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# Governing the water-energy nexus: new integrated management practices

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Event/2015 World Water Week

A large, stylized water drop graphic in shades of blue, positioned in the lower right quadrant of the page. Inside the drop, the text "Stockholm, 24 August" is written in a white, sans-serif font, following the curve of the drop's bottom edge.

Stockholm, 24 August

# Governing the water-energy nexus: new integrated management practices

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**Date** Monday, 24 August 2015



**Time** 16.00 – 17.30



**Room** NL 357



**Convenors** Institute for Advanced Sustainability Studies  
International Renewable Energy Agency  
The World Bank Group

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## Description

Climate change poses fundamental questions about current practices in the use of water and energy resources. Decarbonizing the energy system must go hand in hand with measures to increase water and energy security for a growing population. While water and energy resources are often managed separately, there is growing awareness of the benefits of integrating governance approaches in the two sectors – and of the risks of failing to do so.

Building on their joint event at the 2014 World Water Week, the Institute for Advanced Sustainability Studies, the International Renewable Energy Agency and the World Bank's Thirsty Energy Program will co-host a panel discussion on emerging approaches to governing the water-energy nexus and their role in building more resilient and climate-friendly infrastructure systems. Based on best practices from the field, participants will consider the role of integrated planning and modelling approaches in identifying key trade-offs and synergies when investing in the two sectors. In addition to presenting results of integrated modelling for South Africa, the panelists will discuss new insights on the potential of renewable energy solutions.

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## Programme

- 16.00 Welcome by moderator**  
Dr Dominik Schäuble, Institute for Advanced Sustainability Studies (IASS) Potsdam
- 16.05 Framing the session: on the need for integrated water and energy governance**  
Dr Sybille Roehrkasten, IASS Potsdam
- 16.15 Can water constrain South Africa's energy future?**  
Dr Diego Rodriguez, the World Bank
- 16.25 Renewable energy development in a resource-constrained environment**  
Divyam Nagpal, International Renewable Energy Agency (IRENA)
- 16.35 Foster innovation and sustainability for the energy-water nexus**  
Guillermo Bravo, Abengoa
- 16.45 Panel discussion with comments and questions from the audience**  
Dr Sybille Roehrkasten, IASS Potsdam  
Dr Diego Rodriguez, the World Bank  
Divyam Nagpal, IRENA  
Guillermo Bravo, Abengoa
- 17.25 Summary and wrap-up by moderator**



**Dr Sybille Roehrkasten**

Research Associate, IASS Potsdam

Dr Sybille Roehrkasten is a researcher for the Plattform Energiewende/ Transdisciplinary Panel on Energy Change (TPEC) at the Institute for Advanced Sustainability Studies (IASS) in Potsdam, Germany. Her research focuses on the international dimension of the energy transition, the water-energy nexus and global energy governance. Prior to joining the IASS, Sybille worked as a foreign policy advisor. At the German Institute for International and Security Affairs (SWP), she concentrated on international energy and climate policy and the promotion of renewables. She holds a master's in International Economics and Political Science from Eberhard-Karls-Universität Tübingen. For her PhD at Berlin's Freie Universität, she compared the strategies of the German and Brazilian governments on the global governance of renewables.

**Abstract**

**Framing the session: on the need for integrated water and energy governance**

The focus of last year's World Water Week on water and energy has been crucial for raising awareness of the interlinkages between water and energy. However, major question marks remain: What are the main action implications of the water-energy nexus? To what extent are more integrated governance and management needed and feasible? What are suitable entry points for getting the energy sector on board? These questions will become even more important in the light of the upcoming adoption of Sustainable Development Goals (SDGs). Unlike the preceding Millennium Development Goals, the SDGs comprise goals on both water and energy. If governments around the world agree on this set of goals, they will have to deal with interdependencies, which increases the awareness of and the necessity for integrated governance and management.

Integrated water and energy governance faces various challenges, such as power imbalances, limited institutional capacities, short-sighted decision-making and a lack of adequate and compatible data. In addition, one has to acknowledge that there are tough trade-offs between the division of labour and specialisation on the one hand and integration on the other. Finding a common language is a prerequisite for integration. Here, incorporating water into energy planning is key. Moreover, employing renewable energy technologies can offer great opportunities to mitigate trade-offs and exploit synergies between water and energy security. Our session will shed light on some of these challenges and opportunities.



