Ethno (medical)-Ethics as Contested Knowledge and Practice in Times of Globalization:A Case-Study from China

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Abstract

Framing "new ethics" within both Chinese and international characteristics has become a pressing issue, while China's research and innovation policy encourages a turn towards a knowledge economy and while a number of international/Chinese corporations delocalize industrial production in poorer countries offering cheaper labour. Plural health ideas, practices and medical sciences currently develop within the broader framework of social and economic transformation of the Chinese society. Voices from civil society at large wish also to participate in the debates going on in the official, academic and media spheres. On one side, ethno-(medical) ethics may be contested by most international development actors who strongly support a universalistic view of ethics; on the other side, local/national knowledge through the voices of a number of lay people's groups, locally-based and trained experts, and official actors gain ground for recognition. Of course positions taken by all these stakeholders towards such knowledge in terms of knowledge production, decision-making, and policy implementation may widely diverge. Issues raised in the 2000s relative to medical ethics, bioethics and the New Health Reform guidelines and implementation, will be discussed.My study is based on data collected using anthropological methodology within the framework of a research project (2006-2011), conducted in partnership between the Peking Union Medical College/Chinese Academy of Medical Sciences, Human and Social Sciences Department, Center for Bioethics (IRD and PUMC/CAMS) in Beijing.
In China, failure in health management from the early 1980s over two decades through a market-oriented reform, has been officially assessed. The reform was recognized by the very powerful Chinese State Council as "basically unsuccessful" through the voice of the Center for Development Research (The Evaluation and Recommendations of Healthcare Sector Reform, July 2005, retrieved September, 15, 2011: http://www.drc.gov.cn/report.asp?t=report&y=2005).

Qiu (2008) highlighted the key achievements and failures of the 1980s reform process and from his analysis, voiced the need for renewed interest in Confucian style values of trust coming from the population at large: a very common complaint was that the art of *ren*(humaneness, beneficence; also known as humanism the Chinese way) had been transformed into the art of making money (Qiu, 2012, p. 18). Interestingly enough, while more than 90% of the population at large acknowledged the failure of the reform by strongly disapproving it, in contrast more than 90% of health-care professionals interrogated were very satisfied with it (He, 2005, quoted by Qiu, 2012, p. 19).

This situation prompted previously contained disapproving voices to express dissatisfaction in the academic arena: a number of medical professionals and social scientists argue that a solution might be to look back to previous medical ethical knowledge throughout Chinese history. Nonetheless medical ethics in the context of culture is a form of local knowledge (Christakis, 1992); subsequently,

it is worth further investigation and is capturing the attention of the academic arena at an international level. Further research is urgently needed as UNESCO programmes tackle the pressing and controversial issue of bioethics education, with a focus on Asia (Calderbank, 2008). Open debates and listening to voices from all stakeholders in Asian societies have been limited in the region so far, while basic research and R&D in health sciences have promptly developed, and new (bio)technologies have become gradually available raising new ethical issues.

My paper is organized in three parts: the first part builds on the 2000s health reform; the second one is about ethno-ethnics in China and elsewhere; and the third reports about ongoing discussions in China on a few medical ethics-related issues.

China's New Health Reform

Since the late 2000s, the health reform designed to extend basic health insurance coverage and curb market-oriented health-care, among other goals, has been in progress. A few chronological points with regards to health-care management in China need to be recalled here.

In the 1980s, a first round of reforms characterized by market-led deregulation and massive retrieval of the State in terms of funding and control was gradually implemented. Both urban and rural healthcare systems had experienced drastic changes on the road to economic liberalization. Raising healthcare standards and reducing government financial burden through market competition and rules were generally approved. Even though there was some improvement in terms of operational efficiency and health facility modernization and standardization, one downside with regards to public health was an increased burden on the shoulders of individuals: in 2005 significantly enough more than half of total healthcare expenditure (55.5%) was borne by the people (Jiankangbao, 2005). In the 2000s, Chinese society experienced a new round of reforms called "new health reform" following the assessment of the failed reform and voices raised against the current healthcare system and its dysfunctions: a number of studies and heated debates revealed the importance of trust lying at the heart of patient-healer relationship, which had been badly damaged over the years. This situation signalled a rising societal interest in a widespread quest for better values which often translates into a search into the past. Confucian values and their possible application in medical ethics once again capture public attention in rethinking ethical issues and help to nourish the ongoing discussion.

Why did health reform become unavoidable for the Chinese government, so as to be subsequently considered a priority in public policy change? In the 2000s, health had become the first preoccupation of the Chinese population (Micollier, 2011b), as the people's voice, through the widespread use of what appeared to be a new common adage *kanbinggui, kanbing nan* ('indeed how expensive and difficult it is to consult') became so loud that official actors could no longer ignore it. Many cases demonstrating the vulnerability and lack of trust of ordinary people (*laobaixing*) had been circulated through all sorts of media, with whole families being ruined by a disease affecting one of its members, and patients not being taken care of because they could not afford the exorbitant fees (Micollier, 2011b; Zhai, 2012). All these examples prompted a widespread discussion followed by a heated debate on trust and its high place as a value among Confucian virtues as shown in our historical sets of medical ethics rules (detailed in Micollier, 2014). A process of revitalization of historical medical ethics in the context of broader cultural repertoire change (increased interest for tradition, patrimony, both material and immaterial, knowledge, social ethics,

etc.) is currently at work in China. The 2000s was a period of renewed interest for Chinese traditional and popular knowledge, know-how and practice, with a focus on both material and immaterial patrimony, and on norms and rules, including social ethics for example.

Lack of trust was widely acknowledged and restoring it was urged in both the inter-subjective patient-healer relationship and, on a broader scale, in the population at large and within the health personnel network of relationships, as well as within the larger framework of the health system. Heuristically most contributions from Chinese authors (Qiu, Zhai, Xia, Hou, and Xiao) address these issues in a Special Issue of the *International Journal of Bioethics* concerning "Ethics-related issues in hospitals. French and Chinese situation compared", published in 2012.

About Ethno-Ethics in China and Elsewhere

Since the 1970s, four basic principles have laid at the heart of Western bioethics. These became post-second World War II international basic principles, namely autonomy, beneficence, non-malfeasance and justice (Beauchamp &Childress, 1983). In our globalized and multicultural society, since the 1980s, research in social sciences, and more specifically in anthropology, has brought a new light on the universalistic nature of a number of ethical principles, such as new interpretations about the four principles emanating from the Bellemont report and North-American bioethics. The aim of these studies was to inform about the ethno-centric nature of bioethics, cultural diversity in societies, and issues regarding the application elsewhere of a Western-born ethical thought designed for biomedicine, as practiced and interpreted firstly in the West.

Lieban (1990) studied the medical ethics of traditional and popular healers from a comparative perspective, emphasizing the cultural differences but also the similarities beyond cultures, approaching biomedical ethics from an inter-cultural perspective. His account of the Chinese context is based on Unschuld's (1979) work on medical ethics in Imperial China. A key hypothesis is that similarities in medical ethics do exist in various cultural contexts independent of each other. He takes the case of biomedicine and of traditional medicine in imperial China as significant examples. He argues that both contexts share one principle and two important ethical issues: the principle of beneficence and assistance, the relationship between the two values is perceived as contradictory—profit generated by the practice of medicine versus the altruism necessary for the practice; ethical issues concern the relationship between medical ethics and the process of professionalization.

McGréal (1991) investigated innovation and changes in Chinese medical ethics comparing historical principles' sets and post-1979 (Reform Era) sets.

Lieban (1990, p. 233) builds on Beauchamp & Childress (1983) and Veatch (1981): "Beneficence, defined here in broad terms as a duty to promote the welfare of others, is a primary ethical principle of Western biomedicine, with roots that go back to the Hippocratic Oath". However rather than drawing too hasty a conclusion, the notion of beneficence should be looked at more closely: the meaning of the Western notion of beneficence may diverge from the meaning of *ren* (humaneness, humanity) in Chinese. According to Tung (1994, p. 490), reflecting the highest virtue, the character 仁 (*ren*) formed by "two" and "human" indicates that the body-self is part of a larger whole, more precisely of both another human being and/or of the natural environment. Such a cosmological dimension is not present in the Western notion of beneficence: the relationship of the human being to Nature is obviously very different in each context. In contrast, the principle of social ethics contained in the Chinese term is closer to the Western meaning.

Chinese sources quoted by Unschuld (1979, pp. 30, 52, 71) often mention the moral duty of helping others and of assisting sick people.

The first ethical issue concerned the contradiction inherent in medical practice between making a profit and being altruistic: tension between self-interest and philanthropy has been analyzed as the key paradox in medicine (Pellegrino, 1985).

The second ethical issue concerns medical ethics and the professionalization of medical practice. In the context of China (Unschuld, 1979) and in the context of Western civilization (Freidson, 1970), the codes of medical ethics are tools serving a corporation guaranteeing a moral use of medicine and assuming responsibility for medical resources.

Ethno-ethics of medicine still needs to be explored: it "refers to moral tenets and problems of health care as they are conceived and reacted to by members of a society" (Lieban, 1990, p. 236). Even though most studies about medical ethics from an inter-cultural perspective focus on cultural differences, the consensus is compulsory because biomedicine has fully developed into global institutional medicine. However such consensus and subsequently homogeneity through a standardization and institutionalization process is only apparent and superficial. Therefore Kunstadter (1980) argues that behind the scenes introduction of Western medicine and the spreading of its ethics is the main explanatory factor for such apparent homogeneity. Taking the example of India, he shows how traditional ethical systems have been ignored by Westernized medical institutions. However biomedical ethics in non-Western countries inexorably experiences a process of adaptation to the norms and values of non-Western societies.

If biomedical perspectives conflict with local norms and values, serious ethical issues emerge which need to be discussed and negotiated in context. From the field of health education to research and development sectors, biomedicine is always adjusted in context: such a localization process generates discussion and tensions regarding ideas (knowledge at work and its production) and practice (clinical, care, healing aspects, research) including of course in the field of ethics (On such process, see among other works, Gobatto &Lafaye, 2007; Micollier, 2007; Micollier, 2011a).

