What are EPRs?

The OECD conducts in-depth assessments of the environmental policies and programmes of selected OECD and key partner countries. These Environmental Performance Reviews (EPRs) identify good practice and make recommendations to strengthen the reviewed countries’ policies and instruments for promoting green growth. They are conducted through a peer review process which involves countries assessing each other as equals.

The EPRs are based on national and international data and make wide use of economic analysis. Since work began in 1992, more than 70 EPRs of OECD member and partner countries have been conducted.

Why an EPR of Sweden?

This is the third OECD review of Sweden’s environmental performance: the first was published in 1996, the second in 2004. It provides Sweden’s policy makers with a wide-ranging assessment of environmental progress and policies. The review aims to identify where new or reinforced efforts might be needed to enhance policies’ coherence and cost-effectiveness. It involved a constructive and mutually beneficial policy dialogue between Sweden and the countries participating in the OECD Working Party on Environmental Performance. The main report presents 27 recommendations. These Highlights summarise the main findings, with a special emphasis on:

- Green growth
- Climate change mitigation
- Marine ecosystem services

“Sweden is a frontrunner in using market-based taxes to discourage environmentally harmful activities and foster new technologies. But the better one does, the harder it will need more cost-effective policies and a fairer sharing of costs to meet future goals.”

Simon Upton, OECD Environment Director
Overview

Sweden is a leader in many fields of environmental policy. It has a robust, innovation-oriented economy and a well-developed welfare state system. Sweden has a sound environmental governance structure. It is among the most innovative OECD countries when it comes to environment-related technology, and has pioneered several policy instruments, many based on the principle of putting a price on environmentally harmful activities. Progress in cutting greenhouse gas (GHG) emissions has been impressive and Sweden has committed to ambitious climate goals. With neighbouring countries, Sweden shares a responsibility for the Baltic Sea, a very vulnerable marine ecosystem. Taking account of the benefits of marine ecosystems in decision making is, therefore, all the more important. While overall environmental quality is very good, the country faces challenges in meeting the very ambitious environmental quality objectives it has set for itself. The Environmental Performance Review of Sweden identifies lessons from the country’s experience and suggests further steps towards a green future.

OPPORTUNITIES

- A comprehensive set of ambitious environmental objectives.
- A long tradition of open, free access to environmental information and strong public support for environmental policy.
- A well-balanced environmental policy mix that includes prices on environmentally harmful activities.
- A low-carbon energy mix, with a high share of renewable energy resources.
- A top ranking on the list of the most eco-innovative OECD countries.
- A leading role in climate change mitigation, including as a pioneer in carbon taxation.

CHALLENGES

- Lack of coherence and clarity in the way environment is managed at different levels of government.
- A need to reinforce policy coherence and cost-effectiveness to make further progress and meet ambitious goals.
- Unequal distribution of the costs of environmental and climate policies among sectors of society, with certain tax exemptions and perverse incentives remaining.
- Relatively unfavourable conservation status for some protected habitats and species.
- High pressures on the marine environment, including eutrophication of the Baltic Sea.
- Insufficient consideration of the economic benefits of marine ecosystems in policy making.
Green growth indicators | Sweden

The OECD has developed a set of green growth indicators and these are used to evaluate countries as part of their Environmental Performance Reviews: (1) the environmental and resource productivity of the economy; (2) the natural asset base; and (3) the environmental dimension of quality of life. These have been assessed for Sweden using national and international data.

CARBON, ENERGY AND RESOURCE EFFICIENCY OF THE ECONOMY

- Sweden has large hydropower potential and iron ore resources, but fully depends on imports of fossil fuels for domestic consumption. Forests are a crucial economic resource and provide biomass for energy use.

- The share of fossil fuels in energy supply is a little over 30%, very low compared to most OECD countries. Nuclear power and renewable energy sources make up the rest. Use of renewables, mainly biomass and hydropower, has continued to grow and now exceeds Sweden’s target of renewables accounting for half of energy delivered to final consumers (see page 10).

- Sweden has been very successful in decoupling GHG emissions from economic growth: from 2000 to 2012, total GHG emissions decreased by 16% while overall GDP grew by about 30% (Figure 1). As a result, Sweden more than achieved its commitments to reduce GHG emissions, both that made under the Kyoto Protocol and its more stringent national target (see page 10).

