



## New Perspectives on the Water-Energy-Food Nexus

### Forum Background Note

Water, food and energy security are crucial for sustainable long-term economic growth and human wellbeing and there are strong linkages between all three. Activities in one sector may influence or even constrain economic growth in the others. Additionally, competition for scarce resources can lead to price pressures with short-term consequences and to irreversible ecosystem changes that impact on resource security over a longer timescale. The water sector often assumes that it will have all the energy it needs to pump, clean and transfer water, while the energy sector generally takes for granted that it will have access to the water it needs for cooling and power generation. The food sector has crucial linkages to both water and energy, both as a consumer and source of these resources. The food price spike in 2007-2008 and subsequent widespread social unrest highlighted the economic and political fragility of our societies in the face of interlinked shocks to water, energy and food acting across global value chains. This underscored the danger that policies that neglected these critical linkages would create more problems than they solved.

The Bonn 2011 Nexus Conference was a watershed moment as governments and the international community acknowledged that policies regarding water, energy and food cannot be managed in isolation. This conference heralded an period of increased attention and activity on the nexus in academic, policy and business circles. For example, the World Business Council on Sustainable Development engaged in nexus discussions and published papers on the topic. In 2011, United Nations Secretary-General Ban Ki-moon underlined the importance of the “nexus approach” noting: “As the world charts a more sustainable future, the crucial interplay among water, food and energy is one of the most formidable challenges we face.”<sup>1</sup>

Much of the national and international focus since the Bonn Conference has been on attempting to better understand the complex relationships between water, energy and food policies and how these can be addressed in policy development and implementation. Trying to move beyond the nexus as a “slogan” and making it an operational reality has proved to be challenging given the multi-dimensional inter-linkages. Physical scarcity may be less of an issue at the global level: the global economy is not running out of

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<sup>1</sup> UN (2011), “In Message for World Water Day, Secretary-General Says Urban Water Crisis One of Governance, Weak Policies, Poor Management, Not One of Scarcity”, Press Release, United Nations, March 18, <http://www.un.org/press/en/2011/sgsm13456.doc.htm>



resources any time soon. But bottlenecks resulting from the relative scarcity of land, water and energy are time and place specific. For instance, water may be a plentiful resource, but it is not always available for human use in the quantities or at the quality, time and place required. The sheer complexity of these nexus relationships makes it difficult to develop truly holistic policy frameworks. Analysts and policy makers have focused on addressing how to manage these complex relationships in a time of rapid population growth, changing economic conditions and constraints, and in the face of a changing climate.

This OECD Global Forum on the Environment aims to contribute to this intellectual effort by bringing together experts and policy makers from both OECD and partner countries for wide-ranging and inclusive discussions on a number of nexus topics that have not been a major focus of policy attention to date. With the theme of “New Perspectives on the Water-Energy-Food Nexus”, the Global Forum will address important questions around:

- The linkages between the nexus and sustainable economic growth;
- How the nexus is integrated into national planning;
- Regional and local perspectives on the nexus;
- Incorporating the nexus into economic modelling;
- Addressing the nexus in economic, finance and development policies;
- How nexus risks are considered by investors; and
- The role of the nexus in the Post-2015 development agenda.

The rest of this background note for the Global Forum provides relevant information to help to guide debate in each of the sessions over the two days. The question highlighted for each session are intended to provide an initial stimulus to launch discussions and provoke debate. A summary of the Global Forum, with non-attributed comments, will be prepared and made available following the event.

We look forward to a stimulating and productive Forum.

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Further information available on the Forum website: <http://www.oecd.org/environment/nexus.htm>



## Session 1: Water, energy, food: Risks and trade-offs for sustainable growth

27 November 2014, 09:30-11:00

*The session will start with a presentation of messages from the Expert Task Force on Water Security and Sustainable Growth that have implications for the nexus approach. The panel will then discuss how trade-offs between water, energy and food might affect economic growth, and how they could be addressed.*

As the world population rises to an expected 9 billion by 2050, pressures on water, energy and food resources will rise, potentially posing a significant global challenge. By 2050, the FAO predicts a 70% increase in food production, the World Energy Council expects a 100% increase in energy supply, and the OECD projects that more than 40% of the world population will live in river basins under severe stress.