Discussions in 2000s China: A Few Examples (Text based on Micollier, 2014)

The Chinese situation will be informed with a number of the issues of informed consent, confidentiality, family role and with a focus on the patient-healer relationship. The modalities and management of this relationship lie at the heart of medical ethics considerations.

As is the case in many countries, family decision making is the normative way of dealing with health and illness in China. This has been recognized and recommended within the framework of the national medical ethics scheme. When a family member is affected by a distressful situation, all members perceive themselves as sick and the most vulnerable member is the one who effectively puts the others at risk: from this insider's view, the observer can understand why the decision is often not individual and is made collectively. This attitude questions the value of confidentiality and the role of the individual in the consent procedure. Confidentiality along with privacy are fundamental values in the West relative to individual decision making and a clear line is drawn between the private and public sphere. I will recall here that the emergence of a standardized procedure for informed content and the very idea of informed consent brings us back to the roots of contemporary/Western bioethics, namely the Nuremberg Code, the 1970s Bellemont report and

North-American rules.

Another issue concerns international normative rules that have not been sufficiently contextualized: informed consent is required for any treatment intervention and tragic cases like the one cited by the sociologist Xia (2012, p. 78) are not rare: a pregnant woman had lost her life due to lack of health information and sufficient awareness on the part of her husband who refused to sign the informed consent. This situation happened in Beijing in 2007.

Among others voices, Zhai (2012) argues: while medicine had become a big business, the goals and management of medical services need to be changed to restore people's trust in what has turned into a highly damaged patient-healer relationship. Cases of aggression, attacks targeting health-care personnel, of personnel wearing helmets to protect themselves, has become common in the 2000s (cases' examples by Xia, 2012, pp. 78-79). Xia gathered official data from surveys conducted in the 2000s in Shanghai, Beijing and in Hunan Province showing a consistently badly damaged therapeutic relationship: the number of incidents, medical malpractice, medical disputes, and medical staff being orally insulted or physically beaten, increased dramatically. Results from the Fourth National Health Service Survey completed in 2008 indicated that more than one in five of the medical staff surveyed had endured oral insults, almost one per cent violence and close to six per cent threats, either orally or through mailed letters (Xia, 2012, p. 79).

Xia, Zhai, Qiu and Hou & Xiao all focused on an increased/newly emerged "unbalanced position of negotiation" (Xia, 2012), or on the asymmetric power relationship (Zhai, 2012) between doctors and patients as a key factor explaining why the relationship had undergone such a dramatic change. Interestingly enough, this point is what the Nuremberg Code (1947) elaborated by a post-World War II US Military Court aimed to initially change, namely that reducing the power imbalance between medical staff, institutions, and the patient suggests, in a more egalitarian power-relation model, increasing the decision-making power of the patient who is intrinsically recognized as vulnerable. This is how and why the procedure of informed consent, "une capacité légale totale à consentir" (a complete legal capacity to consent), was created and from then on strongly recommended. "Complete legal capacity" of the individual means that the two parties are equal: subsequently in order to facilitate the analysis of risks and benefits for the individual concerned, sufficient and detailed information concerning the medical service should be provided (Ambroselli, 1994, p. 106).

Following a Foucaldian reading (Foucault, 1976), in the end the whole process for the benefit of the patient, the population at large, and more specifically vulnerable groups of people, would consist in decreasing the "bio-political" power of the medical actors acting acquired through a form of "governmentality" on bodies and individuals, a subtle way of taking control on persons and groups.

East-West exchanges in terms of knowledge production are being reshaped. Applied to the field of health and medicine, Asian ideas and practices are disseminating at a global scale through a whole range of healing practices, among actors and institutions, within the framework of 'integrated' and 'integrating' health care systems. These latter bring other medical traditions into biomedicine: more specifically in the fields of preventive medicine, occupational and rehabilitation medicine, well-being and corporal practices, pain management and palliative care. Let us note however that ethno-ethics and ethical governance from elsewhere, namely not rooted in the post-colonial order, are still scarcely taken into account in this transforming process.

In the end, significantly enough, such process may produce 'post-Western' bodies of knowledge and

practice in a number of fields investigated and therefore contribute to transform societies at a global scale.

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The Rise and Implications of the Water-Energy-Food Nexus in Southeast Asia through an Environmental Justice Lens

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Abstract

This article maps the rise of the water energy food 'nexus' as a research, policy and project agenda in mainland Southeast Asia. We argue that introducing the concept of environmental justice into the nexus, especially where narratives, trade-offs and outcomes are contested, could make better use of how the nexus is framed, understood and acted upon. With funding from high-income country donors,it is found to have diffused from a global policy arena into a regional one that includes international and regional organizations, academic networks, and civil society, and national politicians and government officials. The nexus is yet to be extensively grounded, however, into national policies and practices, and broad-based local demand for nexus-framed policies is currently limited. The article contends that if the nexus is to support stated aspirations for sustainable development and poverty reduction, then it should engage more directly in identifying winners and losers in natural resource decision-making, the politics involved, and ultimately with the issue of justice. In order to do so, it links the nexus to the concept of environmental justice via boundary

concepts, namely: sustainable development; the green economy; scarcity and addressing trade-offs; and governance at and across the local, national and transnational scale.

Keywords: nexus; environmental justice; Southeast Asia; sustainable development;water-energy-food

Introduction

Originating in response to the 2008 global food and economic crisis, the water-energy-food nexus ("the nexus") has been promoted as an emerging global development paradigm and research agenda (Allouche et al., 2015). There are divergent framings of the nexus between its various proponents (Bizikova et al., 2013). However, the dominant approach is through socio-ecological systems thinking that seeks to understand tradeoffs and synergies, increase efficiency and improve governance between food, water and energy systems (Hoff, 2011; Davis, 2014). While much more prominent in international level policy discussion, in mainland Southeast Asia[493] a range of international organizations and civil society, academics and high-income country donors, working with the region's governments and politicians, are translating and diffusing the nexus concept through their research, programming and policy recommendations.

In Southeast Asia, economic, social and political trends such as liberalization, regionalization and globalization, urbanization, agrarian transformation and industrialization, and changing aspirations in terms of work, leisure, and consumption all contribute to create a dynamic region in the throes of rapid change (Lebel et al., 2014; Middleton & Krawanchid, 2014). Behind these trends, new – and contested - visions are being imagined for the future of the region's water, land and forest resources, energy systems, urban and rural areas, and for the people of the region itself (Nevins & Peluso, 2008; Rigg, 2012). In this context, access to and sustainable use of food, water and energy resources, which are institutionally fragmented domestically and across borders (Middleton & Dore 2015), is often framed to be within a complex trade-off relationship (Kirby et al., 2010). Inequality is high in the region, and in most countries widening (ADB, 2012), and access to, exclusion from and contestation over natural resources is a key political issue – especially for the region's poor and marginalized (Lebel et al., 2009; Hall et al., 2011). Major decisions around food, water and energy are highly political, and take place within arenas of unequal power relations that often lack democratic equalizers such as transparency and public participation.

Some have proposed to meet these challenges in Southeast Asia through a nexus approach since 2011. A variety of initiatives have emerged, including those led by the Asian Development Bank geared towards shaping its investment agenda (ADB, 2012), by regional research and policy platforms such as the Challenge Program on Water and Food –Mekong (CPWF-Mekong, 2013), and by inter-governmental organizations such as the Mekong River Commission (Bach et al., 2012). On the ground, some researchers have also taken the nexus as a heuristic framework by which to force thinking on the relationship between food, energy and water trade-offs and operationalize the nexus in participatory planning and decision-making processes (Krittasudthacheewa et al., 2012; Smajgl

[493]In this paper, Southeast Asia refers to mainland Southeast Asia, namely: Cambodia, Laos, Myanmar, Thailand and Vietnam

&Ward, 2013). Despite these activities, the region's social movements and local and national civil society have yet to seriously discuss or adopt the nexus concept as framed in global and regional policy circles. It might be said, though, that to many rural farmers, fishers, and community groups food, water and energy resources had not been conceptually separated in the first place compared to the fragmentation that has occurred in the world of experts and their disciplinary approach to knowledge.[494]

Unjust exclusion from access to natural resources due to development processes and projects, particularly of socio-economically and politically marginalized groups, has been raised as an issue of "environmental injustice" both globally and in Southeast Asia (Sneddon & Fox, 2008; Lazarus et al., 2011; Middleton, 2012; Walker, 2012). Academics, social activists and even some governments have conceived of, framed and theorized environmental justice from plural normative and analytical perspectives. A shared concern, however, is an emphasis on social difference and how groups of people, differentiated for example by race, gender, or class, experience the environment differently (Robbins, 2012, p. 74). From the perspective of environmental justice, modes of (in)justice are: *distributive justice*, namely who wins and who loses in suffering environmental bads (harms and risks) and benefiting from environmental goods; *procedural justice* conceived in terms of the ways in which decisions are made, who is involved, and who has influence[495]; and j*ustice as recognition* meaning who is and isn't valued, and that incorporates social and cultural (lack of) recognition, including politics of knowledge (Walker, 2012, p. 10). The presence or absence of these modes and processes of (in)justice serve to reinforce or undermine each other (Schlosberg, 2004).

In recent years, claims for justice have emerged related to individual components of the nexus, but not towards the nexus itself. These claims often draw on rights-based frameworks given that water, food, and energy, are fundamental to meeting human needs. Food justice, also linked to access to land and related natural resources, is advocated for within a range of social movements such as Via Campasina, as well as more institutionalized processes such as the UN's Special Rapporteur on the Right to Food. Various food justice concepts have emerged, for example Food Sovereignty and Land Sovereignty (Patel, 2009; Borras et al., 2011; Borras & Franco, 2012; Agarwal, 2014). Regarding water, there have been equivalent movements, including against water grabbing, and in pursuit of the Right to Water (Mehta et al., 2012; Sultana & Loftus, 2012; Franco et al., 2014). Meanwhile, questions have also been raised towards the production and distribution of energy.Hildyard et al.(2012) highlight that attaining national energy security is typically interpreted as energy to ensure economic growth, which is not necessarily equivalent to "energy for all" (see also Pasqualetti & Sovacool, 2012).