- As a result of the low-carbon energy mix, carbon dioxide (CO₂) emissions from fuel combustion per unit of GDP have decreased by more than 30% since 2000, making Sweden’s carbon intensity the second lowest among OECD countries.

- The material productivity of Sweden’s economy (economic output per unit of material used) has improved, in part through an effective waste management policy. With a mix of landfill taxes and bans and producer responsibility programmes, composting, material recycling and incineration with energy recovery have increased. Less than 1% of municipal waste is disposed of in landfills (Figure 2).

- Since 2000, nitrogen and phosphorus balances have dropped significantly, more than the OECD average, while agricultural production has remained relatively stable. This is partly due to declines in fertiliser use, although the amount of nitrogen fertiliser used per square kilometre of agricultural land is higher than the OECD average.
More than two-thirds of Sweden’s territory is flat and covered by forests. While more than 60% of the forest area is certified, the intensity of forest resource use is among the highest in the OECD. Many forest species are endangered due to, among other things, infrastructure development and nitrogen deposition, as well as natural disturbances and climate change.

Protected natural areas have been expanded since 2000. They cover a variety of ecosystems (see p. 12). About 14% of the land area and freshwater bodies, 5% of the forest area and 6% of the marine waters are under some form of nature protection. Further efforts are necessary to achieve the Aichi biodiversity targets on protected areas.

The conservation status of some habitats, such as dunes, grasslands and forests, is unfavourable in some areas. Yet the shares of known species of mammals, birds and fish that are threatened in Sweden are generally lower than in other OECD countries.

Several freshwater bodies and most marine ecosystems suffer from excess nutrients, or eutrophication, caused by surface run-off. High loads of nitrogen from agriculture, wastewater, industry and shipping are a major cause of eutrophication of the Baltic Sea.

With its abundant water resources and relatively small population, Sweden has one of the OECD’s lowest levels of water use intensity. Groundwater quality is generally very good and the quality of most bathing waters is excellent. However, intensive use of hydropower and the presence of large channels have modified the ecology of rivers and lakes.

Sweden’s people place high value on the environment, assigning greater importance to environmental protection than the European average. They also appear to be more satisfied with their country’s environmental quality than people in other European countries.

The risk of developing diseases associated with water and sanitation problems is among the lowest in the world: a very high share of the population is connected to advanced wastewater treatment plants.

Although emissions of major air pollutants have fallen significantly, air concentrations of particulate matter, such as soot, often exceed accepted health standards in some cities. Transport, other mobile sources and small-scale wood burning are major sources of emissions of nitrogen oxides (NO\textsubscript{X}) and particulates.

Emissions of heavy metals such as lead and mercury have also fallen significantly since 2000, but their level is still considered of concern, partly due to emissions from other countries. Potential exposure to persistent organic pollutants accumulated in fish from the Baltic Sea poses a major human health risk.
Policies for green growth

Sweden has a long history of environmental policy. It established ambitious environmental objectives and a sound institutional system to develop, implement and monitor environmental policies and measures. Sweden is a pioneer in environmental taxation and other pricing instruments, which have helped reduce such environmental externalities as GHG emissions and promote the adoption of cleaner technology. Sweden has invested in the environment to promote innovation and growth domestically and internationally, with significant expenditure in research and development (R&D).

SOUND ENVIRONMENTAL GOVERNANCE

Sweden has a unique system of environmental quality objectives (EQOs), which underlie its environmental policies in all areas and involve all government agencies and administrative levels. The EQO system is a major society-wide undertaking towards sustainable development. However, policy priorities do not match available resources, reducing actions’ effectiveness. Most EQOs will not be reached by the indicative 2020 deadline.

County and local governments have a fair degree of autonomy, but several mechanisms are in place to facilitate horizontal and vertical institutional co-operation. However, differing degrees of capacity for implementing environmental measures, combined with the influence of local interests, can result in inconsistencies in how measures are put into effect and enforced. Similarly, the quality of strategic environmental assessment of spatial plans varies among local authorities.

Sweden has a long environmental democracy tradition. By ratifying the Aarhus Convention, it further strengthened provisions guaranteeing open access to environmental information, public participation in decision making and access to environmental justice. Environmental information is made available through an Internet portal. Among OECD Europe countries, Sweden’s population is the most satisfied with the availability and quality of environmental information.