**Dr Diego Rodriguez**

Senior Economist, Task Team Leader of Thirsty Energy, the World Bank

Dr. Diego Rodriguez has been working for the last seven years as a Senior Economist at the Water Global Practice of the World Bank Group. He is currently the Task Team Leader of thirsty energy, a new World Bank initiative to assist countries to quantify the tradeoffs of energy and water planning and investments. He is also the Program Manager of the Water Partnership Program, a USD 50 million program to assist to incorporate cutting edge knowledge and innovation in water and other related sectors. Dr. Diego Rodriguez is currently providing technical support to operational teams in several countries on the use of economic analysis in large water infrastructure investments under deep uncertainty. Prior to joining the World Bank he worked for 15 years at the Inter-American Development Bank and also worked at the Danish Hydraulic Institute. Diego Rodriguez has more 23 years of experience in sectorial, operational, policy and strategy development in water supply, sanitation, and water resources management. Diego Rodriguez has degrees in Applied Economics (MA) and Economics of Water (PhD).

**Abstract**

**“Can water constrain South Africa’s energy future?”**

In order to address the challenges presented by energy and water resource planning, the World Bank launched Thirsty Energy in January 2014. Thirsty Energy has been working in several countries. In South Africa the team has partnered with the Energy Research Center of the University of Cape Town (UCT) to fully incorporate water constraints in their energy planning tools. South Africa is a water scarce country with stressed basins and strict water allocation. Significant amounts of water are needed in almost all energy generation processes. However, the energy model did not contain water as a constraining factor, nor did it include any water-related costs. The World Bank’s Thirsty Energy initiative in South Africa has completed the coupling of the energy and water planning models and conducted a preliminary energy-water nexus analysis. Diego Rodriguez will be presenting the preliminary results of this case study.

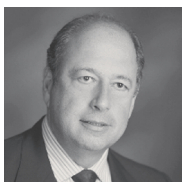
**Divyam Nagpal**

Associate, IRENA

Divyam Nagpal is an Associate in IRENA's Knowledge, Policy and Finance Centre. Within the Policy Unit, he works on a broad range of projects, including renewable energy policy assessment, off-grid renewables for energy access and the water, energy and food nexus. He has co-authored several publications, including IRENA's recent publication on Renewable energy in the water, energy and food nexus. Prior to joining IRENA, he worked in the United Kingdom and India focusing on techno-economic and financial assessments of large-scale and off-grid renewable energy projects, as well as on sector-level energy efficiency benchmarking. He is a mechanical engineer by training and has an MSc in Sustainable Energy Futures from Imperial College London.

**Abstract****Renewable energy development in a resource-constrained environment**

An energy sector transformation is underway. Globally, renewable energy technologies are being deployed at record levels as a means to improve energy security, access, environmental sustainability and stimulate socio-economic development. The number of countries that have adopted renewable energy targets has quadrupled since 2005 and for the past four years, more new renewables capacity has been installed in the power sector than new capacity in fossil and nuclear power combined. The ongoing transformation can also have substantial spill-over effects in the water and food sectors. Those effects were analysed in IRENA's *Renewable Energy in the Water, Energy and Food Nexus* report which concluded that renewable energy technologies offer substantial opportunities within the water and food sectors, and can reduce strains posed by one sector over another. Solar PV and wind technologies, for example, are significantly less water intensive compared to conventional technologies. In markets (national or regional) where substantial capacities of these technologies have been deployed, considerable water savings are being realized. Renewable energy technologies can also be integrated at scale into the water and agri-food supply chains to increase access, decouple from fossil fuels, reduce emissions and increase reliability of supply. To realise the full potential of renewable energy, integrated management approaches need to be adopted that assess the feasibility of such interventions across sectors and guide effective decision making. The entry points for such integrated or nexus thinking in traditional *silos*-based decision-making processes varies as the energy sector evolves into an increasingly decentralised system. While this presents opportunities for democratizing the energy sector, it also poses new challenges for integrating the nexus into policy making and planning processes. Solar water pumping for irrigation is a typical example which illustrates the importance of new governance approaches for technologies that are now being deployed at scale in a highly decentralised manner. These approaches can prove useful to increase access to water through the utilisation of renewable energy in an environmentally sustainable and resilient manner, thus contributing to meeting development goals related to both the energy and water sector.



### **Guillermo Bravo**

Senior Vice President Strategic Relations, Abengoa

Guillermo Bravo has a Master in Civil Engineering, a Master in Business Administration by ICADE and a Degree in Business High Management by Instituto San Telmo (I.E.S.E). He is a professional with more than 35 years of experience: more than 25 in the water sector, and 10 in Corporate Strategy and Mergers & Acquisitions.