There is increasing evidence that the quality and availability of natural resources can affect the economy. The *OECD Environmental Outlook to 2050: Consequences of Inaction* projected that, without more ambitious policies, by 2050 the costs and consequences of inaction on climate change, biodiversity loss, water scarcity and health impacts of pollution could be significant. It is clear that more ambitious policies are needed to reconcile economic growth with the conservation and sustainable use of the environment and natural resources. The challenge will grow over the next decades as the effects of climate change become more significant, affecting the availability and demand for water, energy and food. For example, climate change will affect the future availability of water for energy production and changes in precipitation, crop yields and temperatures will strongly influence both food and bioenergy production.

We still know little about how policies addressing the nexus can contribute to sustainable growth. Over the medium- to long-term, it is clear that water, energy and food policies need to be well-aligned and mutually supportive for prosperity. However, in the short-term, there are real and potential trade-offs between these resources that could significantly alter development pathways and reduce growth prospects. Identifying the nexus risks and trade-offs will help to ensure a greater potential for economic growth.

The Global Water Partnership and the OECD has launched the Global Dialogue on Water Security and Sustainable Growth in order to illustrate pathways that countries have taken or could take to achieve a greater degree of water security, and how they can manage the risks and trade-offs. The Global Dialogue engages high-level policy makers and a Task Force undertaking substantive research to build an evidence base on the impacts of water security. It also includes a country consultation process to investigate perceptions and priorities regarding water security. The Global Dialogue will result in a milestone report on *Water Security and Sustainable Growth* to be presented at the World Water Forum in South Korea in 2015. In this session, the early messages from the Global Dialogue on Water Security and Sustainable Growth will be discussed in the context of the water-energy-food nexus.



### Key questions for discussion

- How do the inter-linkages and trade-offs between water, energy and food affect economic growth?
- What initiatives can governments and the private sector undertake to address them?
- What are the different pathways that lead to water security and sustainable growth?

### Relevant OECD publications

IEA (2012), "Chapter 17 – Water for Energy", *World Energy Outlook*, International Energy Agency.

OECD (2014), *Climate Change, Water and Agriculture. Towards Resilient Systems*, OECD Publishing.

OECD (2014), *Water Governance in the Netherlands. Fit for the Future?*, OECD Publishing.

OECD (2013), *Water Security for Better Lives*, OECD Studies on Water, OECD Publishing.

OECD (2013), *Water and Climate Change Adaptation. Policies to Navigate Uncharted Waters*, OECD Studies on Water, OECD Publishing.

OECD (2012), *Environmental Outlook to 2050: Consequences of Inaction*, OECD Publishing.

OECD (2012), *Water Quality and Agriculture: Meeting the Policy Challenge*, OECD Publishing.

OECD (2011), *Towards Green Growth*, OECD Publishing.



## Session 2: Integrating the nexus into national planning

27 November 2014, 11:30-13:00

*This session will explore the need to move away from a “silo” approach and will highlight the governance structures that have emerged at a national level to promote an integrated nexus approach across sectors and what lessons can be learned.*

Planning for nexus interactions will require an integrated approach and can be an effective instrument to make the nexus work on the ground. However, this is not yet the case in many countries. Often, plans develop without consideration of similar initiatives in other sectors. For instance, how much do irrigation planners factor in demand for water from other sectors, e.g. energy suppliers? And vice versa. The capacity to develop plans and to implement them is uneven across sectors, leading to asymmetries and tensions. This situation creates uneven access to scarce resources (e.g. water). It also generates additional financial costs, for instance when infrastructures fail to address multiple purposes. Short-term thinking and fragmented knowledge and institutions contribute to unsustainable policymaking.

