Executive summary

Decades of regulation and large investments to reduce point source water pollution have brought substantial gains for the economy, human health, environment and social values. But water quality challenges endure in OECD countries as a result of under-regulated diffuse sources of pollution. Eutrophication, a form of water pollution due mainly to agricultural runoff of excess nutrients, is the most prevalent challenge globally.

Controlling diffuse pollution is a complex task. Diffuse pollution is comprised of multiple pollutants from diverse sources – mainly agricultural and urban runoff – and varies spatially and over time. Regulating such pollution generally entails high transaction costs and often meets with political resistance. Lax enforcement of the regulatory measures that are in place weakens their impact. Climate change puts further pressure on water quality, exacerbating existing challenges due to altered precipitation, flow and thermal regimes, and sea level rise.

The cost of current water pollution from diffuse sources exceeds billions of dollars each year in OECD countries. Water pollution has lasting negative impacts on human health, water security, economic productivity, freshwater ecosystem services (including their ability to process pollutants) and social values. Polluted water decreases benefits from swimming, fishing and other recreational uses of water bodies and drags down property values of nearby real estate.

To date, policies in OECD to control diffuse pollution have typically fallen short of addressing the challenge and fail to fully reflect the Polluter Pays Principle. A heavy reliance on voluntary measures is pervasive. Lag times between pollution that degrades the resource and control measures that improve it exacerbate the challenges of managing diffuse water pollution, particularly in terms of who benefits from quality improvements and who pays for them. There is an urgent need to find cost-effective policies and measures to fund water quality improvements.

This report, *Diffuse Pollution, Degraded Waters: Emerging Policy Solutions*, addresses the water quality challenges facing OECD countries from diffuse water pollution. It examines the trends, drivers and impacts of water pollution and analyses a range of policy instruments to control diffuse pollution, illustrated by several case studies of innovative approaches. The report presents a risk-based framework that can assist policy makers and stakeholders to establish new, or strengthen existing, water quality management regimes. The key elements to successful reform of water quality management policies are:

- **Political ambition.** Completely eliminating water pollution risks is often neither technically possible nor cost-effective. Setting the appropriate level of ambition is ultimately a political decision and these decisions should be guided by an assessment the risks (environmental, economic and social), the cost of any resulting

improvements in water quality, and society's level of acceptable risk. A lack of full scientific certainty should not be used as a reason for postponing action. Making links with higher level policy issues – such as public health, food security, energy production and tourism – can provide the stimulus and strengthen the case for political action. Citizen science, and advances in sensor technology, earth observations and water quality and economic modelling provide new data to inform priorities for action.

- **Policy principles**. A set of six principles can guide the design and implementation of policies to control diffuse water pollution:
  - The Principle of Pollution Prevention underscores the fact that the prevention of diffuse pollution is often more cost effective than treatment and restoration options.
  - The Principle of Treatment at Source encourages treatment at the earliest stage possible, which is generally more effective and less costly than waiting until pollution is widely dispersed.
  - The Polluter Pays Principle makes it costly for those activities that generate diffuse pollution and provides an economic incentive for reducing the pollution.
  - The Beneficiary Pays Principle allows sharing of the financial burden with those who benefit from water quality improvements. Requiring minimum regulatory standards to reduce pollution be met before payments are made is necessary to ensure additionality and avoid rewarding polluters.
  - Equity among different groups and across generations should be considered in the allocation of pollution rights and the costs and benefits of abatement.
  - Policy coherence across sectors is essential in ensuring that initiatives taken by different agencies (e.g. water, agriculture, urban planning and climate) do not have inadvertent negative impacts on water quality and can capitalise on potential co-benefits from water quality interventions.
- **Mix of policy instruments**. Regulatory, economic and voluntary policy instruments are all part of the toolkit that is needed to manage multiple sources of diffuse water pollution. The report highlights that economic instruments, such as pollution taxes, charges and water quality trading, could be strengthened and used more extensively to increase the cost effectiveness of pollution control and promote innovation. Advances in computer modelling offers an opportunity to design policy instruments directly proportional to the amount of estimated pollution generated or reduced from individual properties within a catchment. An allocation approach that captures the inherent differences in the underlying natural capital stocks of soils offers an approach to account for the full economic potential of natural resources.

Central government has a critical role to play in the transition to more effective management of the risks to water quality from diffuse pollution. This report lays out the recommended steps to meet this challenge. These include: *i)* providing overarching national policy guidance and minimum standards; *ii)* creating a robust institutional framework ; *iii)* engaging stakeholders to manage perceived and actual risks; *iv)* signalling policy changes and highlighting options for implementation; and *v)* implementing robust policies that minimise the cost of water quality management and promote innovation.