (about EUR 4.4) has remained same since introduction.</p> <p>Sulphur tax: introduced 1991, applied on sulphur content of heavy fuel oils, coal and peat. SEK 30 per kg of sulphur content (around EUR 3.32 per tonne).</p>	No other info available.	No other info available.

Country	Domestic environmental issues	Domestic policy aims	Economic instruments	Legislative requirements	Voluntary and other measures
	<p>source of emissions – so key priority is to cut emissions further. Gradual reductions of exhaust emissions from new vehicles partially offset by overall growth in traffic. Other important emission sources are wood-fired heating and energy sector.</p> <p>Action needed internationally. Plus measures on national, regional and local scale needed to tackle high concentrations in Swedish towns and cities.</p>	<p>corrosion of technical materials located in the ground, water main systems, archaeological objects and rock carvings”</p> <p>Interim targets include...</p> <p>Reduce SO2 emissions to 50k tonnes by 2010 (now met). Reduce NOx emissions to 148k tonnes by 2010 (expected to meet in 2010). This is in line with EU National Emissions Ceiling Directive.</p> <p>-</p>			
Netherlands	<p>Currently unable to meet all EU standards for particulate matter. Aimed to meet standard for nitrogen dioxide by 2010.</p>	<p>National policy laid down in 2001 Fourth National Environmental Policy Plan (NEPP 4) – with targets to be reached by 2010. Fulfils requirements under National Emissions Ceilings Directive.</p> <p>Policy comprises air quality measures: to</p>	<p>Intention to introduce road-pricing system for HGVs and passenger vehicles in 2012 or later.</p>	<p>Reliance on two instruments: air quality standards and emission targets.</p> <p>Low emission zones: “Environmental Zones” in 10 Dutch cities that may not be entered by trucks that don’t comply with Euro-2 standard or higher.</p>	-

Country	Domestic environmental issues	Domestic policy aims	Economic instruments	Legislative requirements	Voluntary and other measures
		reduce emissions and to prevent people from inhaling excessively high concentrations of certain substances. (immission) and measures to tackle large-scale air pollution: that reduce the amounts of pollutants being released (emission).		<p>National Air Quality Co-operation Programme: launched 2009, aims to comply with limit values for particulates and NO₂ by 2011 and 2015 respectively.</p> <p>Emission reduction policies include:</p> <ul style="list-style-type: none"> - tightening emission standards for industry for larger installations - covenants with energy sector and refineries to limit their SO₂ emissions to a stated maximum from 2010 - action plan to reduce particulate matter in industry - 	
Germany	1990-2001, Germany achieved large reductions in emissions of a number of air pollutants. In old Lander, this was through effective environmental management focusing on regulatory measures and	Overall aim: to protect human health and biological, physical and cultural environment from harmful effects of air pollution.	Road user charge for HGVs / Heavy Vehicle Tax: "Eurovignette" for HGVs. Joint programme with Netherlands, Luxembourg, Denmark, Sweden. Cost based on number of axles, weight, distance travelled.	-	-

Country	Domestic environmental issues	Domestic policy aims	Economic instruments	Legislative requirements	Voluntary and other measures
	<p>enforcement, pollution control technology at stationary sources, mandatory fuel quality and efficiency improvements in transport sector.</p> <p>In 2000s, air pollution continued to decrease significantly, but since 2000 no clear signal of similar trend in pollution by particles, nitrogen dioxide and ozone, despite a continuous decline in emissions. Average immissions levels show steady drop in particulate matter and NO2 away from congested urban areas and towards the countryside.</p>		<p>Started in 1995. Succeeded by heavy vehicle tax in 2005, with charge differentiated according to emission level of vehicle and number of axles: average charge 15 cents/km.</p> <p>Tax calculated according to the estimated maintenance, upgrading and renewal costs for the motorway system attributable to trucks. Also explicitly intended to provide an appropriate financial environment for inter-modal competition for freight between road and rail.</p> <p>Low Emission Zones: all drivers required to purchase an emission sticker when passing through LEZ. In certain “green zones”, entrance completely forbidden to vehicles with higher particle emissions (red and yellow stickers). Fine for drivers without</p>		

Country	Domestic environmental issues	Domestic policy aims	Economic instruments	Legislative requirements	Voluntary and other measures
			sticker E40 and a point in Traffic Offences Register.		