Although water, energy and food scarcity issues play out at different scales, sometimes local, there is still a key role for national governments to set regulatory frameworks and standards, remove policy barriers, provide funding and technical assistance and facilitate co-ordination among sectors and different levels of government. National governments will also be essential to integrate the nexus into national strategies, development plans and policy frameworks. Yet in most governments, responsibilities for water, food and energy are placed in separate ministries such institutional choices may appear to make the policy design task tractable in the short-term, and may produce policies that may work initially. But as the effects of such siloed policies unfold, their consequences across the sectors and the economy as a whole may be less benign; the policies may even fail in the medium- to long-term. This reinforces the importance of flexible forms of inter-ministerial co-ordination, such as high-level councils and inter-ministerial task forces, rather than a single ministry for these issues.

The need to integrate policies is not new and there is a wide range of literature supporting environment-specific horizontal policy integration. There are also specific resource-management approaches that consider the interactions of water, energy and food such as integrated water resource management (IWRM) or the “landscapes approach.”

Effective governance and a proper enabling environment and capacity will be essential prerequisites. A clear regime that lays out the legal rights and responsibilities for natural resources will be crucial to enable nexus development. Well-defined resource property rights are important enabling prerequisites yet no single property regime will be universally efficient, fair and sustainable. Creating coherent time horizons for national planning must also be considered. There are different temporal scales for water, energy and agricultural policies. Forward-looking water plans may use a 50-60 year time horizon, energy plans are often 20-30 years into the future and agricultural planning often uses a much shorter time horizon.



Climate change and climate resilience adds another dimension that will require an inter-sectoral response. National governments have the opportunity to take advantage of the rapidly evolving climate change adaptation planning efforts to mainstream consideration of water, energy and food interactions and improve horizontal co-operation across ministries and departments. Strategic planning and risk-assessments are useful to address complex problems. Regulatory impact assessments already include environmental issues and could be broadened to address more environmental interactions.

Some countries are making efforts to achieve greater policy integration. For example, the EU, Australia and South Africa, are increasing their integration of climate and energy policies. However the extent to which the linkage to water issues is then made varies considerably, which is worrying as water is one of the main ways in which climate change is likely to impact the nexus. More positively, Colombia has developed an integrated system for disaster risk management and climate change adaptation. Most developing countries have an established practice of formulating multi-year development strategies that can provide an opportunity to incorporate green growth and green development. These national development strategies can also provide opportunities to include greater nexus considerations.

### Key questions for discussion

- How have national policies integrated the nexus in national development planning?
- Have existing governance structures for water, food and energy been reformed or adapted due to greater incorporation of the nexus in national policy making?

### Relevant OECD publications

OECD (2014), *Climate Resilience in Development Planning: Experiences in Colombia and Ethiopia*, OECD Publishing.

OECD (2014), *Towards Green Growth in Southeast Asia*, OECD Publishing.

OECD (2012), *Greening Development: Enhancing Capacity for Environmental Management and Governance*, OECD Publishing.

OECD (2012), *Sustainability in Impact Assessments: A Review of Impact Assessment Systems in Selected OECD Countries and the European Commission*, OECD Publishing.

OECD (2011), *Towards Green Growth*, OECD Publishing,



### Session 3: Regional and local perspectives on the nexus

27 November 2014, 14:30 - 16:00

*This session will showcase existing initiatives to minimise trade-offs and realise synergies between the nexus at different levels of governance and will highlight the need for consistency between different levels.*

The water-energy-food nexus has a multi-level nature. While energy and agriculture are often considered as national security priorities, water management is decentralised and mainly the responsibility of sub-national authorities. In the United States for example, energy policies are usually designed and implemented by federal agencies, but decisions related to water policies are a state-level issue. In Brazil, energy security is a national priority, while states may favour irrigation and the development of farming; the consistency between federal and state policies becomes crucial when given states (e.g. Amazon region) are intensive sources of hydropower.

More and more, OECD countries allocate increasingly complex and resource-intensive competences to lower levels of government. Decentralisation has made local and regional governments more powerful in formulating and delivering policy, thereby increasing their scope for improving coherence and sustainability across water, energy and agriculture policies and actions. In addition, sub-national governments across OECD countries undertake the majority of public investment.