This paper argues that if the nexus approach is to support its commonly stated aspirations for sustainable development and poverty reduction, then it should engage more directly in identifying winners and losers in "nexused" natural resource decision-making, the inevitable politics involved, and ultimately with the issue of justice. To date, nexus framings that adopt a systems perspective, whilst broadly calling for 'good governance,' are yet to seriously meet this challenge (Lele, 2013; Allouche et al., 2014; Foran, 2015). This paper relates current conceptualizations and framings of the

[494]The authors thank Dr. Edsel Sajor who shared this insight at the Third Mekong Forum on Water, Food and Energy. November 19-21, 2013, Ha Noi, Vietnam

[495] It includes access to information, participation in decision making, and access to justice systems.

nexus to environmental justice via boundary concepts (Mollinga, 2010; 2013), namely: sustainable development; the green economy; scarcity and addressing trade-offs; and governance at and across the local, national and transnational scale. The paper grounds the linkages between the nexus and environmental justice through mapping the rise of the nexus in Southeast Asia and its framings, and by drawing upon examples from the region.

In the next section, we introduce the concept of the nexus as a nirvana concept and narrative. We then discuss the rise of the nexus in Southeast Asia since 2011 by mapping the four types of actors involved in promoting the nexus (investment-led organizations; sustainable development-led organizations and research institutes; conservation-led organizations; and donors) and the key events and reports that have shaped the emerging nexus framing. The section argues that the nexus started as a concept amongst international actors, but through the construction of epistemic networks and aid-linked activities, is now increasingly embedded in region's policy narrative, but not yet extensively into national policy. The subsequent section, followed by the conclusion, explores the potential value of approaching the nexus through an environmental justice lens via boundary concepts shared by the nexus and environmental justice.

Framing the Nexus: A Nirvana Concept, a Frame and a Narrative

The idea of the nexus has traits of "nirvana concept"[496], analogous to the idea of Integrated Water Resources Management (IWRM) analyzed by Molle (2008). Elements of the nexus concept as an ideal include aspirations for: understanding and managing scarcity, synergies and tradeoffs; increasing efficiency; bridging across fragmented food, water and energy policy and institutions; improving governance; and ultimately ensuring that development is sustainable. Whilst each of these concepts are broadly appealing, as Molle (2008, p. 131) states: "[i]deas are never neutral and reflect the particular societal settings in which they emerge, the worldviews and interests of those who have the power to set the terms of the debate, to legitimate particular options and discard others, and to include or exclude particular social groups."

Leach et al (2010, pp. 43-52) and others (see, for example, Molle, 2008; Walker, 2012, pp. 4-5) highlight that there are many different ways of explaining a socio-technical-environment system with equally rational ways of understanding. This in turn can lead to different narratives of explanation between actors of the same system.[497]Narratives are causal and explanatory beliefs (Molle, 2008) produced by actors that frame systems in particular ways towards attaining particular goals. The construction of frames involves subjective (normative) judgments and choice of elements. Thus, framing recognizes that any system is subject to multiple forms of interpretation by a range of actors dependent upon how scale, boundaries, key elements, dynamics, and outcomes are labeled and categorized, and how assumptions are made based on varying degrees of subjective/value judgments. Molle (2008) shows how the ideational power of nirvana concepts underpins the construction and framing of narratives.

[496] Molle (2008, p. 132) defines a "nirvana concept" as those that "embody an ideal image of what the world should tend to. They represent a vision of a 'horizon' that individuals and societies should strive to reach.

[497] According to Leach et al (2010, p. xiii), framing is "the different ways of understanding or representing a social, technological or natural *system* and its relevant *environment*. Among other aspects, this includes the ways system elements are bounded, characterized and prioritized, and meanings and *normative* values attached to each" [emphasis in original]

Thus the nexus, and the particularities of how it is defined, can be understood as a framed narrative (or a discourse – see Dryzek, 2005, and Dore et al., 2012), as, of course is 'environmental justice.' This is not to say that socio-technical-environment systems cannot be studied and mapped – hence an argument for "soft constructivism" (see Robbins, 2012, pp. 128-130). Recognition of the nexused relationship between food, water and energy has the potential to add significant value towards resource management policy and practice. The point is that there is a need to acknowledge the existence and legitimacy of a range narratives and frames in pursuing a nexus approach; in other words, the nexus is a political process, not just a technical one.

The Rise of the Nexus in Southeast Asia

In this section, we identify the key actors promoting the nexus in mainland Southeast Asia and how the nexus has been framed. In doing so, we map out how the nexus concept has been promoted and diffused across the region, and evaluate the extent to which it has become embedded to date.

Preceding the arrival of the nexus, there have been various "nexused notions" calling for the integration of water and related natural resource sectors. Most high profile, of course, is Integrated Water Resources Management (IWRM), which although argued to be different from the nexus still shares some goals including integration across water-related sectors, strengthening governance, and improving public participation (see Benson et al., 2015). Lessons from IWRM in Southeast Asia show us, however, that whilst there has been progress creating institutions, policy and regulations on paper, critical challenges remain (Molle, 2007; GWP, 2011). Domestically, these include that "uncontrolled developments of catchments and river basin, water pollution and flood risks are common threats" and there is a "…lack of co-ordination among water-related agencies and institutional technical capacity to implement IWRM…" (GWP, 2011, p. 56). Reflecting on inter-governmental attempts to implement an IWRM Basin Development Plan through the Mekong River Commission for the lower Mekong basin, Hansson et al (2012) argue that greater attention must be paid to power asymmetries and politics in regional water politics if transboundary water management is to be sustainable and inclusive (see also Cooper, 2012).

In Southeast Asia, there has been a growing momentum of meetings and reports around the nexus, and thus the concept itself has grown in prominence since 2011. Dore et al. (2012, p. 26) observe that it is within the nexus discourse that "many actors see a logical, sectoral entry point for themselves in compelling new, multi-sector, interdisciplinary and transboundary deliberations." Surveying the array of major reports written, and conferences and dialogues hosted with a focus on mainland Southeast Asia (see Appendix A), three broad types of organizations that have led promoting the nexus can be distinguished, as reflected in the organization's mission statements:

- *Investment/ Lending organizations*: Asian Development Bank (ADB); World Bank
- *Sustainable development organizations and research institutes*: Mekong River Commission (MRC), the CGIAR Challenge Program on Water and Food-Mekong (CPWF-Mekong), the Stockholm International Water Institute (SIWI), United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), United Nations Environment Program (UNEP), International Water Association (IWA), International Water Management Institute

(IWMI), the Stimson Centre, the Commonwealth Scientific and Industrial Research Organisation (CSIRO), and the Stockholm Environment Institute (SEI).

- *Conservation organizations*: International Union for the Conservation of Nature (IUCN); and the Worldwide Fund for Nature (WWF)

Major donors funding the above organizations are predominantly high-income country governments with interests in Southeast Asia. These include the governments of Australia, Finland, Denmark, Germany, Sweden, the United Kingdom, and the United States. Other donors include "investment organizations", namely the Asian Development Bank and the World Bank, although these actors also principally receive support from high-income country governments. Global shifts in aid funding towards the nexus reflect the agenda promoted through and beyond the Rio+20 conference and the World Economic Forum (Allouche et al., 2015), as well as in the context of the need to respond to climate change.

Organizations promoting the nexus and their donors have commissioned research, supported networks of government policy makers, academics and civil society, and organized conferences in promoting and deliberating the nexus. The first major conference on the nexus in Southeast Asia was the "1st Mekong Forum on Water, Food and Energy", held in held Phnom Penh, Cambodia in December 2011 and organized by the CGIAR Challenge Program on Water and Food-Mekong (CPWF-Mekong) with funding from Australia Aid. Two subsequent conferences organized by CPWF were held in Hanoi in November 2012 and December 2013. These conferences, which have grown in size and scope, were convened as multi-stakeholder dialogues utilizing the nexus as a framing concept. One intention of the nexus frame was to draw senior officials from an array of government agencies responsible for water, food, energy and the wider economy. The research of CPWF-Mekong, implemented for two phases between 2004-2014, was also presented at these conferences. CPWF-Mekong is linked to a global CPWF project across six transboundary river basins, and has incorporated the nexus into its research program and activities as the nexus framing has gained momentum globally.[498]

The CPWF-Mekong program[499], together with another research network called the "Mekong Program on Water, Environment and Resilience" (M-POWER),[500] have built a research-driven epistemic network[501] around water governance in the region that has increasingly researched and deliberated the nexus at their conferences and other convened dialogues (Dore et al., 2012; Dore, 2014). These networks are formed of international organizations, regional and international researchers and civil society, regional governments, and mainly high income country donors. Thus, the nexus concept has also spread into other conferences and policy forums that draw upon active members of these networks. Many research projects to date, however, may be better characterized

[498] http://wle-mekong.cgiar.org/about/our-focus/ [Last accessed 9.1.15]
[499] The CPWF-Mekong channelled funds into thirty two major research projects in mainland Southeast Asia between 2004 and 2014. See: http://wle-mekong.cgiar.org/
[500] CPWF's successor, the CGIAR Research Program on Water, Land and Ecosystems, adopts the nexus-type relationships as one organizing principle for its program. http://www.mpowernetwork.org/ [Last accessed 9.1.15]
[501] Haas (1990, p. xviii) defines an epistemic community as: "knowledge-based groups of experts and specialists who share common beliefs about cause-and-effect relationships in the world and some political values concerning the ends to which policies should be addressed"

as multi-disciplinary and cross-sectoral but considering particular nexused relationships, rather than specifically engaging the nexus as taken "off-the-shelf" of global policy; for example, Orr et al.(2012) explore the trade-off between lost fish protein production and plans for construction of mainstream dams on the Mekong River.

Governments have also broadly engaged with the nexus, the most prominent being via the Mekong River Commission (MRC), an intergovernmental transboundary river basin organization for the Mekong basin that also draws its funding principally from high-income country donors.In May 2012, the MRC hosted the "Mekong2Rio" International Conference on Transboundary River Basin Management" that convened experts from fourteen major transboundary river basins and sixteen related-international organizations to reflect on the nexus-approach (Bach et al., 2012). By hosting the conference, the MRC also placed the Mekong basin as a key focal object in the discussion of nexused transboundary river management globally. The Mekong2Rio conference's conclusions fed into the global Rio+20 process in June 2012 (Bach et al., 2012, pp. 60-61). Subsequently, in April 2014, another major nexus-framed international conference was hosted by the MRC (Bach et al., 2014),[502]from which a nexus-framed message was delivered in person to the region's highest-level political leaders who attended the accompanying Second MRC Summit:

> "In order to collectively benefit from the opportunities [of the nexus perspective], transboundary agreements and institutions develop and need to adapt to changing environments. For these to work effectively, a combination of political will, technical cooperation and an inclusive process is required."