INVESTING TO PROMOTE GREEN GROWTH

Several subsidy programmes have encouraged businesses and households to invest in renewables, energy efficiency, GHG emission mitigation and more environment-friendly farming. As a result, industry expenditure on environmental protection, for example, has increased significantly. Questions remain, however, about whether such investment would have been made without government support, and about the resulting windfall profits. In addition, such measures could be made more transparent in budget reporting.

Sweden was the third most innovative OECD country in environment-related technology in terms of patents per capita in 2009-2011 (Figure 3). Since the mid-2000s, the government has increased its spending on R&D for environment and energy. Strong environmental and innovation policies have helped Sweden develop clusters of energy and environmental technology businesses, some with European or global reach.

The environmental goods and services sector has grown rapidly, but is relatively small. Sweden has so many funding bodies and programmes that this, paradoxically, may hamper the development of larger-scale research initiatives. It also makes it hard to find the best funding opportunities, especially for small and medium-sized enterprises.

ENVIRONMENTAL QUALITY OBJECTIVES

The EQO system, established in 1999, is considered the country’s largest co-operative project. The 16 objectives include reduced climate impact, clean air, a non-toxic environment and sustainable forests. The generational, or overall, goal is “to pass on to the next generation a society in which major environmental problems have been solved without increasing environmental and health problems beyond Sweden’s borders”. Milestone targets specify concrete actions towards achieving one or more EQOs.
GETTING PRICES RIGHT

Sweden was one of the first countries to introduce taxes for environmental purposes, including a tax on emissions of CO₂ in 1991. The CO₂ tax rate has been substantially raised over time and it is now among the world’s highest. Sweden is one of the few countries to successfully undertake a “green tax shift”, reallocating the tax burden from labour to environmentally harmful activities, namely CO₂ emissions and the use of energy generated from burning fossil fuels (Figure 4). Other instruments have been introduced in the last ten years, including a landfill tax, CO₂-based vehicle taxes and congestion charges in Stockholm and Gothenburg (see page 9).

Much of the progress in environmental taxation dates back to the 1990s or early 2000s. Tax rates are not systematically adjusted for inflation, so their incentive function weakens over time. The design of some taxes and charges, such as the NOₓ charge and the CO₂-based annual vehicle tax, could be improved (see page 8).

Despite progress in reducing exemptions from energy and carbon taxes, the remaining exemptions can decrease incentives to use energy efficiently. Sectors such as small industry, agriculture and forestry still have lower energy and CO₂ tax rates than households. The energy tax on diesel is half that on petrol, even though burning diesel in vehicles generates more hazardous local air pollution. Other measures with potentially undesirable effects include generous tax treatment of company cars and commuting allowances.

Next steps | towards green growth

- Make the EQOs a more effective strategic framework for environmental policy. Separate domestic targets from international ones. Set short- and medium-term priorities, and clearly define measures and resources.
- Apply environmental taxes and prices to more products and activities, especially in areas other than energy use, while possibly reducing other taxes.
- Assess the potential environmental consequences of tax breaks and other subsidies.
- Evaluate environmental subsidies with a view to maximising their environmental impact while reducing overlap and potential windfall profits.
- Improve transparency in water pricing policy for the various economic sectors with a view to more fully applying the polluter-pays and user-pays principles.
- Further develop environment-related technology and encourage its adoption, including by streamlining funding programmes and introducing binding environmental requirements in public procurement procedures.
THE CHARGE ON NO\textsubscript{X} EMISSIONS

In order to combat acidification, in 1992 Sweden introduced a charge on NO\textsubscript{X} emissions from stationary combustion facilities (such as power plants and industrial installations) as an incentive to reduce emissions beyond the regulatory limits. To address competitiveness concerns, all proceeds from the charge are paid back to the plants, based on the amount of energy used. This means that plants with low emissions vis-à-vis energy production are net receivers of funds, while plants with high emissions in relation to energy production are net payers. The NO\textsubscript{X} charge stimulated demand for NO\textsubscript{X} abatement technology and thus increased innovation. It also helped halve NO\textsubscript{X} emissions per unit of energy produced.

However, the charge rate needs to be systematically adjusted to maintain its incentive function. In addition, the refund mechanism gives rise to an implicit subsidy to producers: they do not pay the full environmental cost of the pollution they generate.