The effective co-ordination between centralised frameworks and decentralised efforts for the nexus is a daunting task. The multiplicity of actors that deal with the nexus sectors across ministries and public agencies, between levels of government and at the sub-national level is a challenge: roles and responsibilities for water, energy and food security are scattered and not always effectively co-ordinated. As an example, in Chile, there are up to 15 central authorities involved in water management alone.<sup>2</sup> Also, the multi-level nature of the nexus generates mismatches between hydrological (basins, lake, aquifers) and administrative boundaries (municipal, state, national and cross-border) at which water, energy and food are managed. The search for the “relevant scale” and the combination of different scales are a permanent concern.

Co-ordination across levels of governments is therefore essential if governments wish to meet their strategic goals and address the nexus concerns without undermining the sustainability of water, energy and food security. Vertical co-ordination (across levels of governance) is necessary to identify and manage joint and coherent policy competencies, maximise the potential for investments and ensure adequate resources and capacity to undertake nexus policies. Incentives are needed to understand the challenges and trade-offs associated with the nexus at the local and regional levels and help identify mutually beneficial responses.

While an integrated national framework for water, energy and food policy should serve as an overarching structure, regional and local efforts are just as crucial to raise the effectiveness of nexus efforts and actions

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<sup>2</sup> OECD (2011), *Water Governance in OECD Countries: A Multi-Level approach*, OECD Publishing.



in practice. At local level, strong synergies between water, energy and agriculture call for policy coherence, i.e. to reduce energy input and heat output of cities, while using water more efficiently, or to avoid the harmful consequences of the use of fertilisers and pesticides on water. Policy complementarities are much needed in view of the increasing competition for resources driven by climate change and growing populations, and considering the limited financial resources available in the aftermath of the economic crisis.

Regional and local governments can play a crucial role in raising awareness and producing knowledge, by collecting data on agricultural production, energy generation, water supply and sanitation, improvement of water quality and the status of aquatic ecosystems. In addition, decision-making related to the nexus should be supported by risk assessment on water, energy, and food security (e.g. OECD risk approach); cost-benefit analysis of nexus-based *versus* business-as-usual approaches; indicators of policy coherence; water, food, energy footprints; as well as environmental and social impact assessments. Stakeholder engagement across the nexus sectors can also be helpful in policy making to secure buy-in and enhance accountability.

### Key questions for discussion

- What are the tensions between national planning related to water, energy and food security and local priorities and how can they be overcome?
- What initiatives can governments initiate to promote an integrated perspective across different levels of government and across borders?

### Relevant OECD publications

OECD (2014), *Recommendations on Effective Public Investment Across Levels of Government*, Recommendations of the Council.

OECD (2014), *Regions and Cities: Where Policies and People Meet*, OECD Publishing.

OECD (2014), *Water Governance in the Netherlands: Fit for the Future*, OECD Publishing.

OECD (2013), *Green Growth in Cities*, OECD Green Growth Studies, OECD Publishing.

OECD (2013), *Making Water Reform Happen in Mexico*, OECD Publishing.

OECD (2011), *Water Governance in OECD Countries: A Multi-Level Approach*, OECD Publishing.

OECD (2010), *Cities and Climate Change*, OECD Publishing.



## Session 4: Understanding the long-term trends and interactions

27 November 2014, 16:30 - 18:00

*This session will provide an overview on the current knowledge, technical capacity and challenges to make long-term projections of the interactions of water, energy and food in a context of increasing pressures from global trends.*

The linkages in the nexus are complex and it is hard to say which link is most important or deserves most attention. Furthermore, long-term socioeconomic trends affect the nexus in multiple ways, strengthening certain synergies and trade-offs and weakening others. The water-agriculture link may be the most relevant right now, with 80% of global water withdrawals for agricultural use. However, the water-energy link may become more relevant in the future with increasing water withdrawal by non-agricultural users. Furthermore, climate change and population growth may both increase the competition for land and threaten food security. This may in turn lead to intensification of energy practices, increasing the demand for water and can affect land use patterns and energy use. It is therefore possible that in the coming decades changes in environmental and economic circumstances will lead to restricted availability or reduced quality of land, water and energy resources, and will affect the economy through quantity and price changes.