This demonstrates a significant shift in framing from the message delivered to the region's political leaders at the first MRC Summit held four years earlier, which was framed around the implementation of transboundary IWRM (MRC, 2010).[503] From an environmental justice perspective, given the particularities of the region, namely the "ASEAN Way" that emphasizes the principle of non-interference in other country's affairs (Acharya, 2009), emphasis in the MRC's framing of the nexus is placed on "balanced" development, managerial-type decision-making, and with reference to principles of international water law (Hirsch & Jensen, 2006; Rieu-Clarke, 2015).

On a different tack, the Asian Development Bank (ADB) – an investment organization –also promoted the nexus through a major conference in Bangkok in February 2012 under its Greater Mekong Subregion (GMS)[504] program, a program which is principally geared towards accelerating regional economic integration through infrastructure investment, institutional reform and capacity

[502] The International Conference on Cooperation for Water, Energy and Food Security Under Climate Change in the Mekong Basin, 2-3 April 2014, Ho Chi Minh City

[503] Although the nexus as a formal concept itself was absent from the agenda (given it was yet to be "invented" in the context of sustainability at Bonn 2011), notions of a nexus where hinted at. For example, the conference summary notes "Water is life, and our increasing demands for food and energy depends on our ability to work together to develop and manage this precious resource, while protecting the unique environment of our river basins upon which millions of people and other living creatures depends for their daily living." (MRC, 2010)

[504] The GMS program was initiated by the ADB in 1992 and geographically encompasses Cambodia, Laos, Myanmar, Thailand and Vietnam, and Yunnan Province and Guangxi Zhuang Autonomous Region of the People's Republic of China. It is principally a subregional economic cooperation that has grown to incorporate multi-country projects in the following sectors: transport, energy, telecommunications, environment, human resource development, tourism, trade, private sector investment, and agriculture.

building (ADB, 2012). At the conference, experts presented on the nexus principally to senior government officials, representatives from the private sector, donors and select civil society.The conference provided input to the GMS program, with the conference proceeding preface stating:

> "The progress [of the GMS program] is reflected in terms of improvements in infrastructure connectivity, promotion of trade and investment, stimulation of economic growth, and reduction of poverty. However, such progress has not been without some adverse impacts on the environment…. Many presentations … focused on deepening the awareness and understanding of the nexus as a basis for transition to climate resilient and green economic pathways of development… ADB is committed to play its part in assisting countries in the subregion to achieve this goal by mobilizing additional financial resources and developing new knowledge products."

The ADB's approach to the nexus, working principally with the region's governments, thus reflects an approach to define its investment strategy with the conference outcomes framed in terms of promoting economic growth and a green economy, rather than giving explicit consideration to justice in decision-making beyond generic approaches embodied in calls for good governance. The ADB has launched several additional major reports on water and the nexus, most notably *Thinking about Water Differently: Managing the Water-Food-Energy Nexus*(ADB, 2013). This report, whilst wide-ranging, emphasizes how economic water scarcity in Cambodia, Laos, Vietnam and Myanmar could be addressed through "improving supply side infrastructure," whilst also addressing demand side factors (including through water pricing), strengthening governance, and building new institutions (ADB, 2013, pp.vi-vii), thus again explicitly linking the nexus to the ADB's investment strategy.

Overall, only a limited number of international NGOs and policy think tanks have been drawn to the nexus in the region to date. The Stimson Institute, in their report *Mekong Turning Point: Shared River for a Shared Future*, frame their subsequent analysis on the risks posed by plans for mainstream dams on the Mekong River with the opening sentence:

> "In no part of the world does the increasingly critical nexus of water, food, and energy have more immediate relevance than the Mekong River…" (Cronin & Hamlin, 2012, p. 1)

Another example is the WWF's "Mekong Nexus Project" initiated in late 2014 designed to "research key links, conflicts and positive synergies between conservation of biodiversity, responses to climate change, and supply of energy, food and water" (WWF, 2014). On the other hand, national and local civil society groups have rarely explicitly utilized the nexus as a framing for their work to date. Despite this, implicit to many campaigns are nexus-type trade-offs, as has been demonstrated in heated debates around the revived plans for Mekong mainstream dams (Grumbine et al., 2012; Matthews, 2012; WWF, 2012). Indeed, it is in these debates that claims for justice are most commonly heard (Middleton, 2012; Rieu-Clarke, 2015).

Finally, a number of global-level nexus initiatives have also sought to gather experience from Southeast Asia both to promote the nexus in Southeast Asia and to project the region back into global policy arenas. In addition to the CPWF program and Mekong2Rio conferences mentioned above, most notable has been the International Water Association (IWA)-IUCN Nexus Dialogue on

Water Infrastructure Solutions that held three "regional dialogues" including in Bangkok in March 2014 and subsequently a global synthesis meeting in Beijing in November 2014 (GWP-China et al., 2014). Unlikely bedfellows, the IWA in its framing of the dialogue emphasized how the nexus "has led to new demands for water infrastructure and technology solutions"[505] whilst IUCN has sought a framing emphasizing "natural infrastructure" (see Krchnak et al., 2011).

The number of high-profile nexus meetings involving senior political leaders and civil servants would suggest an increasing embededness of the nexus in political discourse towards natural resources. This comes with provisos, however, as several recent high-profile political meetings did not highlight the nexus. For example, at the Second Asia Pacific Water Summit held in Chiang Mai, Thailand in May 2013, whilst a session on the nexus was convened (Waldorf, 2013), the "Chiang Mai Declaration" adopted by the leaders was framed by IWRM rather than the nexus, even as it referred to the green economy and "the Future we Want" Rio+20 declaration.[506]

Several initiatives in Southeast Asia have sought to operationalize the nexus through their field-based work. An innovative research project titled "Exploring Mekong Region Futures" led by the Commonwealth Scientific and Industrial Research Organization (CSIRO) (2009-2013) used the nexus as a heuristic tool in a regional "Delphi" assessment, together with five local case studies[507] to explore a range of development scenarios and alternative futures (Smajgl & Ward, 2013; Foran, 2015).[508]For example, the Northeast Thailand Futures study led by the Stockholm Environment Institute (SEI) worked with farmers, local government, academics and others to explore a range of scenarios related to rice, sugarcane, cassava, and rubber production in the context of rising demands for energy (including biofuels) and food in the Huai Sai Bat (HSB) sub-basin of the Chi river (Krittasudthacheewa et al., 2012). The learning-orientated research design and involvement of Thailand's National Economic and Social Development Board facilitated the inclusion of a form of nexus-concept into the 11th five-year National Economic and Social Development Plan for Northeast Thailand.

In a different application, in 2012 the ADB commissioned the consultancy firm International Center for Environmental Management Asia (ICEM Asia) to undertake a Strategic Environmental Assessment (SEA) of Southeast Asia's energy sector. ICEM Asia, in designing the SEA, selected to adopt a nexus-type approach, whereby the study assessed the impact of different energy scenarios according to impacts on a range of securities, including ecological, food, climate, social, economic and energy securities (ICEM Asia, 2013). Thus, the report findings promoted consideration of 'nexused' policy objectives in energy planning. Yet, despite in principle guided by representatives of the region's governments under the Regional Power Trade Coordination Committee convened under the GMS program, there is little evidence that the SEA has significantly shaped a nexus approach to national-level energy policy and planning to date (Middleton & Dore, 2015).

[505] http://www.iwawaterwiki.org/xwiki/bin/view/Articles/NexusDialogueonWaterInfrastructureSolutions-BuildingPartnershipsforInnovationinWaterEnergyandFoodSecurity [Last accessed 9.1.15]
[506] http://apws2013.files.wordpress.com/2013/05/chiang-mai-declaration.pdf [Last accessed 9.1.15]
[507] Rubber Futures in Yunnan, China; Water options in Lao PDR; Future farming in Northeast Thailand; Impact of development on Tonle Sap; and Sea-level rise and future livelihoods in Vietnam's Mekong Delta.
[508] http://www.csiro.au/Organisation-Structure/Divisions/Ecosystem-Sciences/Mekong-Futures.aspx [Last accessed 9.1.15]

Alongside the conceptual objects of nirvana concept and narrative outlined above, Molle (2008) also proposes a third conceptual object of "model." Models, Molle (2008, p. 138) states, are "based on particular instances of policy reforms or development interventions which ostensibly embody a dimension of 'success' and qualify as 'success stories'." Whilst the nexus concept is itself is quite young, particularly to Southeast Asia, some *tentative* models have emerged from the region back into the global nexus discourse.For example, several hydropower projects whose planning, construction and operation predates the arrival of "the nexus" were partially reframed as nexus projects at the Bonn 2011 Conference. Both located in Laos, these were the Nam Theun 2 (EDF Group, Thailand et al., 2012) and Theun Hinboun projects in Laos (Ministry of Energy and Mines (Laos) et al., 2012). The claims of both dams of being sustainable model projects that adequately integrated project operation with other food, water and livelihood concerns have been contested (FIVAS, 2007; Lawrence, 2009).

On the other hand, there are also nexus-based problem definitions that arguably become the precursor to defining a nexus-based development intervention to thus remedy it (see Escobar, 1995, pp.21-54). For example in the recent major UN World Water Development Report, titled *Water and Energy*, the Mekong Basin is identified as a "notable example" of how "[d]amming rivers to produce energy can have adverse impacts on important inland fisheries by changing water flow rates and timing, fragmenting habitat and disrupting fish migration routes" (UNESCO 2014, pp. 55-56; see also Flammini et al., 2014, pp.84-88).[509]

In summary, there is some indication of the spreading and embedding of the nexus in the region ranging from the presentation of the concept to the region's top political leadership at various policy forums, to the involvement of government, regional academics and others in dialogue meetings and conferences, to the growing volume of academic and policy-orientated research. On the other hand, tangible impact in terms of policy, especially reforming institutions and implementing nexus-type plans and regulations is less apparent. National water policy, on paper at least, is still IWRM focused, and it remains to be seen whether the nexus will replace, displace or compliment it as a new nirvana concept and narrative towards water management.