ANNEX I - COMPARISON OF MIX OF INSTRUMENTS / VOLUNTARY MEASURES IN PLACE TO ACHIEVE WASTE MANAGEMENT OUTCOMES, INCLUDING REQUIREMENTS UNDER THE WASTE FRAMEWORK DIRECTIVE, LANDFILL DIRECTIVE, WASTE INCINERATION DIRECTIVE AND PACKAGING DIRECTIVE

Country	Domestic environmental issues	Domestic policy aims	Economic instruments	Legislative requirements	Voluntary and other measures
Sweden	<p>Swedes culturally averse to wasting resources. Also public reaction against landfill and incineration, including dioxin debate in 1980s. More recently, energy policy has become a driver – incineration important role to play in heat and electricity generation, especially through district heating systems.</p> <p>No geographical constraints on landfill but one of lowest rates in EU – only 1.4% of household waste in 2009.</p> <p>Sweden had 30 incineration plants in 2008 and approach half of household waste sent for incineration. Provides heat equivalent to needs of 810,000 homes, and electricity equivalent to needs of</p>	<p>A good built environment: “The total quantity of waste should not increase, and the maximum possible use should be made of the resource that waste represents, while at the same time minimising the impact on, and risk to, health and environment.”</p> <p>A Strategy for Sustainable Waste Management, 2005 - targets:</p> <ul style="list-style-type: none"> - By 2010 at least 50% household waste to be recycled by recovery, including biological treatment. - By 2010 at least 35% of food waste from households, restaurants, institutional catering and shops to be 	<p>Landfill tax: introduced 2000; now E40/tonne.</p> <p>Variable municipal waste charging: fixed so that waste management self-financing. Municipalities allowed to charge according to volume of waste produced, weight or frequency of collection. Vary significantly. Most householders can get reduced waste charges for composting or accepting lower frequency collections.</p> <p>Deposit-refund systems: mandatory systems for aluminium and plastic beverage containers. Voluntary system for glass bottles. Estimated return rate >90%.</p>	<p>Landfill ban: sorted combustible waste from 2002; all organic waste from 2005.</p> <p>Extended producer responsibility: concept introduced by Thomas Lindhqvist in 1990 report to Swedish Ministry of Environment. Defined by him as “an environmental protection strategy to reach an environmental objective of a decreased total environmental impact from a product, by making the manufacturer of the product responsible for the entire life cycle of the product and especially for the take-back, recycling and final disposal of the product”.</p> <p>Legislation requires producers to meet statutory targets for recycling. Up to</p>	<p>In 2008 Government appointed a negotiator to help identify better co-operative waste handling solutions between municipalities and producers, for the recycling of glass and paper.</p> <p>New agreement on waste recycling established in early 2009 between municipalities, county councils, recycling companies and manufacturers of recyclable paper and packaging. Aim was to strengthen cooperation between the parties and improve recycling efforts. E.g. increase in number of available recycling stations.</p> <p>Voluntary commitment to emissions reduction: Avfall Sverige – Swedish</p>

