



# From state to system: Financialization and the water-energy-food-climate nexus

Jeremy J. Schmidt<sup>a,\*</sup>, Nathaniel Matthews<sup>b</sup>

<sup>a</sup> Department of Geography, Durham University, Lower Mountjoy, South Road, Durham DH1 3LE, UK

<sup>b</sup> Department of Geography, King's College London, The Strand, London WC2R 2LS, UK



## ARTICLE INFO

### Keywords:

Nexus  
Finance  
Sustainability  
Systems  
Resilience  
Risk

## ABSTRACT

The water-energy-food-climate nexus has risen rapidly in global water governance over the past decade. This article examines the role of global financial networks in articulating the nexus and in connecting it to sustainability programs. It provides new insights into critical engagements with the nexus that, to date, have focused predominantly on water security and governance. The article examines how global financial networks conceptualized and concretized the nexus towards two ends: First, the nexus was used to effect the transition from state-oriented development models to financialized approaches of water development and sustainability. Here, the nexus was formulated in critique of, and as a solution to, the previously dominant approach to water development: integrated water resources management (IWRM). Second, the nexus was deployed to connect water, energy, food, and climate to the global economy in terms of complex systems. The identification of risks to the resilience of environmental and economic systems provided a new form of integration across the supply chains affected by the governance and security of water, energy, food, and climate. In both cases, the nexus mobilizes technologies of global finance, such as credit-risk ratings, to construct and defend new strategies for governing water security and to enable sub-sovereign actors, such as municipalities, to be incorporated into the global economy. The paper concludes that alignments of the nexus with sustainability programs, and the Sustainable Development Goals, must be reconsidered in view of the constraints posed by financial orientations towards the risks and resilience of economic and environmental systems.

## 1. Introduction

Since the 2008 financial crisis, one of the most significant shifts in global water governance has been the rise of the water-energy-food-climate nexus (hereafter: nexus). In 2009, Ban Ki-moon focused attention on the nexus when, as Secretary General of the United Nations, he asked the global financial community to prioritize water security at the annual meeting of the World Economic Forum in Davos (UN Water, 2009). Two years later, the *World Economic Forum (2011a)* delivered its report. Entitled *Water Security: The Water-Energy-Food-Climate Nexus*, the report argued that water, energy, food, and climate crises are linked to the structural mismanagement of water across the global economy. This article examines the role of global financial networks in articulating and positioning the nexus astride UN agendas. Indeed, by 2017, UN publications noted the “most commonly discussed set of interactions” regarding the Sustainable Development Goals (SDGs) lie “...in the nexus between food, water and energy, as reflected in the links between SDG 2 [food], SDG 6 [water] and SDG 7 [energy], with potential conflict in water use for energy production and generating

hydropower with residential and industrial water use and for irrigation for food production” (Nikolova et al., 2017: 15).

This article argues the nexus helped pivot global water governance discourse from state-oriented development models to the governance of globally interconnected economic and environmental systems. It proceeds in three steps to theorize, situate, and explicate the shift from ‘state to system’ in global water governance: First, it reviews how the nexus has typically been understood—as a frame for integrating water security and governance at multiple scales and across sectors. Neither nexus discourse nor its critiques, however, have attended to the de-territorializing role of global financial networks in articulating the concept. To address these concerns, we position our methodological approach towards the nexus in reference to the financialization of nature—the processes by which the material and energetic throughput of the Earth system are drafted into processes of capital accumulation wherein financial profits are proportionally greater than those of industrial production. Second, the article situates the nexus with respect to how it realigned previous sustainable development programs, notably Integrated Water Resources Management (IWRM). Third, the

\* Corresponding author.