Large scale biofuel crop cultivation is one of the proposed means to slow-down and ultimately stabilise climate change, but opinions on whether it can accomplish this differ widely. Considerable land areas would be required if biofuels were to fulfil a substantial share of the global energy demand, which raises concerns over food production and resulting higher prices. Moreover, any expansion of additional agricultural land (e.g. due to production of biomass for biofuel production) takes place at the expense of natural land, including forests, and will affect hydrological and carbon cycles.

Few studies have analysed the linkages between land, water and energy simultaneously in an integrated framework and then translated these into projections for long-term economic impacts. Some studies have looked at linkages and trade-offs between individual pairs of the nexus bottlenecks. Other studies have looked at links between one resource and the economy. However, none have profoundly addressed all three components of the nexus together and their link with the economy.

The OECD is working to address this research gap with the CIRCLE project (Costs of Inaction and Resource Scarcity: Consequences for Long-term Growth) which is designed to explicitly address relevant linkages between land, water and energy simultaneously.<sup>3</sup> The water-energy-food nexus is studied by modelling the biophysical impacts of socio-economic developments on land, water and energy, and their combined feedback on the economy. For this, a biophysical model, "Integrated Model to Assess the Global Environment" (IMAGE) model, operated by the Netherlands Environmental Assessment Agency PBL is used to simulate the environmental consequences of human activities. These environmental consequences can

<sup>3</sup> See [www.oecd.org/environment/circle.htm](http://www.oecd.org/environment/circle.htm) for more details on this project.



be translated into economic costs and economic growth using an economic model developed by the OECD known as “ENV-Linkages”.

Understanding and modelling these interactions is crucial. However, modelling exercises will only be helpful for policy makers if they can usefully inform policy, planning and investment decisions. Researchers have highlighted the difficulty for even well-educated individuals to understand basic concepts essential for understanding complex environmental problems. This lack of understanding “not only prevents the design of effective cross-sector policies, but also blinds the community to the need for at least a minimum level of dynamical systems literacy in those entrusted with policy design.”<sup>4</sup> Greater understanding on the part of policy makers of the system dynamics could therefore help to improve the ability of local and central governments to formulate appropriate policies in response to pressure on resources and environmental change.

### Key questions for discussion

- Which elements of the nexus are most important for economic growth and how do global long-term trends affect the nexus?
- What are the most important knowledge gaps in creating plausible long-term projections and how can they be overcome?

### Relevant OECD publications

OECD (2014), “Economic Impacts of the Land-Water-Energy Nexus: Exploring Its Feedbacks on the Global Economy”, *CIRCLE Project Note*.

OECD (2013) “CIRCLE: Assessing the Environmental Feedback on Economic Growth and the Benefits (and Trade-offs) of Policy Action”, *Scoping Paper*.

OECD (2012), *Environmental Outlook to 2050: Consequences of Inaction*, OECD Publishing.

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<sup>4</sup> Newell, B., D.M. Marsh and D. Sharma (2011), “Enhancing the Resilience of the National Electricity Market: Taking a Systems Approach in Policy Development”, *Ecology and Society*, 16, 2, 15+.



## Session 5: Getting the incentives right for investment

28 November 2014, 09:30 - 11:00

*This session will discuss which incentives and regulations can maximise cross-sectoral synergies among the water, energy and food sectors and promote innovation in business value chains.*

Investment financing needs for water, agriculture and energy infrastructure have generally been considered separately. This means that opportunities may have been lost to build and operate multi-purpose infrastructure, which can serve different users at least cost for the community. This silo approach has also encouraged inefficient and sometimes counter-productive investment decisions. Economic instruments can provide incentives to use water, energy, and food more efficiently and promote investment in resource-efficient options

Investing in “nexus-friendly” multi-purpose infrastructures can improve sustainable resource management. For example, multi-purpose management of reservoirs can reconcile up-stream and downstream uses and help to alleviate tensions between hydropower and other water users, such as farmers. Storage creates new opportunities to use water up-stream, e.g. on the Durance river in France, where the reservoir has created opportunities for recreational use, which now affects the management of the lake. Storage also contributes to mitigating common risks (e.g. floods).