Country	Domestic environmental issues	Domestic policy aims	Economic instruments	Legislative requirements	Voluntary and other measures
	<p>250,000 homes.</p> <p>In 2008, 13% of household waste went to biological treatment – just over a quarter food waste, remainder park and garden waste.</p> <p>In 2008, recycling / efw rate of 80% for packaging.</p>	<p>recycled by biological treatment.</p>	<p>Incineration tax: tax on incineration of “fossil” component of household waste. Aim to encourage recycling (especially of plastics), reduce CO2 emissions, encourage combined heat and power generation.</p> <p>Tax based on assumed fossil content – currently 12.6% of waste stream. Waste incineration facilities with only heat generation pay SEK 444/tonne of waste; facilities generating power as well pay lower rate.</p>	<p>producers how they meet targets, in most cases rely on bring systems. Collection and processing costs passed onto consumer in product price.</p> <p>Requirements for changed in 2008 to make producers liable for establishing incentive structures and collection facilities that facilitate collection and recycling.</p> <p>Waste separation obligation: since 1994, householders required to separate waste to facilitate collection under EPR.</p>	<p>Waste Management (trade association for waste management and recycling industry) proposed that biogas and biogas upgrading plants should measure their methane emissions every three years and draw up action plans to deal with any emissions that cannot be eliminated immediately. At start 2008, 17 biogas and 15 biogas upgrading plants had committed.</p>
Netherlands	<p>Public pressure through 1980s around issues including dioxin emissions from incineration plants and their impact on milk quality, pollution from landfill sites and growth in waste generation requiring more treatment</p>	<p>Based on “Lansink’s ladder” – Dutch waste hierarchy concept enshrined in Waste Framework Directive</p> <p>Target to increase waste recovery to 83% by 2012, and to limit waste disposal to 9.5bn kg.</p>	<p>Landfill tax: E107.49 in 2010;</p> <p>Environmental Quality of Electricity Production Incentive Scheme: subsidy payments for electricity production based on waste to encourage</p>	<p>Landfill ban: applies to 35 categories of waste if possible to re-use, recycle or incinerate. From 1995, ban on landfilling household waste except where temporary shortage of incineration capacity.</p>	<p>Government policy a critical factor in giving companies confidence that awareness of need for change will be translated into legislation, regulations and fiscal measures. Dutch regulatory framework has given rise</p>

Country	Domestic environmental issues	Domestic policy aims	Economic instruments	Legislative requirements	Voluntary and other measures
	<p>capacity in constrained environment. Lack of space and growing environmental awareness forced Dutch government into early action to reduce landfilling.</p> <p>Recycles 64% of waste, most of remainder incinerated to generate power. Netherlands has a smaller emphasis on incineration (11 plants in 2008). In 2008 Netherlands (2%) second smallest proportion landfilled in EU.</p>	<p>Second national waste management plan 2009-2021: main aim is to contribute to “the creation of conditions and the general framework for the conservation and improvement of the environment to contribute to sustainable development”.</p> <p>Overall objectives are:</p> <ul style="list-style-type: none"> - limit growth in waste generation (by decoupling from economic growth) - reduce the environmental impact of waste (by optimising recovery and re-use) - minimise environmental product chains <p>Targets are:</p> <ul style="list-style-type: none"> - limit waste production to 68m tonnes in 2015; 73m tonnes in 2021; - promote total waste recovery from 83% in 2006 to 85% in 2015; - promote recovery / re- 	<p>investment in incineration for recovery. In 2007, 2.9E cents subsidy per kw/hr of electricity supplied by power plants or equivalent that use biomass for auxiliary firing or co-incineration and have energy yield of more than 26%. Heat also included in determining yield threshold.</p> <p>Waste charging: by 2000, approx 20% Dutch municipalities implemented pay per kg, bag or waste bin. An additional 40-60% pay collection charge related to number of persons in household.</p> <p>Product charges and taxes: included in price of certain good including ELVs, packaging waste, batteries, white goods, brown goods (household electrical entertainment) – NB not necessarily incentive to improve</p>	<p>Requirement for municipalities to collect 3 types waste separately – compostable, recyclable, mixed. Compostable and mixed must be collected at kerbside.</p> <p>Producer responsibility: operations often funded through introduction of waste management fee, paid into common fund by producers or importers for each new product placed on market. In almost all cases, producers have set up collective systems to meet obligations.</p>	<p>to manufacturing industry based around techniques such as sorting and composting.</p> <p>Voluntary schemes for separate collection of recyclables: almost total participation by municipalities in schemes for paper, cardboard, glass, metals, textiles and small chemical wastes. Mostly kerbside, some bring.</p> <p>National government and provinces stimulate and facilitate municipalities in area of waste prevention and separation through monitoring and benchmarking. In addition, a was introduced by the Dutch Government in 2001.</p>