E-mail addresses: [jeremy.schmidt@durham.ac.uk](mailto:jeremy.schmidt@durham.ac.uk) (J.J. Schmidt), [nathaniel.matthews@kcl.ac.uk](mailto:nathaniel.matthews@kcl.ac.uk) (N. Matthews).

article explicates how global financial networks retooled—at times rejected—IWRM as the nexus took shape. Analyzing key publications on global water finance from the World Bank and the World Economic Forum's *Global Risk Reports*, the article shows how financial technologies shape the kinds of connections that are to be governed and secured as development agendas are re-scaled from state-centered modes of industrial production to financialized systems of accumulation. One caveat: the analysis prioritizes water even though other nexuses (i.e. food-energy) are also important (see [Field and Michalak, 2015](#)). As becomes evident, the rationale for emphasizing water is its foundational role in notions of the nexus ([Allan et al., 2015](#)).

## 2. The nexus: water security, governance, and financialization

At a 2011 conference in Bonn, the nexus was advanced as a tool for transitioning from the traditional concerns of sustainable development to a framework befitting an increasingly globalized world ([Hoff, 2011](#)). A “nexus approach” was defined in terms of “integrating management and governance across sectors and scales” so as to achieve water, energy, and food security ([Hoff, 2011](#): 7). Timed to inform the Rio + 20 conference in 2012, the Bonn gathering forwarded the nexus as key to the “green economy” ([Ringler et al., 2013](#); [Finley and Seiber, 2014](#)). At Rio + 20, however, the “green economy” was contested by developing countries worried it may prove a vehicle by which, “industrialized countries slip out of their commitments to promote and fund sustainable development, while imposing new forms of environmental conditionality on resource use” ([Conca, 2015a](#): 169). Despite these contests, scholarship on the nexus has focused on water security and governance with comparatively little attention to what is at stake in transitions towards the “green economy” or to contests over funding conditions.

Prior to Bonn, [Hellegers et al. \(2008\)](#) argued governance gaps could create or compound water security challenges across interconnected water, energy, food, and environmental systems. Subsequent accounts of the nexus followed suit by assessing basin-scale interactions among water security, governance institutions, and ecosystem functions ([Lawford et al., 2013](#); [Ringler et al., 2013](#); [Scott et al., 2011](#)). This focus on basin-scale, or watershed interactions was designed, at least in part, to retain fidelity with previous sustainable development programs, notably the concept of integrated water resources management (IWRM) that dominated the 1990s (see [Conca, 2006](#)). As explored below, however, IWRM was criticized for being too “water-centric” whereas the nexus remained committed to coordinated, sustainable development, but focused on governing connections across interconnected sites affecting water, such as energy and food production and climate change ([Hussey and Pittock, 2012](#); [Benson et al., 2015](#)). Since, in a globalized world, interconnected concerns extend beyond the watershed, the nexus offered a framework to connect watersheds to the institutional, political, and economic scales that govern global supply-chains of water, food, and energy—from Spain, India, China, and Mexico to the United States ([Hardy et al., 2012](#); [Malik, 2002](#); [Scott, 2011](#); [Scott et al., 2011](#); [Shah et al., 2003](#); [Wang et al., 2012](#)). Especially after Rio + 20, the nexus offered a way to recognize the interdependence of water with other sectors, yet not require conformance to a single management framework such as IWRM ([Howells and Rogner, 2014](#)). Further, by attending to multiple scales of governance and water security in the context of global environmental change, the nexus could alert decision makers to unanticipated consequences that arise in entangled social-economic-ecological systems ([Leck et al., 2015](#); [Scott et al., 2015](#); [Smagl et al., 2016](#)). As new programs of global governance emerged, such as UN Water and UN Energy, the dual focus on water security and governance mobilized the nexus to show how the uneven effects of global environmental change required flexibility in dealing with the non-linear dynamics of complex systems (cf. [Schubert and Gupta, 2013](#); [Grenade et al., 2016](#); [Rockström et al., 2014](#)).