Subsidies and policy misalignments have distorted price signals in the nexus. For example, in the name of energy independence and, later, climate mitigation, public policies have subsidised the development of biofuels. Yet biofuels are water-intensive and support for them has created a perverse incentive clear forests and plough up pastures in order to grow feedstock. Desalination plants may be powered by water-intensive fossil fuels such as coal. These cases test the meaning of “sustainable” water, energy and food policies and highlight the need to consider water, energy and food security at the same time. This will be particularly important for the development of appropriate economic instruments.

Removing harmful subsidies and aligning incentives across the three dimensions of the nexus is key to getting the appropriate levels of investment, innovation and resources. Fossil fuel subsidies imply a host of economic, fiscal, social and environmental costs. Subsidies reduce the incentive to invest in new infrastructure, distort prices, and are inefficient at transferring income to the poor. Removing misaligned subsidies on water, energy, food and land has been described as a “nexus no-brainer.”<sup>5</sup>

There is also a need for appropriate pricing of natural resources to signal scarcity. Economic instruments such as water pricing can help to cover financial costs of irrigation systems and improve water use efficiency in situations of water scarcity. In addition, if water prices are set efficiently, then the optimal timing for

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<sup>5</sup> Ringler, C., A. Bhaduri and R. Lawford (2013), “The Nexus Across Water, Energy, Land and Food (WELF): Potential for Improved Resource Efficiency?”, *Current Opinion in Environmental Sustainability*, 5, 622.



investment is signalled by market prices. However, water authorities often set prices without proper consideration of efficiency. As a result, prices that do not fully reflect the scarcity of the resource weaken the signal to invest in water, land or energy infrastructure, and so can lead to significant welfare losses.

Public policy can also help to encourage users to adopt “greener” or more sustainable behaviours. Incentives can be used to spur behavioural change. Softer measures such as public education campaigns and food labelling can also play a significant role to help to increase awareness and influence demand-side changes.

### Key questions for discussion

- How can economic instruments be used more consistently to encourage innovation and investment in more resource-efficient water, energy, and food infrastructure?
- How can policy makers identify and create the right incentives for the private sector to invest?

### Relevant OECD publications

OECD (2014), *Agricultural Policy Monitoring and Evaluation 2014: OECD Countries*, OECD Publishing.

OECD (2014), *Climate Change, Water and Agriculture: Towards Resilient Systems*, OECD Studies on Water, OECD Publishing.

OECD (2014), *Making Innovation Policy Work: Learning from Experimentation*, OECD Publishing.

OECD (2013), *Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels*, OECD Publishing.

OECD (2013), *Policy Instruments to Support Green Growth in Agriculture*, OECD Publishing.

OECD (2013), *Scaling-up Finance Mechanisms for Biodiversity*, OECD Publishing.

OECD (2010), *Innovative Financing Mechanisms for the Water Sector*, OECD Publishing.

OECD (2010), *Paying for Biodiversity: Enhancing the Cost-Effectiveness of Payments for Ecosystem Services*, OECD Publishing.

OECD (2010), “Phasing Out Energy Subsidies” in *OECD Economic Surveys: Indonesia 2010*, OECD Publishing.

OECD (2010), *Sustainable Management of Water Resources in Agriculture*, OECD Publishing.



## Session 6: Mainstreaming the nexus in investment and development

28 November 2014, 11:30 - 13:00

*This session will examine investor experience with evaluating and promoting the nexus throughout the investment and asset management process. Private investors can also help to mainstream the nexus in the value-chains of their investments.*

Based on 700 survey responses from a multi-stakeholder community, the World Economic Forum's 2014 *Global Risks Report* placed water and food crises among their top 10 global risks, alongside climate change and a greater incidence of extreme weather events.<sup>6</sup> Nexus discussions and resource scarcity has been referred to as creating a new sort of "resource realism" for businesses and investors. However, "investing in the nexus" to improve resilience is as difficult as the concept is hard to define and operationalise. A more realistic approach is for companies, investors, donors and shareholders to use a risk-based perspective to analyse water, energy and land-use risks present in their supply chains, project pipelines and investment portfolios. By encouraging consideration and understanding of the inter-linkages between water, energy and food, investment and asset management processes can support sustainability.