Country	Domestic environmental issues	Domestic policy aims	Economic instruments	Legislative requirements	Voluntary and other measures
		<p>use of household waste from 51% in 2006 to 60% in 2015;</p> <ul style="list-style-type: none"> - promote waste recovery/re-use of waste from small business from 46% in 2006 to 60% in 2015; - at least hold current re-use/recovery rate for C&D waste at 95% - at least hold current re-use/recovery rate for industrial waste at 90% - reduce landfilling of burnable waste to 0 by 2012; - reduce the environmental pressure of seven specific waste stream-chains by 20% per chain. 	<p>product design as no differentiation in extra charge to consumer on basis of recycling performance.</p> <p>Deposit-refund systems: for beer bottles, drink containers. Deposit returned by automatic machines at supermarkets.</p> <p>Stimulation Programme on Separation and Prevention of Household Waste: introduced 2001; government grant scheme for municipal projects that contribute to household waste prevention and to separate collection.</p>		
Germany	1997-2008 Germany reduced municipal solid waste generation by >10%. 2008 figs show Germany (with 67 plants) has greater emphasis on incineration than UK. Germany landfilled 1% of	<p>Goal is full recovery of municipal solid waste by 2020:</p> <p>“By 2020 at the latest, waste treatment technologies should be so advanced and</p>	Green dot scheme: separate from local municipal recycling schemes; recovers and recycles packaging put into circulation in Germany on behalf of its licensees. Funded by	Landfill ban: ban introduced 2005 on landfilling of untreated biodegradable matter and municipal solid waste containing organics. Problem is lack of pre-treatment	-

Country	Domestic environmental issues	Domestic policy aims	Economic instruments	Legislative requirements	Voluntary and other measures
	waste in 2008 – least in EU.	ubiquitously available that all waste from human settlements in Germany can be fully and environmentally safely recovered.”	<p>licence fees from companies wishing to sell their consumer products – such companies print Green Dot on packaging, thereby indicating that they meet requirements of German packaging regulations.</p> <p>Deposit refund system: mandatory one-way deposit system introduced 2003. Deposit is 25eurocent. Great success – 98.5% refillable bottles returned by consumers – highest in world.</p> <p>Waste charging: households pay waste management charges based on local authority fee scales reflecting actual cost of treatment and disposal.</p>	<p>facilities for commercial waste, leading to significant requirement for interim storage (often in landfill).</p> <p>Producer responsibility: Packaging Ordinance 1991 played pioneering role in reducing packaging material in marketed products and increasing the proportion of material recovered from packaging waste. Requires producers and retailers to take back and recycle a certain % of products.</p>	

ANNEX J - COMPARISON OF MIX OF INSTRUMENTS / VOLUNTARY MEASURES IN PLACE TO ACHIEVE WATER QUALITY OUTCOMES (PARTICULARLY TO REDUCE CONTAMINATION OF GROUNDWATER AND SURFACE WATER WITH MINERALS SUCH AS PHOSPHATE AND NITROGEN), INCLUDING TO MEET REQUIREMENTS OF WATER FRAMEWORK DIRECTIVE AND NITRATES DIRECTIVE