Diffusion of the Nexus: From Top to Bottom

The nexus to date has emerged as a concept spread principally within regional-scaled policy circles. Many of the most influential nexus-proponent international organizations also have global nexus programs (e.g. UN agencies, IWA, IUCN, SEI…), and therefore the projection of the nexus into Southeast Asia also reflects the regionalization of a global policy discourse. It is, in other words, a process of international policy diffusion[510] of which three mechanisms are in evidence (Dobbin et al., 2007), namely: social construction; coercion; and learning.

[509] In another example, in the Red River basin, FAO (2014, p. 2) write: "As water becomes scarce, and competition is growing between the energy and agricultural sectors, there is still a lack of reliable and policy-relevant data and information to guide water allocation choices. Effective cross-sectoral consultation mechanisms are needed to ensure the development of concerted efforts to address this problem, and to make sure that decisions on water release and allocation are taken as part of an integrated, long-term and multi-sectoral strategy."

[510] (International) diffusion theorists propose that policy adoption is shaped by the choices of others, rather than domestic conditions alone (Dobbin et al., 2007). Given that the nexus has formed principally from a global

Social construction processes link policy diffusion to epistemic networks and international organizations and argue that ideas (and rhetoric) propagated through these networks provide the motivation for the willing uptake of policy.[511]Nexus-related knowledge has clearly been produced in the region through a widening epistemic network that incorporates international organizations, regional governments, regional and international academics and civil society, high-income country donors, and various private sector actors, bound (loosely) together through programs such as those of CPWF-Mekong and M-POWER. These epistemic networks are diffusing and using the idea of the nexus through building shared research agendas and organizing conferences, multi-stakeholder dialogues, and high-level policy meetings. In contrast, coercion-based policy diffusion occurs under conditions of unequal power-relations, including control of resources such as aid grants and loans. That many nexus-related activities have been funded through the international aid of high-income country governments hint at a measure of soft coercion, according to this definition; on the other hand, in contrast to more clearly coercive policies such as past Structural Adjustment Loans, nexus-orientated projects are also driven by demand within the region amongst those organizations and individuals active upon it, including to fund research, inform policy, and influence practice on the ground. Finally, learning-based processes (similar to social construction processes) find that policy diffusion is driven by the sharing of ideas, but emphasize how policy actors make reasoned observation and rationalization based on their own experience and the experience of others. In this sense, the CSIRO "Exploring Mekong Region Futures" project demonstrates these traits, including in the local-level participatory action research case studies that adopted an actor learning perspective, in the process creating the Challenge-and-Reconstruct Learning (ChaRL) framework (Foran et al., 2013; Smajgl & Ward, 2013).

From the knowledge produced and deliberations held on the nexus to date, it is also apparent that much of the focus has been on understanding the interaction between food, water and energy systems, and how to shift towards sustainability through: managing scarcity with efficiency measures; articulating trade-offs to inform them; and ensuring economic growth in the form of a green economy. Governance of the nexus, whilst part of the nexus parlance (for example, the need for public participation), has yet to be seriously problematized and integrated, in particular in the context of the institutions, politics and history of Southeast Asia (Foran, 2015). Furthermore, nexus tradeoffs are rarely conceptualised in terms of justice neither in the region nor globally.

A Nexus between the Nexus and Environmental Justice?

That food, water, energy and climate are in a nexus relationship is increasingly recognized amongst various experts. As demonstrated above, however, globally and as diffused into Southeast Asia, a plurality of nexus framings exist (Bizikova et al., 2013).The nexus and environmental justice share a number of boundary concepts (Mollinga, 2010; 2013), including: sustainable development; the green

agenda around the Rio+20 conference and is now increasingly promoted in developed and developing countries, the mechanisms of international policy diffusion offer insight into the concept's spread.

[511] Dobbins et al (2007, p. 452) identify three approaches that could result in social acceptance of a policy: "(a) leading countries serve as exemplars (follow-the-leader); (b) expert groups theorize the effects of a new policy, and thereby give policy makers rationales for adopting it; or (c) specialists make contingent arguments about a policy's appropriateness, defining it as right under certain circumstances".

economy; scarcity and addressing trade-offs; and governance at and across the local, national and transnational scale.[512]

In this section, for each boundary concept, an analysis is made of its relationship with the nexus and environmental justice. The purpose is to draw potential linkages and identify tensions or disjunctures between the nexus and environmental justice via the boundary concepts. The discussion is contextualized through case studies from Southeast Asia.

Sustainable Development

The concept of sustainability has come a long way since the groundbreaking Brundtland report (1987) defined it along the lines of needs and limitations, accounting for present and future generations, prioritizing those in poverty, and seeing the earth as a system geographically and temporally that is amendable to systems thinking. Since the Rio Earth Summit in 1992, this famously amorphous idea has continued to be critiqued and furthered (Carter, 2007, pp.207-239), for example through the concept of dynamic sustainability (Leach et al., p. 2010).

As the Dublin Principles that informed IWRM were an input to the Rio Earth Summit, so the nexus (and the associated green economy) framed at Bonn 2011 were an input into Rio+20. Hoff (2011, p. 5), in the background document to Bonn 2011, considers that the nexus can facilitate a sustainability transition through: increasing resource use efficiency; generating knowledge that informs trade-offs and identifies synergies across sectors; investing to sustain ecosystem services; and accelerating access and integrating the poorest. Most nexus literature in Southeast Asia (and globally) clearly states sustainability as a goal, often left broadly or undefined, whilst also claiming that the region's development is unsustainable at present and in need of redirection.

Given that the MRC was host to the Mekong2Rio international conference in May 2012, Southeast Asia played a high-profile role to bring a transboundary river perspective about the nexus into discussions about sustainability. The follow-up MRC nexus international conference in April 2014 sought to link the nexus for transboundary rivers to the Sustainable Development Goals that emerged from Rio+20. Both conferences emphasized transboundary river nexus management, the key role of states, and the value of incorporating transboundary cooperation within these global policy frameworks. Meanwhile, the ADB's approach to sustainability through the nexus in Asia includes developing new economic modelling tools, investment in supply side infrastructure, and reforming water governance institutions (2013, pp.vi-ix). Whilst both approaches talk about multi-stakeholder approaches, emphasis is on the role of the government in nexus management and planning including bridging between fragmented water, food and energy government institutions.

There is a large body of literature linking sustainable development to environmental justice (Agyeman et al., 2003; Beder, 2006; Okereke, 2008; Clapp & Dauvergne, 2011). Haughton (1999, p. 64, cited in Agyreman et al., 2002), observes that finding the common ground between environmental justice and sustainability requires:

[512] This list is derived from an assessment of the key elements of the nexus by Bizikova et al (2013) and the themes of the "Nexus 2015: Water, Food, Energy and Climate Conference" (http://nexus.unc.edu/).

> "acknowledging the interdependency of social justice, economic wellbeing and environmental stewardship. The social dimension is critical since the unjust society is unlikely to be sustainable in environmental or economic terms;…"

Many concepts of environmental justice readily link to those of sustainable development, and thus could also contribute insight to the nexus. Recognizing the temporal consideration of sustainable development, the community of justice is often understood to include the rights of future generations (Walker, 2012, p. 10). Meanwhile regarding meeting needs that also prioritizes poverty, the crux of environmental justice often focuses on the environmental burden and lack of access to decision-making of economically, socially and politically marginalized communities.

The concept of procedural justice, a central tenet of environmental justice, is embodied in Principle 10 of the Rio Declaration – a foundational document both of sustainable development and international environmental law. Principle 10 emphasizes participation, access to information, and access to justice systems for redress and remedy. Procedural justice is intended to ensure that state institutions and laws and policies are fair and inclusive. In Southeast Asia, whilst policies and laws on water governance and social and environmental protections may be broadly improving (Robert et al., 2006), challenges include incoherent or incomplete legal frameworks, a wide gap between legal frameworks and implementation in practice, and limited capacities of the state and of civil society (Dao, 2010; Foran et al., 2010; TEI, 2011; Grumbine et al., 2012). For example, ADB (2010) note that Thailand and Vietnam have the most comprehensive Environmental Impact Assessment (EIA) procedures, although "loopholes still exist" (2010, p. vi), whilst Cambodia's, Laos' and Myanmar's practices are significantly weaker.

There is no shortage of cases in Southeast Asia where disputes have arisen around decision-making of large-scale irrigation or hydropower projects that unequally distribute environmental harms and risks, with the voices of affected communities marginalized from decision-making processes.[513] They may seek to influence decision making – to the extent that political space allows – through attempts to engage in formal policy and planning processes, or working outside of these processes such as in street protests, media work or direct action, or both, thus seeking redress for environmental injustices (Middleton, 2012).For example, in the case of the Xayaburi Dam[514], under construction on the Mekong River in Northern Laos since late 2010, international and regional civil society groups and communities representatives in particular from Thailand, Vietnam and Cambodia sought to suspend the project through official processes such as a regional consultation process hosted by the Mekong River Commission initiated in September 2010[515], as well as subsequently in the Thai administrative courts and through the Thai National Human Rights Commission, and via various international voluntary mechanisms such as the OECD Guidelines for Multinational Enterprises (Matthews, 2012; Herbertson, 2013; LeFevre, 2014).They also organized numerous street protests,

[513] A particular stream of environmental justice, termed "environmentalism of the poor," refers to how the poor may seek to defend their existing access to resources from large-scale extraction projects, including those associated with forms of the nexus such as large-scale land uses and large hydropower dams, because "[t]his behaviour is consistent with their interests and with their values" (Martinez-Alier, 2014, p. 240).

[514] The US$3.5 billion 1,260 MW Xayaburi Dam is constructed by a predominantly Thai private-sector consortium and would export 95% of its electricity to Thailand.