A CO-MANAGED NATIONAL PARK

The idea of protecting the waters and shores of the Koster Islands as a national park goes back to the late 1980s. The area has habitats and species found nowhere else in Swedish waters. Local people engaged in fishing, however, opposed the plan for fear of losing their means of subsistence. After some failed attempts, negotiations with local residents and fishers resumed in the early 2000s. They focused on the reasons for protection, using maps of the sea floor displaying the conditions required for species to flourish. This education effort was successful, and Kosterhavet National Park opened in September 2009. It operates on an innovative co-management model, with people representing the affected municipalities, fishers and local community organisations maintaining the park under set guidelines. Commercial fishing is still allowed, though special regulations apply.

CLEANING WITH MUSSELS

Between 2005 and 2011, the Lysekil municipality paid a mussel farmer to remove nutrients from the coastal waters where the wastewater treatment plant discharged. The payment was based on the nitrogen and phosphorus content of the harvested mussels.

Wastewater treatment in Lysekil discharged 39 tonnes of nitrogen per year into the bay, but the programme results showed that production of 3 500 tonnes of blue mussels per year helped fully remove this nitrogen load, exceeding the minimum legal requirement of 70% nitrogen removal from wastewater treatment plants. In addition, the mussels capture phosphorus and organic material that would put stress on the marine environment.

This example of a payment for ecosystem services (PES) programme cost the municipality about EUR 100 000 per year less than traditional nitrogen removal. A 2009 bill titled “A Coherent Swedish Maritime Policy” proposed expanding mussel farms to reduce eutrophication of Sweden’s coastal waters.
TOWARDS ZERO WASTE LANDFILLS
Swedish waste management legislation and taxes, combined with energy and carbon taxes, have played a major role in diverting waste away from landfills and towards recycling and waste incineration with energy recovery in district heating systems (see page 4).

CONGESTION CHARGE
After a trial period and a referendum, a traffic congestion charge was introduced in Stockholm in 2007: a charge equivalent to between EUR 1 and EUR 2 is imposed for entering the inner city on weekdays, with a higher charge at peak hours. Most of the revenue is intended to finance investment in public transport. The congestion charge has helped reduce city centre traffic by around 20%. While public opposition to the charge was considerable, analyses indicate that it has diminished over time. A similar charge was launched in 2013 in Gothenburg. These congestion charges are the only form of road pricing currently used in Sweden. Passenger cars do not pay tolls on the national road network. Heavy goods vehicles pay an annual road charge linked to vehicle size and environmental classification but not to distance driven.

THE GREEN LIST
In Västra Götaland county, a project called Considerate Design works with manufacturers to develop office furniture, textiles and furniture for public spaces that meet criteria for accessibility and reduced environmental impact. The share of products that comply, and thus go on a so-called Green List, steadily increased from 33% of purchase value in 2008 to more than half in 2012. The Green List, now at over 450 products, has boosted knowledge and green ambitions in the furniture industry and played a large role in advancing the environmental maturity of the market in Sweden. One key factor in this success was collaboration with interior design companies. Another was the allocation of time and resources to guide and train potential suppliers and procurement staff, helping them understand and use the Green List.

The legislation includes bans on landfilling of combustible waste (since 2002) and organic waste (from 2005). A landfill tax of SEK 250 per tonne was imposed in 2000 and increased gradually to reach SEK 435 per tonne in 2006; it now applies to all waste exempted from these bans. Less landfilling and more energy recovery from waste incineration have resulted in a dramatic decline of GHG emissions from waste management. However, the expansion of waste incineration can undermine prevention and recycling of waste.
Sweden has taken a global leadership role in addressing climate change, and aims to continue doing so. GHGs emissions have markedly declined, thanks to an effective mix of policies and the increase in renewable energy use. Many low-cost approaches for curbing GHG emissions have already been deployed. To avoid excessively high costs and maintain political support, Sweden will have to adopt more cost-effective policies, allocate compliance costs more equitably and further encourage technological change. This is all the more important as the country has established the ambitious long-term objectives of “no net GHG emissions into the atmosphere” by 2050 and “a vehicle fleet independent of fossil fuels” by 2030.