Country	Domestic environmental issues	Domestic policy aims	Economic instruments	Legislative requirements	Voluntary and other measures
Sweden	<p>Very high standard sewage treatment. In 2004, Sweden already had very advanced urban waste water treatment – including tertiary treatment for phosphorus in 95% of treatment plants. 36% of treatment capacity equipped for nitrogen removal.</p> <p>Pressure on water resources and per capita withdrawals low.</p> <p>Swedish efforts to reduce environmental impact of agriculture have been quite effective in reducing the amount of agricultural inputs used: nutrient surpluses from agriculture steadily reduced over past 20 years.</p>	<p>EQO Zero eutrophication: nutrient levels in soil and water must not be such that they adversely affect human health, the conditions for biological diversity or the possibility of various uses of land and water.</p> <p>EQO Good quality groundwater: groundwater must provide a safe and sustainable supply of drinking water and contribute to viable habitats for flora and fauna in lakes and watercourses.</p>	<p>Pesticide tax: implemented 1986 based on amount of active ingredient. In addition to tax, producers pay yearly charge corresponding to 2.6% of sales value of product. Plus producers are charged when registering new products or changing existing registrations.</p> <p>Environmental tax on nitrogen fertiliser: introduced 1980s; since 1994, set at a fixed rate of 20% of the price of fertiliser (about 3% of the farmer's income).</p>	<p>Baltic Sea Action Plan for Sweden: includes measures to reduce nutrient load including by:</p> <ul style="list-style-type: none"> - improving N-treatment in municipal wastewater treatment; - use of technology for on-site treatment for single homes, small businesses and scattered settlements; - strengthen implementation of Nitrates Directive, in 2010 measures introduced including: limits to application of livestock manure; prohibition on application of fertiliser within certain distance of watercourse; 	<p>Voluntary measures in National Pesticide Reduction Plan 1980: local advisory groups established by unions. Provided farmers with advice on how to fulfil regulatory obligations. E.g. working out complex calculations such as the effect that wind drift could have on buffer zone distance between the area of application of pesticides and the watercourse.</p> <p>Current advisory services include forecasting and warning services, demo trials, info on how to reduce dosage rate, supported by research on needs-based crop protection, spray techniques and organic methods.</p>

Country	Domestic environmental issues	Domestic policy aims	Economic instruments	Legislative requirements	Voluntary and other measures
	Improving the environment of the Baltic Sea is a key priority.			prohibition of spreading organic and mineral fertilisers during winter; extension of areas where farmers may be granted payment when cultivating catch crops / using spring cultivation; or where planting riparian zones alongside watercourses etc.	Swedish farmers required to attend 3-day training course and there is a voluntary programme for testing of spray equipment .
Netherlands	<p>Problem of Nitrogen surplus in Netherlands much more serious than in UK. Agriculture accounts for over two thirds of total Nitrogen leached to Dutch surface waters.</p> <p>Faced with rapidly increasing animal intensive agriculture 1960-85 under CAP incentives, Netherlands forced to confront non point source water pollution as a significant and visible issue.</p>	<p>National Water Plan 2009-15: policy to achieve sustainable water management. Focuses on protecting against flooding and providing sufficient clean water as well as various types of water use.</p> <p>Fourth Action Programme on the Nitrates Directive (i.e. manure policy) 2010-13: “manure policy” to reduce contamination of groundwater and surface water with minerals such as phosphate and</p>	<p>Minerals Accounting System (MINAS) 1998-2005: registration of nitrogen and phosphorus inputs and outputs at farm level. Where difference between inputs and outputs exceeded specified levels, farmers had to pay a levy per unit above levy-free level. So incentive to lower inputs. Levy free surpluses lowered over time. Problem was lack of direct relationship between N and P surpluses and N and P</p>	<p>1984-90: attempts to stop growth in animal production.</p> <p>1990-98: lowered application limits for animal manure, restrictions on timing of manure application, measures to decrease ammonia emissions to air.</p> <p>2006+: introduction of system of application standards for N and P.</p> <p>Fourth Nitrate Action Programme 2010-13 to</p>	<p>Local-level integrated water resource management: new collaboration between municipalities (responsible for spatial planning) and waterschappen (local Water Boards) responsible for drainage and waterway management.</p> <p>Cities like Nijmegen and Groningen have made huge strides towards improved water management based on principles of multi-</p>