[515] The Procedures for Notification, Prior Consultation and Agreement (PNPCA) is required under Article 5 of the 1995 Mekong Agreement for mainstream dam projects. Its interpretation and conclusion has been subject to significant uncertainty and contestation (Middleton, 2014; Rieu-Clarke, 2015).

peace walks, and worked extensively with the media, seeking to influence decision makers and public opinion outside of the formal processes; even as the project was somewhat redesigned, overall the project developers and the Laos government remained relatively impervious to these protests (Middleton, 2014). Many other well-document cases exist of contentions politics around large water infrastructure, for example the contested Pak Mun and Rasi Salai dams in Northeast Thailand since the 1990s (Missingham, 2003; Foran & Manorom, 2009; Molle et al., 2009) and the Lower Sesan 2 currently at an advanced stage of planning in Northeast Cambodia (Grimsditch, 2012).

There is, however, some tension between various frames of environmental justice and sustainability regarding the extent that they are considered compatible (Walker, 2012, p. 37). Agyeman et al. (2002, p. 88), reflecting on the different origins of sustainability (rooted originally in international policy spheres) and environmental justice (rooted originally in grassroots social movements) argues that the discourses "have developed in parallel" and that there had been "insufficient interpenetration of values, framings, ideas and understandings." On the other hand, Fisher (2003, p. 206) argues that environmental justice movements and sustainability movements have symbiotic goals. Agyeman et al.(2003), meanwhile, calls for joined-up thinking to bring together sustainability with environmental justice. Others, however, see the sustainability discourse as too readily acceding to the status quo of market-led development, technical eco-modernization solutions and power asymmetry, and doubt that environmental justice is seriously considered (Walker, 2012, p. 37).

Environmental justice literature recognizes that unequal power relations together with deeper economic, social and political structures and processes that shape the (re)production of environmental harms mean that "procedural justice" is not the only precondition to accessing environmental justice.[516] An environmental justice lens can thus problematize nexus goals of sustainability, in particular by identifying winners and losers in projects and plans proposed for sustainable development, including highlighting the need for procedural (and recognitional) justice in decision making (see also 'trade-offs' below).

Green Economy

The concept of the green economy was popularized by the UNDP's Green Economy Initiative during the 2008 global financial crisis (at the same time that World Economic Forum also initiated its discussion on the nexus). The Green Economy established itself as a global development concept with its central role in the Rio+20 conference, sparking much debate amongst governments, scholars, and activists including over: the concepts radical, minimal, or zero transformative potential; and whether it displaces, facilitates as a tool, or simply reinforced attaining "sustainable development" (Ehresman & Okereke, 2014).[517] Ehresman and Chukwumerije (2014), surveying recent literature, propose a typology that maps out the relationship between different framings of

[516] Processes of exclusion have been investigated by an array of social and political (ecology) theories, ranging from common property theory and Marxist political economy to urban metabolisms and environmental governmentality (Robbins, 2012, p. 49-81).

[517] UNEP defines a green economy as one that results in "improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In its simplest expression, a green economy can be thought of as one which is low carbon, resource efficient and socially inclusive." [UNEP "What is the Green Economy" www.unep.org/greeneconomy/AboutGEI/WhatisGEI/tabid/29784/Default.aspx (Last accessed, 9.1.15)]

green economy – which they identify as a "woolly" and "amorphous" concept – with principles of environmental justice associated within them:

- *Thin Green Economy*, which emphasizes the central role of a liberalized market in increasing resource efficiency, holds beliefs that technological solutions will address resource scarcity, and that creating economic growth that will address environmental impacts by following the environmental Kuznets curve; to *market justice* which emphasizes the centrality of creating and protecting property rights, and thus implicitly economic rights.

- *Moderate Green Economy*, which proposes significant reform but not displacement of the existing economic system, including strategies towards "sustainable production and consumption," market and non-market instruments, and reforming institutions drawing, for example, on earth systems governance scholarship; to various concepts of *liberalegalitarian concepts of justice*, for example Rawlsian egalitarianism, capabilities approach, and human rights justice.

- *Thick Green Economy,* which concludes the current economic system must be radically transformed due to fundamental limits to growth yet runaway consumption (especially in the North), and to be achieved through de-growth models and retraction from neoclassical economic models; to *structural justice* whereby a whole new political economy must be created that places as central social equity and environment protection.

In Southeast Asia, the green economy has been promoted in the region both in relation to the nexus and separate from it. The UNEP and UNESCAP have been amongst the lead regional proponents. UNESCAP, in a position paper published in 2013 on the WEF nexus in Asia and the Pacific region, acknowledging the "dearth of studies on the interconnections between water-food-energy in the Asia Pacific region" recommends the wider region to:

> "Embrace green economy as a new policy goal and pursue 'low carbon, resource efficient, and socially inclusive' development strategies as espoused in the United Nations Conference on Sustainable Development (UNCSD or Rio+20)… The world needs to find profitable market-oriented solutions to nexus challenges…" (UNESCAP, 2013, p. 49).

The strategy detailed is essentially an ecological modernization project, orientated around a market-based approach of resource productivity, efficiency and technology. Little consideration is given to whether markets themselves are resulting in social exclusion or undermining sustainable environmental exploitation. Other reports have been published in a similar vein, for example by UNESCAP, ADB and UNEP (2012), which relate to a thin concept of green economy evoking what Ehresman and Chukwumerije (2014) term principles of market justice.

Other organizations have approached the nexus recommending a moderate Green Economy. For example, the MRC's Mekong2Rio conference in April 2012 explicitly linked a Green Economy to the need for basin management, building upon the Bonn 2011 conference which was framed by the Stockholm Environment Institute's background briefing paper (Hoff, 2011). In their conference report, framings of the green economy include: highlighting the (economic) value of natural infrastructure and their ecosystem services, and then need to rebuild natural capital; mobilizing

consumers to shape their sustainable consumption; and aiming for growth in income and employment driven by public and private investments that should be green. MRC states that rebuilding natural capital is "especially important for poor people whose livelihoods and security depend on nature" (Bach et al., 2012, p. 14). The report moves away from an emphasis on market instruments, and balances them with non-market interventions including the importance of (cross-border) dialogue.

At the national level, it appears that the Myanmar government – now apparently entering a period of democratic transition and economic transformation (Holliday, 2011) – has demonstrated the greatest interest amongst the countries of the region in a green growth-orientated nexus. At the Third Green Growth Forum in November 2013, a major conference opened by President Thein Sein and backed by some high-income country donors and international NGOs such as the World Wide Fund for Nature (WWF), three days were spent in Yangon and Nay Pi Daw discussing the 'water-energy-food nexus' and relating it to Myanmar's development pathway (see also Kattelus et al., 2014). Contradictorily, however, in Myanmar there are regular reports of ongoing unsustainable and unjust natural resource extraction and exploitation, for example around land (Woods, 2014) and hydropower projects (Hadfield, 2014; Saw Yan Naing, 2014).

Globally, a more radical civil society and social movement have opposed the Green Economy concept; the World Social Forum has called it "the Green Washington Consensus," stating "this latest phase of capitalist expansion seeks to exploit and profit by putting a price value on the essential life-giving capacities of nature" (Working Group on Green Economy, 2012). In Southeast Asia, many civil society and social movements rally around the rights of local communities to access and manage their natural resources and defending natural resource commons, including to rivers, forests and land (Ahmed & Hirsch, 2000; Cuasay and Vaddhanaphuti, 2005; LRAN, 2011; Middleton, Grundy-Warr et al., 2013). They tend towards holding a "thick green economy" position - although would not refer to the position using this phrase - with an emphasis on redressing structural injustices, especially the role of the market and the power asymmetries exercised through it by domestic and international investors and state versus local communities (see Hall et al., 2011).

Thus, building from Ehresman and Chukwumerije's (2014) assessment of the linkage between green economy and environmental justice, it is also possible to relate the nexus to environmental justice via the green economy as a boundary concept, and thus more explicitly consider the role that justice should and could play both in the green economy and the nexus.

Scarcity and Addressing Trade-Offs

Claims for resource scarcity are often evident in nexus framings, with crisis narratives created by some actors, epitomized by the World Economic Forum's Global Risks 2011 report:

> "Shortages could cause social and political instability, geopolitical conflict and irreparable environmental damage. Any strategy that focuses on one part of the water-food-energy nexus without considering its interconnections risks serious unintended consequences." (WEF, 2011, p. 7)

Given the emphasis on scarcity, managing trade-offs have been seen as central to the nexus (Mushtaq et al., 2009; ODI et al., 2012; Rasul, 2014). Largely adopting a systems approach, nexus

thinking seeks to integrate sectors through making apparent the relationships between food, water and energy systems, and addressing interconnected externalities (Howells et al., 2013). Managing trade-offs is approached from the perspective of maximizing benefits through minimizing inefficiencies, reducing externalities, informing trade-offs through knowledge production, and identifying synergistic win-win scenarios where they exist . The Stockholm Environment Institute observes (Davis 2014,p.2):

> "In some cases, however, especially when resources are very scarce, a nexus analysis may not find a win-win option, but just difficult trade-offs (Weitz et al., 2014). The role of science in such situations is not to say what the "right" answer is, but to clarify the choices and ensure that all cross-sectoral impacts, externalities and tradeoffs are known and understood. Participatory processes can also help ensure that vulnerable stakeholders have the information and access they need to advocate for themselves, and can foster dialogue across sectors and scales."

Critical approaches to resource scarcity and the trade-offs entailed emphasize how scarcity can also be understood as a social phenomenon, shaped by market rules and other societal decisions; from this perspective, who experiences scarcity is determined by a politics of resource allocation that excludes particular groups from access (Mehta, 2010; see also Hall et al, 2011; and Scoones et al., 2014).[518] Thus, it is important to ask food, water, and/or energy security "for whom, by whom and from whom, security of what and for what?" (Brauch, 2011, p. 62). Yet, across much of the nexus literature, the principles of distribution and governance of trade-off decisions – including who takes decisions and for whom – are inadequately problematized (Lele, Klousia-Marquis et al., 2013). Foran (2015), for example, critiques systems approaches as under-theorized and under-politicized, in particular with regard to historical and relational considerations. Nexus literature to date, if serious about attaining poverty reduction goals, need to pay more attention to *whose* food, water and energy security is secured, including the means by which the needs of the marginalized will be prioritized (Allouche et al., 2014).