In-depth | climate change mitigation

More than meeting climate targets. With a 20% drop in GHG emissions between 1990 and 2012, Sweden exceeded both its commitment under the Kyoto Protocol and its more stringent national target (Figure 5). Emissions fell in several sectors, including industry, transport, residential and waste management. Nevertheless, while Sweden is on track to meet its 2020 target, the current GHG emission trajectory is not sufficient to reach the 2050 vision of zero net emissions.

Pricing carbon. The climate policy mix relies on the carbon tax on energy products and the EU Emission Trading System (EU ETS). The tax rate on CO₂ emissions has progressively increased and is higher than comparable taxes in most OECD countries. A gradual reduction of energy and CO₂ tax exemptions would further improve the effectiveness and efficiency of Sweden’s climate policy.

Maintaining a low-carbon energy mix. Between 2000 and 2012, energy from renewables grew by 18% to exceed 35% of Sweden’s energy needs, the fourth highest share among OECD countries (Figure 6). A tradable electricity certificate system has driven the deployment of renewables in power generation more cost-effectively than in several other OECD countries. The system, together with the carbon tax, has also been decisive in attracting investment in combined heat and power production and district heating, driving the dramatic decline of GHG emissions from space heating in buildings – by 77% between 2000 and 2011.

Reducing emissions from passenger cars. GHG emissions from passenger vehicles have declined by 12% since 2000, thanks to increasing oil world prices, the carbon tax, vehicle taxes, subsidies for cleaner vehicles and congestion charges (see page 9). Sweden gives favourable tax treatment to biofuels, which now account for more than 12% of transport fuels. However, such tax discounts are a costly way to cut GHG emissions.
Develop a strategic action plan with intermediate domestic targets and effective coordination and implementation mechanisms for achieving the 2030 and 2050 objectives.

Strengthen evaluation of the cost-effectiveness and distributional impact of climate policy.

Remove remaining exemptions from carbon and energy taxes that are not justified on environmental, economic and social grounds.

Evaluate the policy mix in the transport sector, including motor fuel taxes and vehicle taxes, the tax treatment of biofuels, the taxation of company cars and commuting allowances, and road tolls for heavy goods vehicles.

Ensure that planning of, and investment in, transport infrastructure are consistent with climate policy objectives.

CHALLENGES

Balancing distribution of climate policy costs. Effective carbon prices vary widely across the economy, partly because some sectors (including small industry, agriculture and forestry) benefit from lower energy and CO₂ tax rates. The industry and energy sectors that participate in the EU ETS have paid very little, if anything, due to persistent over-allocation of free emission allowances and the resulting low price within the system. As a result, GHG emissions have mainly been reduced in sectors where carbon prices are higher – notably the residential sector – while cheaper abatement options may have been missed.

Monitoring cost effectiveness. Achieving Sweden’s ambitious climate goals requires adjustments that may come at very high costs for the economy and society. Reducing overlap among climate policy measures to improve the overall policy’s cost-effectiveness is, therefore, of paramount importance. While procedures to monitor GHG emissions and evaluate climate policy are well developed, they have paid insufficient attention to the cost-effectiveness and distributional impact of the policy. A comprehensive strategic action plan is needed to galvanise and guide action and to effectively monitor progress towards the targets.

Cutting transport emissions. Transport is the largest source of GHG emissions in Sweden, accounting for about one-third of the total. This figure underlines the size of the challenge involved in achieving the goal of a fossil-fuel-free vehicle fleet by 2030. There have been few initiatives to reduce GHG emissions from heavy goods vehicles, which have increased since 2000. An additional need is to better reflect environmental costs in the price of road freight transport so as to make alternative modes (rail and sea) more competitive.
The Baltic Sea is the largest body of brackish water in the world. As one of nine Baltic Sea countries, Sweden attaches great importance to the marine environment and actively engages in international and regional initiatives. Several marine-based economic sectors (including shipping, fishing, coastal industry and tourism) contribute to Sweden's economy and employment, but also exert pressures on marine ecosystems. There is increasing evidence of the vulnerability of the Baltic Sea, and new pressures are emerging, including climate change effects, acidification and invasive alien species. All this has led Sweden to increase attention to the management of marine ecosystem services in recent years. Like many other countries, however, Sweden is at a very early stage of implementing the ecosystem approach in its marine policy.

OPPORTUNITIES

Pursuing international engagement. Sweden collaborates with the European Union, the Baltic Marine Environment Protection Commission (HELCOM) and the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR). There has been increasing recognition, nationally and internationally, that an ecosystem approach is needed to ensure conservation and sustainable use of marine ecosystem services.

