

# T16P04 / Responding to Water Scarcity and Quality in the Nexus: Effects on the Water, Energy and Food Sectors

**Topic :** T16 / Sustainable Development and Policy

**Chair :** Cecilia Tortajada (Institute of Water Policy, Lee Kuan Yew School of Public Policy, National University of Singapore)

**Second Chair :** Quentin Grafton (The Australian National University & National University of Singapore)

**Third Chair :** Jamie Pittock (The Australian National University)

## GENERAL OBJECTIVES, RESEARCH QUESTIONS AND SCIENTIFIC RELEVANCE

**PANEL PROPOSAL – Responding to water scarcity and quality in the nexus: Effects on the water, energy and food sectors**

Institute of Water Policy, Lee Kuan Yew School of Public Policy, National University of Singapore

The Australian National University, UNESCO Chair in Water Economics and Transboundary Water Governance

In an increasingly globalized and interconnected world, societies are becoming less resilient with respect to shocks to water, food and energy resources. Long term developments such as population growth, urbanization and industrialization in emerging markets, as well as the impending threat of climate change, are increasing the impacts on these critically important resources. Private, public and civic institutions must respond to these challenges.

The complexities of water, food and energy sectors must understood in relation to each other as well as within their own social, economic, natural, political and cultural environments, and not in isolation. Water is a critical resource for global sustainability and has a fundamental role in every sector. The effective governance of water can offer very large benefits to people and ecosystems, but typically water is not used or allocated to reflect its scarcity value. Water is also essential for crop production, be this for food, feed, fibre or fuels.

Food sustainability depends on the resilience of related agro-ecosystems, of which water is a fundamental component. Water, and its proper management, are indispensable for energy production and power generation. Water is used extensively in energy extraction, refining, processing and transportation; and energy is essential for transporting water over long distances, for treating water, and distributing it to end users, and for collecting and treating wastewater. Policies that take into account trade-offs, complementarities and resource constraints between water, food and energy are not yet effectively developed despite the urgent need.

In this session the speakers will discuss the effects of water scarcity (both in terms of quantity and quality) on food and energy needs today and tomorrow. Particular attention will be given to the policy framework and institutional underpinnings required to respond to the needs of the water, energy and food sectors. Case studies of projects, cities and regions will be discussed along with a framework to understand the complex interdependencies across the sectors and pathways to sustainable governance of water.

## CALL FOR PAPERS

**Panel proposal – Responding to water scarcity and quality in the nexus: Effects on the water, energy and food sectors**

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The Australian National University, UNESCO Chair in Water Economics and Transboundary Water Governance

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## Session 1 Responding to the Water Nexus

Friday, June 30th 10:30 to 12:30 (Block B 1 - 1)

### Discussants

Jamie Pittock (The Australian National University)

Stuti Rawat (Education University of Hong Kong)

### Singapore: No ordinary nexus

Cecilia Tortajada (Institute of Water Policy, Lee Kuan Yew School of Public Policy, National University of Singapore)

### Impacts of hydropower dams, dikes and rice intensification on the water and food nexus in the Mekong Region

Jamie Pittock (The Australian National University)

### Irrigation policy in Africa: Lessons on the water-food nexus for sustainable development

Jamie Pittock (The Australian National University)

Bjornlund Henning (University of South Australia)

### Opportunities for Nexus-Oriented Policy Design: The Case of Singapore's Transboundary Haze Pollution Act (THPA)

Ishani Mukherjee (Singapore Management University)

### The global struggle for water – for food, feed, fibres, fuels or flowers – for the rich or the poor

Arjen Hoekstra (University of Twente / National University of Singapore)

### Food-Energy-Water-Environment-Development Nexus in China and India: Opportunities and Challenges

Asit K. Biswas (Lee Kuan Yew School of Public Policy)

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## Session 2 Water Allocation and Governance

Friday, June 30th 13:45 to 15:45 (Block B 4 - 6)

### Discussants

Edoardo Borgomeo (University of Oxford)

Cecilia Tortajada (Institute of Water Policy, Lee Kuan Yew School of Public Policy, National University of Singapore)

### Pathways to Improved Water Allocation

Quentin Grafton (The Australian National University & National University of Singapore)

### Sustainable water governance in agriculture: The case of Gangetic plains of South Asia

Stuti Rawat (Education University of Hong Kong)

### Diversity within unity: State, market and community approaches to water allocation in China

Jesper Svensson (School of Geography and the Environment, Oxford University)

### Considering a whole of resource approach: Underground resources policy in Australia

Sara Bice (The University of Melbourne)

### Water scarcity and variability in the Awash basin, Ethiopia: economic effects and policy options for water and food security

Edoardo Borgomeo (University of Oxford)

### Bringing multiple perspectives to water, energy and food systems in Pakistan

Grigg Nicky

Toni Darbas (Commonwealth Scientific & Industrial Research Organisation (Australia))

Tira Foran (CSIRO (Commonwealth Scientific and Industrial Research Organisation))