Mr. Bravo has an extensive and professional track record. Mr. Bravo started in the field of consulting, where he took part in the creation of “Corporación Industrial Banesto S.A.” and worked as Managing Director in Price Waterhouse Coopers S.A. He later joined the water sector through the establishment of the firm “Consultoría y Gestión de Empresas S.L.” and later “Construcciones y Depuraciones S.A. (Codesa)”; dedicated to the construction and operation of hydraulic works, as well as water treatment and sewage disposal, working also as government advisor.

After selling the company to Abengoa, Mr. Bravo has been CEO of Abeima (Water division of Abengoa), previously known as Befesa Agua; in June 2012 he was promoted to Senior Vice President Strategic Relations of Abengoa, leading the international relations of the company in the energy and water sectors; and representing the company before governments, key global accounts and international finance institutions (World Bank, Asian Development Bank, European Investment Bank and African Development Bank among others). In this regard, he has supported and further developed new concepts such as Integrated Water Resource Management and the Energy and Water Nexus which derived to position Abengoa as an active partner in key international initiatives such as ‘Thirsty Energy’ or ‘Clean Energy Ministerial’ among others.

### **Abstract**

#### **Foster Innovation and Sustainability for the Energy Water Nexus**

- Abengoa decided to merge the Water and Energy Directorates into one unit and has included the energy-water nexus planning in all the projects
- Innovation: integrated water resource management (IWRM), desalination, modernization of combined cycle (CC) and hybrid plants, zero liquid discharge (ZLD) in solar plants
- Financing for sustainability and costs
- Data on improved efficiency using the nexus
- Conclusions



**Dr Dominik Schäuble**

Deputy Team Leader, IASS Potsdam

Dr. Dominik Schäuble has been working as a Research Associate with the Transdisciplinary Panel on Energy Change (TPEC) at IASS Potsdam since October 2012. He has been deputy group leader since October 2014. Within TPEC his main focus is on policies and market regulations affecting the future role of renewable and conventional power generation in Germany. He analyses emission reduction policies, electricity market reform options and support mechanisms for renewable energies in the context of the German Energiewende. Further, Dominik Schäuble has been working on the role of power generation from renewables in the water-energy-nexus. He was the scientific coordinator of the seminar “Producing electricity with less water – New perspectives for renewables in a water-constrained world” at the World Water Week 2014 in Stockholm. Prior to joining the IASS, Dominik Schäuble has been with the Institute of Atmospheric Physics of the German Aerospace Center (DLR) where he did his PhD and worked as a PostDoc in the field of Atmospheric Physics and Chemistry. He studied Geosciences with specialization in climatology at ETH Zurich.



### The Institute for Advanced Sustainability Studies IASS Potsdam

The IASS Potsdam was founded in 2009 for the purpose of gathering together all relevant forms of knowledge from science, society and politics in order to initiate and support a transformation towards sustainable development that is grounded in scientific research. Currently around 100 researchers from over 30 different countries are working at the institute on projects that span the humanities and the natural and social sciences.

Our status as an Institute for Advanced Studies means that international researchers at the IASS can pursue interdisciplinary research using innovative methods to find new and practicable solutions to urgent global sustainability questions.

Our research follows a transdisciplinary approach. We actively include societal stakeholders in the research and peer-review processes. In this way we ensure that our scientific insights are directly usable for society. By involving society at large in our research from the very start, we also facilitate the generation of new research questions that address the urgent challenges posed by sustainable development.

Our strategic focus lies on sustainability issues where we see a great need for transformation or expect a high transformation potential as a result of developing new options for action. We identify these issues in a dialogue with stakeholders and with the IASS Strategy Advisory Board and General Assembly.

## PLATTFORM ENERGIE | WENDE

### Transdisciplinary Panel on Energy Change/Plattform Energiewende

The Transdisciplinary Panel on Energy Change (TPEC) at the IASS aims to develop and mobilise knowledge to enable a global transition to a sustainable energy supply. The panel brings together stakeholders from research, politics, business and society in a transdisciplinary research process, thereby contributing to ongoing political processes and societal developments. The German Energiewende represents an important reference point within a work programme that is global in scope.

The main pillars of the current work programme are:

- Enabling a Global Energy Transition
- Financing and Flexibility Options for Germany's Energiewende in a European Perspective
- The Water-Energy Nexus
- From Coal to Renewables
- Transformative Energy Governance

Launched in March 2012, our platform takes up the suggestions of the Ethics Commission for a Safe Energy Supply, which was co-chaired by IASS Executive Director Klaus Töpfer on behalf of Chancellor Angela Merkel. In addition to carrying out original research on different aspects of the Energiewende and a global energy transition, the team organises thematic working groups and workshops, and bilateral talks with experts from Germany and its partner countries.



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# Notes

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