Water scarcity in Southeast Asia is a complex proposition, including because of the uneven distribution of water availability temporally between seasons, and between years and spatially, (see MRC, 2010; Middleton, 2012). Furthermore, flooding and drought are experienced by groups differently (Lebel & Sinh, 2007); for example, variability in annual flood regimes of the Tonle Sap Lake, Cambodia shape risk reception and livelihood strategies of fishers and farmers living in its floodplains differently, including decisions for household members to migrate in search of work (Middleton et al., 2013). Meanwhile, water availability and allocation are continually changing due to construction of water storage infrastructure (hydropower dams and irrigation systems, for example), evolving institutional arrangements, and changes in hydrological regime, including due to climate change; these redistributions of access to water, of course, raise questions of the incorporation of justice in the decisions surrounding them (Neal et al., 2014).The politics of these changing water allocations have been extensively documented, although not necessarily within a nexus framing (Molle et al., 2009; Lazarus et al., 2011)

[518] Scoones et al (2014) examining global land grabs, propose three framings of scarcity: (Malthusian) absolute scarcity; (Ricardian) relative scarcity; and (Marxist) political scarcity.

Across the recent nexus literature on Southeast Asia, scarcity is a common framing. For example, at the ADB's GMS 2020 conference on the nexus, experts presented mainly technical assessments on: how water resources are under growing pressure from agriculture, industry, energy production and water extraction (Thapan, 2012); and how food security, which is already insecure for millions across the region, is further at risk for a range of reasons including growing water scarcity (Rosegrant et al. 2012). Broadhead et al (2012, p. 205), however, assess that for water availability in the GMS overall:

> "…although dry areas do exist, Thailand and Chinese parts of the subregion do not experience significant water scarcity with less than 25% of water from rivers being withdrawn for human purposes (IWMI 2007). Outside the PRC and Thailand, the GMS experiences "economic water scarcity" in which "human, physical and financial capital limit access to water and although less than 25% of water from rivers is withdrawn for human purposes, malnutrition exists." On the whole, however, per capita water availability in the GMS is greater than 5,000 cubic meters (m3) water per year - among the worlds [sic] highest."

Whether water scarcity already exists, as it does in some places, or is claimed to be looming, approaches to tackle these challenges generally orientate, as discussed earlier, around technical and managerial approaches including the need for more data and research, investment in infrastructure, and policy reform.

Viewed through an environmental justice lens trade-off decisions are evaluated by: drawing on concepts of distributional, procedural and recognitional justice; making explicit narratives and associated power asymmetries and its manifestations, for example the politics of knowledge and scale; and incorporating other concepts such as vulnerability, needs and responsibilities (Walker 2012:46). Thus, recognizing that trade-off decisions entail contested claims for entitlements, critical analysis of the claims and narratives of competing actors– for example, what evidence is invoked or which concept of justice should apply[519] – can help render visible how social environmental (in)justice is produced (Walker 2012, p. 40).[520] Whose knowledge, evidence or arguments is recognized as legitimate is particularity important to claim-making[521], as has been well documented in environmental politics in general (Forsysth, 2003) and for water governance in Southeast Asia (Contreras, 2007).

The Northeast of Thailand within the Mekong Basin is an (unfortunate) example demonstrating the production of environmental injustice. Here, there are contested framings, visions and ideologies for allocation and use of water between irrigated food production, electricity generation, and water for wetlands and other local small-scale uses upon which many poorer households depend (Molle, Floch et al., 2009). Also known as the Korat Plateau or Isaan, the region receives the least annual rainfall

[519] Justice involves positioning of what is "fair" and thus can be highly contested and political; the notion of justice can be defined according to multiple principles, including equality of rights, utilitarian equity, and justice as fairness, as well as accommodating indigenous and customary justice arrangements. A detailed treatment of justice is beyond the scope of this paper (see Walker, 2012, pp. 42-53, and Schlosberg, 2007)

[520] Walker (2012, p. 40) differentiates between: evidence of how things are, which tends towards description; process of why things are how they are, which aims to be explanatory; and justice or how things ought to be, which is normative in prescription.

[521] The perceived validity of evidence relates to recognitional justice and thus deeper processes of cultural, identity-based, and institutional bias.

across the Mekong basin of less than 1000 mm per year (MRC, 2010). Government agencies have framed the area as "a poor and parched inhospitable place, begging for more irrigation" (Dore et al., 2012, p. 26), and have pursued developmentalist visions of large irrigation and hydropower schemes. These projects have been justified by government agencies as seeking to address food insecurity, alleviate poverty, and during the 1970s to counter communist insurgency in the region.[522] Pursued first by the Royal Irrigation Department (RID) since the 1960s with the backing of the US Bureau of Reclamation and, since the 1970s, also by the then newly created Department for Energy Development and Promotion (DEDP), successive waves of plans for large- and medium-scale dam and diversion schemes have sought to irrigate Thailand's Northeast region, including "the Green Issan Project" in the early 1980s, the "Khong-Chi-Mun Project" in the late 1980s and 1990s, the "Water Grid Project" in the early 2000s, and most recently a Thai-Lao Water Transfer project (Molle et al., 2009; Blake, 2013).

The large-scale development plans and individual projects have been frequently contested by affected villagers, social activists, NGOs and academics on the grounds of their environmental and social costs, and who have held different visions of development (Missingham, 2003; Blake et al., 2009). In some cases, sustained community protests have resulted in government compromise, for example in the case of the Rasi Salai and Hua Na irrigation dams[523] where since 2013 the RID has committed to spend US$133,300 per year until 2023 on wetland recovery; discussion has now switched to how collaboration can occur as communication remains poor, and how to channel these resources which at present appear to reflect government priorities. In other cases, such as the Pak Mun hydropower dam, disputes remain entrenched and ongoing (Foran & Manorom, 2009). Power assymmetries and politics of scale (see next section) have shaped whose voice is heard within project decision-making and who benefited or paid the costs associated with these decisions (Sneddon, 2003).

Northeast Thailand has entered into Southeast Asia's recent nexus discourse. Blake (2013) labeled the Thai government's approach "irrigationalism" at a nexus conference organized in Chiang Rai in March 2013 organized by the Shared Waters Partnership and IWMI. He argued that a lack of post-facto evaluation hides the extent of irrigation development failures in Northeast Thailand, and that rice production in Thailand is "basically an unprofitable crop without subsidies, unless grown purely for subsistence purposes." Meanwhile, the Stockholm Environment Institute, in their Northeast Thailand Futures nexus project (introduced above) found that in the Huai Sai Bat sub-basin increased access to irrigation in recent years had resulted in heightening water competition between dry season rice with other crops (sugarcane, cassava, and rubber) (Krittasudthacheewa, Polpanich et al., 2012). As research entailed participatory scenario processes, livelihood surveys and modelling of

[522] It's interesting to note that early interventions by the RID promoted from the 1930s to the 1950s emphasized small-scale tank irrigation and river diversion projects.

[523] Completed in 1994, the Rasi Salai project failed to achieve its anticipated benefits and irrigates less than 1,600 hectares of land, compared to an original plan for 5,000 hectares. Meanwhile, nearby communities directly affected experienced loss of farmland, reduced river resources, and the loss of a wetland area (locally called "Pa Boong Pa Taam" areas) that was important for rice and fishery production, herbs, firewood, grazing areas, NTFPs and vegetable production. The dam was originally estimated to cost 140 million Baht, but actual costs were far over budget costing 871 million Baht (nearly six times the planned amount). Over the course of the project, villagers were repeatedly excluded from the decision-making process and access to information was denied, especially in the final stages of construction (see: Sretthachau, Nungern et al., 2000; Dulin, Franko et al., 2008).

water use and livelihood changes, it sought to sensitise members of the sub-basin river committee to nexus trade-offs and thereby embed a nexus approach in decision-making (to the extent that the committee has influence).

Governance at and across the Local, National and Transnational Scale

Through the lens of environmental justice, scale, place and distance are important considerations in understanding the production of environmental injustices. The emergence of transnational environmental justice movements and analysis grew from a concern over the relocation of polluting industries to the South, alongside the growing consumption patterns in high-income countries facilitated by international trade (Schroeder et al., 2008). More recently, processes of international "land grabbing" and other natural resource appropriations have garnered public attention (Borras &Franco, 2012). The growing distance between the point of consumption and the point of production creates spatial disconnects that can render environmental injustices in areas of production invisible to consumers (Agyeman, 2014).

Political and economic geographers have highlighted how place-based environmental injustices are produced through the interaction between the specifics of the place and interaction with higher scale actors, drivers and structures (e.g. Harvey, 1996; Leichenko & Solecki, 2008; Sikor & Newell, 2014). These include, for example international markets, the investments, commodities and knowledge that flow through them, and the local and national institutions that mediate them. Furthermore, a growing ecological footprint of the relatively wealthy in the North (and the South[524]) significantly raises the likelihood of environmental injustice, including across nexused natural resources. Given the thin to moderate green economy approach that frames many international organizations' approach to the nexus (discussed above), these insights from environmental justice are pertinent.

Hoff (2011, p. 38), in laying the foundation for the nexus, considers its governance, institutions and policies as best addressed through multi-scaled, nested governance (see also Davis, 2014):

> "There are large opportunities to be realized if the nexus is addressed coherently across all scales, through multi-level governance with differentiated (but clearly defined) responsibilities of institutions. At the local scale, trends for more participation and decentralization co-develop with new guidelines and codes of conduct."

Scott et al (2011), identify how institutions and decision-making on energy and water resources are coupled at multiple scales (local, national, transnational). They consider how existing multi-tiered institutional arrangements (laws, policies, and organizations that operate across jurisdictional levels) for water and energy either match or do not resource coupling across scales. In other words, national demands for energy can have local impacts on water use, and national or regional-level water and energy policies and regulatory mechanisms can either reinforce or undermine local governance arrangements.

Many governance challenges related to cooperation between water, food and energy institutions have already been experienced as major challenges by IWRM-approaches, yet there is little new

[524] Increasingly, the North is in the South, and the South in the North; namely that there are enclaves of high consumption in the South, whilst there are also areas of poverty and low consumption in the North.

thinking in nexus thinking about how to move beyond them asides from calling for a more equal footing between the water, food and energy sectors. Lele et al. (2013, p. 61), however, highlights the lack of studies on nexus governance and more broadly argues that there remains insufficient clarity on the meaning of good governance in water, food and energy systems, as well as a need for a better understanding of "the roles of and linkages between policies and institutions at various political and administrative levels."