Country	Domestic environmental issues	Domestic policy aims	Economic instruments	Legislative requirements	Voluntary and other measures
	<p>Entire country is an NVZ.</p> <p>Water mgt an important issue because ¼ of Neth below sea level.</p>	<p>nitrogen (and implement EU Nitrates Directive).</p>	<p>losses from agriculture. Plus not compatible with Nitrates Directive.</p> <p>Waste water levy: introduced 1971. Revenue recycled for support of municipal sewage treatment plants and to support in-house pollution abatement in industry.</p> <p>Households pay a flat rate, small firms pay a fixed rate, medium sized firms pay according to non-measured factors, large firms pay according to direct measurements.</p> <p>Charge based on "pollution equivalents" that are in the particular discharge, where one pollution equivalent is standardised to the amount of effluent that an individual produces.</p> <p>The levy applies to discharges of particular chemicals.</p>	<p>be achieved via mix of measures:</p> <ul style="list-style-type: none"> - application standards for N and Phosphate - restriction of manure spreading in certain periods - increased storage capacity for livestock manure - extension of manure-free zone along watercourses in higher parts of Netherlands - animal production rights for pigs and milk quota system for cattle - development programmes to make agriculture more sustainable, including innovation. 	<p>stakeholder participation (with support base evolving through interaction between different stakeholders).</p>

Country	Domestic environmental issues	Domestic policy aims	Economic instruments	Legislative requirements	Voluntary and other measures
Germany	<p>Diffuse pollution results from high nitrogen surplus of the farming sector, and nitrate leaching into the groundwater. Entire country is NVZ.</p> <p>Flood damage caused by lack integration between water management, transport policy and nature conservation objectives.</p>	<p>Policy objective set early 1990s for 2000, but extended to 2010: 100% rivers in quality class II (moderate pollution) by 2010.</p>	<p>Waste water charge: in place in all Lander by 1983. Tax rose from 12DM in 1981 to 70 DM in 1997.</p> <p>Tax is effectively a penalty tax for non-compliance with standards, levied on a 'damage unit' (equivalent to pollution generated by one individual). Applies to direct discharges only.</p>	<p>Nitrates Directive delivered through</p> <p>Fertilising Ordinance: mandatory standards for nitrogen use in agriculture. Beyond that level of good farming practice, voluntary agri-environmental measures with compensation payments are promoted as supplementary measures.</p> <p>Water Protection Zones (WPZs): designated for groundwater and surface waters; water resources are given the highest protection and priority is given to WPZs over all other land use.</p> <p>Measures within WPZs are driven by compulsory regulations or agreements between water companies and farmers.</p> <p>Activities such as intensive fertiliser use are prohibited and land owners have to tolerate</p>	<p>MEKA project: voluntary measure in Baden-Wurtemberg to improve environmental quality. Binds participating farmers to contract for a minimum of five years. Farmers receive compensation payment for taking part in the project and are awarded points depending upon the different environmental management practices applied.</p> <p>Co-operation in groundwater protection: Lower Saxony has over 15 years of experience of co-operation in groundwater protection in water protection areas for drinking water. Aim to develop win-win solutions in a round table approach together with all concerned stakeholders, such as the drinking water company, the authorities</p>

Country	Domestic environmental issues	Domestic policy aims	Economic instruments	Legislative requirements	Voluntary and other measures
				<p>regulatory activities such as water sampling. Compensation to farmers is provided under certain conditions.</p> <p>The state of Baden-Wurttemberg in Germany has two main environmental programmes for reducing diffuse pollution from agriculture, the Market Release and Conservation programme (MEKA) and the Regional Regulation for Water Protection Areas (SchALVO). MEKA is a voluntary scheme and SchaALVO is compulsory.</p> <p>SchALVO scheme: Baden-Wurttemberg, compulsory scheme in operation since 1988; restricts the application of fertilisers in water protection areas in order to prevent the pollution of groundwater by nitrates and pesticides. Farmers receive compensation for</p>	<p>involved (e.g. Chamber of Agriculture), and land users (agriculture, forestry and horticulture). The cooperation committees develop water protection ideas for each drinking water catchment.</p> <p>Water resources management in co-operation with agriculture (WAgriCo): joint project with UK, conducted by Federal Agricultural Research Centre. Objective is to reward farmers for improvement of nutrient management at farm level. Reward calculated based on farm-gate balance.</p>

Country	Domestic environmental issues	Domestic policy aims	Economic instruments	Legislative requirements	Voluntary and other measures
				<p>their land that is taken out of productivity, financed by the water users of Baden-Wurtemberg who pay a tax on the purchase of water. If the monitored nitrates concentration exceeds certain standard farmers have to repay compensation money.</p>	