Efforts to mainstream sustainability concerns can be evaluated by addressing the ways that businesses and investors are responding to these risks as well as addressing the reporting and disclosure protocols that have emerged to encourage better management of water, energy and land-use issues. There has been a surge in the development of risk assessment tools, reporting frameworks and disclosures linked to water, energy and land-use. There has been particular growth in the development of "water stewardship tools" which are designed to measure water consumption, impacts and risks. Similarly there has been a sharp increase in water "foot printing" and water accounting tools.

Companies are increasingly aware of the business risk that water, energy and land can present and are taking action. Water scarcity risks have attracted particular attention as they can affect a wide range of industries including food and agriculture, chemicals, utilities, manufacturing, pharmaceuticals, and the energy sector. Since 2003, Coca-Cola and its bottlers have spent nearly USD 2 billion to reduce water use and improve water quality in the areas where they operate. According to Financial Times Research and data from the Global Water Intelligence, in the past three years, private companies have spent USD 84 billion on improving the way they access, conserve or transport water.<sup>7</sup> Operating costs are also increasing. In the mining industry for example, development costs have increased due to the need to invest in alternative water sources such as desalination and operational costs are on the rise due to the need to use energy-intensive

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<sup>6</sup> Business stakeholders are the largest group of respondents with approximately 40% of the sample. Academia (18%) and NGOs (17%) also play a key role. International organisations (8%), Other (8%) and Government (7%) round out the survey. Responses are roughly evenly split between advanced economies and emerging and developing countries (WEF, 2014: 55).

<sup>7</sup> Clark, P. (2014), "Nestle Warns Water Scarcity 'More Urgent' Than Climate Change", Financial Times, July 14, <http://www.ft.com/intl/cms/s/0/c8d19bc6-0b49-11e4-ae6b-00144feabdc0.html#axzz3IUJVKKDy>



water treatment and transport. Global credit ratings provider Moody's has described water scarcity as a "key risk" for mining companies that, without proactive management, will have negative credit-rating consequences with smaller mining companies facing particularly high risk.

Project financiers can also promote consideration of water, food and energy sustainability into project design and development. Development banks are increasing their analysis of water issues. The IFC revised their environmental performance standards to increase due diligence of the water impacts of its loans) and the World Bank's Thirsty Energy programme is working to highlight the growing water needs for energy. Existing asset owners are already using their position as shareholders to push for greater reporting and disclosure that integrates nexus considerations. Moody's believes that capital markets will increasingly start to consider water risks in their investment and lending decisions and there may be signs that this is beginning to take root.

### Key questions for discussion

- How do project financiers evaluate water, energy and food and their interactions in the project development and planning process?
- What could be done to improve existing reporting, disclosure or risk tools to promote greater consideration of the interactions between water, food and energy scarcity?

### Relevant OECD publications

Baron, R. (2014), "The Evolution of Corporate Reporting for Integrated Performance", *Background Paper for the 30<sup>th</sup> Round Table on Sustainable Development*, OECD Publishing.

Kaminker, C. et al. (2013), "Institutional Investors and Green Infrastructure Investments: Selected Case Studies", *Working Papers on Insurance and Private Pensions*, OECD Publishing.

OECD (2014), *Development Co-operation Report: Mobilising Resources for Sustainable Development*, OECD Publishing.

OECD (2011), *OECD Guidelines for Multinational Enterprises: 2011 Edition*, OECD Publishing.



## Session 7: The nexus in the post-2015 development agenda

28 November 2014, 14:30 - 16:30

*This session will explore how the nexus approach could inform ongoing discussions regarding the Sustainable Development Goals (SDGs) as well as what the proposed SDGs cover, and their implication for the nexus.*

There is a great amount of hope and momentum as the year 2015 approaches. Indeed, 2015 will be a key year for environment and development policy making, particularly in the context of the Post-2015 Development Agenda which will see the Sustainable Development Goals (SDGs) build on the Millennium Development Goals to help guide development to 2030 and beyond. The outcome of these agreements will be crucial for addressing the most pressing social, economic and environmental challenges.

