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Water-Energy- Food Security Nexus in Large Asian River Basins

Edited by
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Printed Edition of the Special Issue Published in *Water*

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About the Guest Editors



Marko Keskinen is a University Lecturer at Aalto University, Finland. He has been working as a researcher and consultant as well as a civil servant at the Finnish Ministry for Foreign Affairs, and has led several multidisciplinary and multicultural projects. Dr Keskinen has a long experience in sustainability, water resources management, transboundary cooperation, integrated approaches and science-policy-stakeholder interaction.



Shokhrukh Jalilov is a Postdoctoral Fellow at the Institute for the Advanced Study of Sustainability of the United Nations University. His current research focuses on the development of modern methodological approaches for the economic evaluation of clean water environment in urban contexts. His past research examined the interdependencies among water, food, energy and climatic resources, including a policy analysis and designing of hydro-economic models to optimally allocate water resources in transboundary river basins. He has also consulted on a number of projects for international and bilateral donor organizations. Originally from Tashkent, Uzbekistan, he did his Master's and PhD Degrees in USA, followed by one and half years spent as a postdoctoral researcher at Aalto University, Finland. At Aalto, Dr Jalilov continued his research on the diverse connections between water, energy and food security in large Asian river basins, with a specific focus on Central Asia (Amu Darya) and Southeast Asia (Mekong).



Olli Varis is the Matti Pursula Professor for Water and Development and Vice Dean at Aalto University, Finland. Dr Varis is an internationally distinguished and recognised researcher in water and environmental issues, with a specialisation in global water resources as well as the interaction between development and sustainable use of natural resources. He is especially renowned for his research related to Asia's growth economies. Dr Varis has led numerous international research projects and has a broad publication track record of high quality. He has also acted as an expert in numerous significant positions both in Finland and internationally.

Preface to “Water-Energy-Food Security Nexus in Large Asian River Basins”

Is our world secure?

This question is now, at the end of the tumultuous year 2016, extremely relevant. The political, economic and climate-related developments around the world have underlined the interconnectedness of our world, but also fundamentally contested the idea of one global village. At the same time, increasing migration is challenging the idea of free movement of people. As a result, nationalistic views are on the rise, and many countries strongly highlight their sovereignty and also the security of their critical resources.

Water, energy and food are the most critical resources of the whole of humankind. The three are also closely linked, with water acting as an enabler for both food and energy production and at the same time feeling adverse effects of activities in those sectors. All three also regularly cross national borders, with energy and food flowing from one country to another with the help of trade. Water, energy and food are present in today’s world; thus all are, in essence, transboundary.

While all this is well known, the wide-ranging societal and economic impacts of increasing water and resource scarcity have only been properly recognized in recent years. This is exemplified by the World Economic Forum’s Global Risks Report 2015, which for the first time placed “water crises” as the most important global risk in terms of impact. The increased awareness about scarcities of resources and their interconnectedness has also translated into heightened attention given to security-related aspects of water, energy and food. Hence, instead of just using and managing the different resources, attention is also increasingly given to securing both availability and access to them—and the related inequities and politics.

The water–energy–food security nexus aims to “enhance water, energy and food security by increasing efficiency, reducing trade-offs, building synergies and improving governance across sectors”. That was the description in the influential Background Document for *Bonn2011 Conference on the Water, Energy and Food Security Nexus*.

Since the Bonn2011 Conference, the number of nexus-related activities, projects and publications has boomed, with a variety of actors using the nexus concept to guide, frame and reflect upon their activities. At the same time, there is still no commonly agreed definition for the nexus. Several articles in this Special Issue engage in this discussion, providing their views on how to define the nexus and what kind of elements and methods it could entail.

Yet, any discussion about the characteristics of a nexus as an approach remain theoretical unless linked to actual planning and decision-making processes on the ground. That was also the aim of our Special Issue: to see what kind of practical benefits and challenges the emerging nexus approach could accrue when actually examined, analyzed and applied in differing management contexts.

The geographical focus of our Special Issue is Asia and its large river basins. The majority of these basins are transboundary, shared by more than one nation state. While recognizing that the nexus approach should not be applied only within water-bound boundaries, i.e., catchments, we decided to set the focus on large Asian river basins as they present particularly challenging management settings due to their scale and variety of actors. In addition, there is already a rich literature on their water, energy and food-related characteristics and management processes, making comparison between the nexus and other management approaches easier. Finally, despite all these activities, the situation in many transboundary basins remains contentious, with different sectoral actors and nation states not able to agree on the most suitable ways forward. We were thus interested in seeing what kind of potential benefits this nexus could bring to such contexts.

Editing the Special Issue has been an important learning experience for us, and provided new insights (see our Editorial). One important point of learning relates to the concept of security and its inclusion or exclusion in the nexus discussion. When initially drafting the call for the Special Issue, we decided, after long debate, to leave the term “security” out from the title: the idea was that the articles would, in this way, focus more on the three sectors and their interrelations, rather than broader

security-related aspects. However, after going through the articles and related cases included in the Special Issue, it has become apparent that the nexus is, obviously, very much about security—whether about ‘separate’ securities related to water, energy and food, or more comprehensive forms of security. Further, in many cases, it is exactly these security-related aspects that have led to the biggest challenges, whether between sectors or riparian states. The inclusion of security into the nexus is therefore crucial for almost any possible solutions. For this reason, we have also added the term to the title of this Special Issue book.

This Special Issue includes 11 articles and an editorial from a total of 35 different authors. Geographically, the majority of the articles look at Central Asia and the Mekong, both of which are regions seeing rapid development and include several important transboundary river basins. Methodologically, the articles address both theoretical and practical aspects related to the nexus. We would like to thank all the authors, reviewers and MDPI editors for their contribution and engagement during the process. Special thanks to the Academy of Finland (#269901 NexusAsia) and Strategic Research Council (SRC) of Finland (#303623 Winland), whose financial support enabled the research and editorial work related to this Special Issue.

During this editorial process, some of our reviewers challenged the very idea of the nexus, questioning whether it actually brings anything new to the discussion about water, energy and food security. This is a valid point, and it can well be argued that the interconnections between these three sectors have already been known for centuries and that over time the nexus may indeed wade from fashion. Yet, we already see that the impressive set of articles in this Special Issue exemplifies that the nexus helps both researchers and practitioners to think about relationships between water, energy and food security in new—sometimes perhaps forgotten—ways. With its focus on three critical sectors, their interlinkages and related security aspects, we believe that the nexus has potential as a complementary approach to support water resources management, transboundary cooperation and, ultimately, sustainable development.

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