Perhaps unsurprisingly, the rapid ascent of the nexus has not been

without critique: [Leese and Meisch \(2015\)](#) argue the ‘securitization’ of the nexus reduces complex social and environmental dynamics to metrics (i.e. risk calculations) that marginalize distributive concerns. [Biggs et al. \(2015\)](#) argue the nexus overemphasizes security at the expense of livelihoods, thereby ignoring a central democratic aim of sustainability. [Allan et al. \(2015\)](#) contend that reducing security to supply-chain risks may produce or exacerbate social inequalities while undervaluing ecosystems that do not fall with the remit of supply-chain considerations (cf. [Allan and Matthews, 2016](#)). Finally, [Williams et al. \(2014\)](#) argue the nexus is not a significant departure from previous sustainable development programs, such as IWRM, but rather retains neoliberal logics where capitalist modes of production create and shape spaces for accumulation.

Missing from both constructions and critiques of the nexus, however, are considerations of finance. This is surprising; the nexus gained prominence in the wake of the 2008 financial crisis and amid calls to address the deep structural connections between the global economy and the Earth system (cf. [Homer-Dixon et al., 2015](#); [Dietz et al., 2016](#)). In fact, neither the literature cited above, nor book-length appraisals of the nexus give sustained (if any) attention to finance (e.g. [Pittock et al., 2015](#); [Webber, 2016](#)). On the rare occasions finance is mentioned, it is not with respect to how the nexus was conceptualized but, rather, with respect to what financial commitments nexus solutions require (e.g. [Dodds and Bertram, 2016](#)). The nexus, however, must be understood with respect to the fundamental role of global financial networks not only in promoting the concept, but in extending technologies of finance to forge the kinds of connections among water, energy, food, and the climate that are to be governed to achieve water security.

### 2.1. The financialization of nature

Financialization describes patterns of accumulation that accrue profit, “primarily through financial channels rather than through trade and commodity production” ([Krippner, 2005](#): 174). While the relative weights of industrial versus financial profits wax and wane ([Arrighi, 1994](#)), the past several decades have witnessed a significant increase in the proportion of economic activity driven by financial markets relative to industrial production ([Epstein, 2005](#)). As finance drives a greater proportion of economic activity, financial products are also entangled with the material aspects of complex human-environment systems ([Cooper, 2010](#)). For example, weather insurance derivatives proliferated in the 1990s in response to regulatory shifts on climate change in the US energy sector ([Pike and Pollard, 2010](#)). Critically, financial notions of governance, security, and risk are not simply descriptions of economic or empirical dynamics, but rather influence how impacts are defined, known, and responded to ([Langley, 2016](#); [Riles, 2011](#)). For instance, metaphors of financial risk, such as the “subprime bubble” in the U.S. mortgage sector, convey notions of intrinsic instability that affect governance and security ([Krippner, 2012](#)).

Financialization can also create new sites of accumulation as investments mobilize water, and nature generally, in ways that befit global finance ([Bayliss, 2014](#); [March and Purcell, 2014](#); [Merme et al., 2014](#); [Loftus and March, 2015](#)). Corporations, for instance, may hedge against water risks by purchasing futures or insurance products, or they may introduce calculative techniques for governing and securing water based on financial assessments ([Hepworth, 2012](#); [Larson et al., 2012](#)). Frequently, infrastructure is a site where financial products (i.e. loans, bonds, securities) meet the material mobilization of ‘nature’. For instance, investment in urban water utilities or desalination facilities are increasingly entangled with circuits of global finance both as capital is raised and as debts and securities are traded ([Castree and Christophers, 2015](#); [Loftus and March, 2016](#); [Bresnihan, 2016](#)). [Conca \(2015b\)](#) argues that examining connections among risks to finance and infrastructure as well as those to water, energy, food, and the climate requires attending to how existing institutions compel and constrain approaches to water security and governance.

Download English Version:

<https://daneshyari.com/en/article/7353574>

Download Persian Version:

<https://daneshyari.com/article/7353574>

[Daneshyari.com](https://daneshyari.com)