At Rio+20, discussions centred on how to build a sustainable green economy that could lift people out of poverty while improving international co-ordination. The sustainable use and management of water, energy and land resources is recognised as being a key first step towards poverty eradication and sustainable development. In July 2014, the Open Working Group published an outcome document with a preliminary set of 17 SDGs, including both stand-alone water, energy, climate, food and land-related goals and cross-cutting indicators in a number of related goals, e.g., on poverty, infrastructure or cities.<sup>8</sup>

Given the prospective range and complexity of the proposed SDGs at this stage (bearing in mind that decisions on the final set of SDGs is some way off), a crucial question is how well the nexus is integrated into the SDG development. That is, how well do each of the proposed goals for water, energy, food, climate, etc. take account of the risks and trade-offs created by the inter-linkages between the sectors? Do these SDGs “talk to each other”? This is the question that will form the focus of this session.

This question also has links to the broader question in the development agenda of finance for development. Public, private, domestic, and international will be needed to finance sustainable development. The OECD has explored the range of financing options available and the new and innovative ways to leverage greater amounts of public capital for sustainable development in its 2014 *Development Co-operation Report*. Clearly, official development assistance (ODA) will continue to play an important role in supporting progress towards sustainable development. 2013 was a record year for development assistance with USD 135 billion in ODA.

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<sup>8</sup> UN (2014a), Sustainable Development Goals, Open Working Group Proposal, Open Working Group of the General Assembly on Sustainable Development Goals, United Nations,  
<http://sustainabledevelopment.un.org/content/documents/1579SDGs%20Proposal.pdf>.



A key question is the extent to which ODA is helping to promote greater cross-sectoral considerations or if it is reinforcing the traditional silo approach. The OECD measure and monitors ODA targeting environmental policy objectives through its Creditor Reporting System (CRS) using four “Rio Markers” and the environmental marker. While there is no single policy marker for the water-energy-food nexus, analysis of ODA data for water, energy and agricultural projects can provide a state of play and highlight trends. Together, environment-related ODA to energy, water and agriculture accounts for 40% of total bilateral environment-related ODA in 2010-12<sup>9</sup> and 16% of total ODA.

Environment-related<sup>10</sup> bilateral aid commitments to the energy sector averaged USD 5.2 billion per year over 2010-12 (61% of bilateral aid to sector), that to water and sanitation averaged USD 4.7 billion per year (73% of bilateral aid to sector), and that to agriculture averaged USD 2.4 billion per year (40% of bilateral aid to sector). The environment-related share of total aid to each of these three sectors has grown since 2004-06. While it is evident that development co-operation providers are paying substantial attention to environmental issues within the water, energy and agriculture sectors, further analysis would be required to understand whether or not the interactions between these issues are considered in the design and implementation of these aid activities.

### Key questions for discussion

How can inter-linkages between water, energy and food be best captured in the post-2015 sustainable development agenda?

Which information, approaches and tools are necessary to support nexus action in the follow-up process on the post-2015 agenda for sustainable development?

### Relevant OECD publications

OECD Post-2015 Reflection Series: <http://www.oecd.org/dac/post-2015.htm#Beyond>

OECD statistics on external development finance targeting environmental objectives including the Rio Conventions: <http://oe.cd/RM>

OECD (2014), *Development Co-operation Report: Mobilising Resources for Sustainable Development*, OECD Publishing.

OECD (2013), *Putting Green Growth at the Heart of Development*, OECD Publishing.

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<sup>9</sup> energy = 15%, water = 17%, agriculture = 8%

<sup>10</sup> This includes all bilateral aid targeting global environmental objectives as identified using the Rio markers (mitigation, adaptation, biodiversity, desertification) and local environmental objectives (as identified using the “environment” marker), netting out any overlaps. More information at: <http://oe.cd/RM>