Making use of a dedicated agency. The Swedish Agency for Marine and Water Management, established in 2011, is responsible for developing and implementing a sea-basin-based strategy for Sweden's marine waters, in line with the EU Marine Strategy Framework Directive. It provides an opportunity to streamline the main marine programmes and improve policy coherence.

Improving protection of marine areas. In 2009, Sweden established its first marine national park in Kosterhavet (see page 8). It has extended its total marine area under protection (Figure 7): some 6% of marine waters are now protected. Sweden needs to expand coverage of marine protected areas to meet the Aichi target of protecting at least 10% of coastal and marine areas by 2020. It should also ensure that all such areas have management plans and the means to implement them.

Providing incentives to reduce water and sea pollution. Sweden has provided several grants for protection and restoration projects in marine waters. It has used some levies to improve the marine environment: wastewater pollution charges, a tax on pesticides, pollution charges on oil spills, and shipping lane duties. A tax on mineral fertiliser containing nitrogen was repealed in 2011. These measures have helped reduce pressure on the seas, such as nitrogen leaching, at relatively low cost.

Figure 7: Sweden’s protected areas and Natura 2000 sites

Source: Statistics Sweden (2012), Protected nature 2012
To visualise dynamic data, please visit http://www.oecd.org/country-reviews/sweden2014
THE ECOSYSTEM APPROACH FOR MANAGING MARINE WATERS

A well-functioning ecosystem typically provides society with a variety of goods and services, such as food (fish, shellfish, algae), water, resources for pharmaceutical and biochemical use, climate and atmospheric regulation, recreational activities and even scenery and inspiration.

Evaluating the benefits that ecosystem services provide to humans, so they can be compared with other sources of value to society, can help improve decision making. For instance, according to a valuation study, the population of the nine littoral countries of the Baltic Sea would be willing to pay EUR 4 billion per year to protect the Baltic and reduce its eutrophication.

The ecosystem approach to the management of marine waters considers human activities as part of a single system where all sectors are integrated, allowing the wider consequences of decisions to be determined and managed more effectively. In contrast, traditional management approaches have tended to be sectoral, considering individual ecosystem components in isolation.

CHALLENGES

Relieving pressures on ecosystems. Despite significant efforts, progress in combating eutrophication, toxic pollution and overfishing in Sweden’s seas has been limited. The Baltic Sea is particularly vulnerable to pollution due to limited water exchange and the run-off from a catchment area containing 85 million people. Despite progress, Sweden needs to further reduce inputs of nutrients to the Baltic to meet its national reduction target under the HELCOM Baltic Sea Action Plan.

Achieving an integrated approach. Coastal zone management is the responsibility of municipalities, while marine spatial planning is the responsibility of the central authorities. To date, only a few of the 85 coastal municipalities have included marine areas in their spatial plans. Sweden has participated in pilot marine spatial planning projects for the Baltic Sea, which provide a good basis for implementing the proposed EU directive on maritime spatial planning.

Expanding use of payments for ecosystem services. There are just a few examples of PES programmes to improve the quality of the marine environment in Sweden. One is mussel farming to remove nutrients (see page 9). There are also regional subsidies for establishing riparian buffer zones to minimise leakage of nutrients from farmland. Meeting marine environmental targets, such as reducing nutrient loads, does not come cheap. PES programmes can help.

Filling data gaps. A major challenge is how to assess cumulative impacts in large, complex ecosystems and identify thresholds beyond which changes such as the impact of climate change and ocean acidification are irreversible.

Next steps | marine ecosystem services

- Develop an overarching national water and marine strategy to integrate national and regional activities, in line with the requirements of the EU Marine Strategy Framework Directive.
- Fill data gaps and strengthen economic valuation of marine ecosystem services.
- Review opportunities for, and threats to, marine ecosystems from policy measures in sectors such as fishing, agriculture, transport and tourism. Screen such policies in terms of their impact on the marine environment.
- Further expand marine protected areas and establish effective management plans and resources.
- Integrate marine spatial planning and coastal zone management.
- Further develop PES programmes and expand the use of market-based approaches to reduce marine pollution, especially from nutrients and hazardous substances, e.g. through trading systems for nitrogen and phosphorus discharges.