An important dimension of nested government that arguably needs greater attention in understanding the politicized character of nexus governance is the politics of scale (Norman et al. 2012). This refers to how projects or issues are framed by multiple scales to (de)legitimize actors claims to environmental benefits and harms, and how in decision making processes, many local scale impacts are rendered invisible (i.e. non-recognized) by project proponents (Dore & Lebel, 2010).

For example, the Xayaburi Dam (discussed above) entails a range of nexused trade-offs (see ICEM, 2010; Costanza et al., 2011) that has been framed at multiple scales.[525] The project, located in Northern Laos, is under construction by a largely Thai consortium, funded wholly by Thai banks, and exports 95% of its 1,260 MW to Thailand. To its proponents, including the Laos government, the project developer, and some of Thailand's relevant ministries including the electricity utility, it is a national and transboundaryproject; they argue that the project would contribute towards Thailand's energy security and suggest that the cross-border FDI and project revenues would bring "development" to Laos. They have sought to reframe the Mekong River from a common pool resource central to the livelihoods of riverside fishing and farming communities to the river as a common good for regional economic cooperation and growth. To project opponents, including local NGOs throughout the region, international NGOs, and some communities, it is a local project, but with transboundary implications also experienced at the local level; they emphasize that the dam is resettling approximately 2,100 people in Laos and that more than 200,000 people located near the dam will experience some negative impacts to their livelihoods and food security due to the projects operation, both within Laos and in neighboring countries. They highlight how the project's Environmental Impact Assessment report is of poor quality and does not consider transborder impacts (International Rivers, 2011). This cross-border power trade project with impacts on the transboundary Mekong River has raised challenging questions in terms of sovereignty and access to justice, namely the relative roles and responsibility of: the Laos government (the project host); the Thai government (without which the project could not proceed); and the Vietnam and Cambodian governments who are also members of the MRC (see Middleton, 2012; Rieu-Clark, 2015).

Towards Energy, Food and Water Nexus Justice in Southeast Asia

This paper has mapped how the nexus has spread throughout mainland Southeast Asia from global-level policy conceptualization to within regional policy circles that have included international and regional organizations, academic networks, and civil society, national politicians and government officials, and high-income country donors. The nexus is yet to be extensively grounded, however, into national policies and practices, and broad-based local demand for nexus-framed policies is

[525] See Sneddon (2003) for a politics of scale analysis of large water infrastructure development in Northeast Thailand.

currently limited. The paper has also highlighted that more attention is required to the politicized nexused relationships between food, water and energy governance systems (c.f. Foran, 2015).

Pieterse (2010) has argued that for ideas to be significant, social forces must carry them into action. Molle (2008, p. 143), meanwhile, suggests that a "snowballing effect" results in a growing number of actors promoting and implementing a particular nirvana policy concept, such that it is "gradually established as a consensual and controlling idea." If the nexus is to become embedded in the region, there must be demand for it both from above and below. This paper would argue that to increase demand from below, a technocratic ecological modernization approach will be insufficient, and the concept must engage more clearly with promoting fair decision-making and thus to the expectations of many of the community resource users themselves.[526]It is proposed, therefore, that introducing the concept of environmental justice into the nexus, especially where narratives, trade-offs and outcomes are contested, could make better use of how the nexus is framed, understood and acted upon.

To this end, the article has also demonstrated that there are a number of boundary concepts common to both the nexus and environmental justice, including: sustainable development; the green economy; scarcity and addressing trade-offs; and governance at and across the local, national and transnational scale.Environmental Justice is at its strongest in evaluating fairness in decision-making, and explaining why (in)justices may have occurred. It is institutionally-rooted, with an emphasis on understanding processes of decision making and with strong linkages to policies, law, and systems of justice – a weakness of the current nexus approaches. Environmental Justice approaches are arguably weaker than Nexus approaches in explaining inter-sectoral linkages between food, water and energy systems, including consequences of cross-sectoral decisions that could have justice implications. We thus argue that in light of food, water, and energy trade-offs within Southeast Asia, bridging the gap between the nexus and environmental justice - via boundary work (Cash et al., 2003) - can redress in part a weakness of each.

This article concludes that justice matters in nexus governance. Yet, even defining justice in water governance from a multi-disciplinary perspective is at an early stage due to its complexity (Neal et al., 2014; Zeitoun et al., 2014), leaving conceptualization of justice in nexus governance at an even earlier stage. This article has proposed that drawing on environmental justice scholarship and practice offers a promising starting point to redress this deficit.

[526] This is not to say that nexus-promoting organizations – or some individuals within them – are not working towards justice through their work on the nexus; yet such language is not explicit in nexus literature to date.

Appendix A

Table A: Chronology of major Nexus conferences in mainland Southeast Asia			
Date	*Conference*	*Lead organizer*	*Lead sponsor*
7-9 December, 2011.	"1st Mekong Forum on Water, Food and Energy," Phnom Penh, Cambodia[527]	Challenge Program on Water and Food	Australian Aid
20-21 February, 2012	"GMS 2020: Balancing Economic Growth and Environmental Sustainability," Bangkok, Thailand[528]	Asian Development Bank	Swedish International Development Aid (SIDA), Finland
1-3 May, 2012	"Mekong2Rio: International Conference on Transboundary River Basin Management," Phuket, Thailand[529]	Mekong River Commission	Multiple international organizations[530]
13-14 November, 2012	"2nd Mekong Forum on Water, Food and Energy," Hanoi, Vietnam[531]	Challenge Program on Water and Food	AusAid
5-7 March, 2013	"Mekong Environment Symposium," Ho Chi Minh City, Vietnam[532]	DLR and WISDOM	Federal Ministry of Education and Research, Germany
11-13 March, 2013	"Food Security in the Mekong - The Water, Food and Energy Nexus Revisited," Chiang Rai, Thailand[533]	The Shared Waters Partnership[534], IWMI and Mae Fah Luang University	-
2-3 and 5-6 December, 2013	"Water-Food Security in Cambodia and the Vietnam Delta - Assessing risk and alternatives under an altered flow regime,"Phnom Penh, Cambodia and Can Tho, Vietnam	The Shared Waters Partnership	-
19-21 November, 2013	"3rd Mekong Forum on Water, Food and Energy," Hanoi, Vietnam[535]	Challenge Program on Water and Food	AusAid
11-13 March, 2014	"Nexus Dialogue on Water Infrastructure Solutions, 3rd Regional Workshop – Asia," Bangkok, Thailand[536]	IUCN and International Water Association (IWA)	Natural Heritage Institute, International Hydropower Association,

[527] http://wle-mekong.cgiar.org/mekong-forum-proceedings/1st-mekong-forum-on-water-food-and-energy/ [Last accessed 9.1.15]
[528] http://www.gms-eoc.org/events/international-conference-gms2020 [Last accessed 9.1.15]
[529] http://www.mrcmekong.org/news-and-events/events/mekong2rio/ [Last accessed 9.1.15]
[530] Sponsors identified as: ADB; CPWF; DANIDA; DHI; GIZ; GWP; ICIMOD; IUCN; IWMI; Mississippi River Commission; M-POWER; SEI; SIWI; UNEP; World Bank; WWF
[531] http://wle-mekong.cgiar.org/mekong-forum-proceedings/2nd-mekong-forum-on-water-food-and-energy/ [Last accessed 9.1.15]
[532] http://www.mekong-environmental-symposium-2013.org/frontend/index.php#.VK_zRSuUeSp [Last accessed 9.1.15]
[533] http://www.watergovernance.org/swp-workshop [Last accessed 9.1.15]
[534] UNDP Water Governance Facility and SIWI Water Governance Facility
[535] http://wle-mekong.cgiar.org/mekong-forum-proceedings/ [Last accessed 9.1.15]
[536] http://www.waternexussolutions.org/239/events/asia-regional-workshop.html#.VLABnyuUeSo [Last accessed 9.1.15]

			Hydropower Sustainability Assessment Protocol, and UNEP
2-3 April, 2014	"2nd MRC Summit International Conference on Water, Energy and Food Security Under Climate Change in the Mekong Basin," Ho Chi Minh City, Vietnam	Mekong River Commission	Multiple international organizations[537]

Table B: Chronology of major reports and papers on the Nexus in mainland Southeast Asia		
Year	Report/ Paper	Note
2012	Mekong Turning Point: Shared River for a Shared Future (Cronin and Hamlin 2012)	Civil society report
	Climate Change Adaptation for Water Management in a Green Economy (UNESCAP 2012)	International organization report
	Water Wealth? Investing in Basin Management in Asia and the Pacific (Pangare, Das et al. 2012)	International organization report
	Transboundary River Basin Management: Addressing Water, Energy and Food Security (Bach, Bird et al. 2012)	Conference proceedings
	International Conference on GMS 2020: Balancing Economic Growth and Environmental Sustainability, Focusing on Food-Water-Energy Nexus (ADB 2012)	Conference proceedings
2013	Thinking about Water Differently: Managing the Water-Food-Energy Nexus (ADB 2013)	International organization report
	The Status of the Water-Food-Energy Security Nexus in Asia and the Pacific region: A position paper commissioned by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP 2013)	International organization report
	Asian Water Development Outlook 2013: Measuring Water Security in Asia and the Pacific (ADB 2013)	International organization report
	The Water-Food-Energy Nexus in the Mekong Region: Assessing Development Strategies Considering Cross-Sectoral and Transboundary Impacts (Smajgl and Ward 2013)	Academic publication
2014	Cooperation for Water, Energy and Food Security in Transboundary Basins under Changing Climate (Bach, Glennie et al. 2014)	Conference proceedings

[537] GWP, UNDP Water Governance Facility, SIWI, WWF, IWMI, ADB, World Bank, SEI, ICIMOD, UNEP, DHI, University of the West of England, IUCN, IWA, UNESCO-IHE, Australian Aid, DANIDA, GIZ, University of Arizona, AGWA, World Water Council, Swiss Agency for Development and Cooperation, Ministry of Foreign Affairs of Finland, Ministry of Foreign Affairs of Sweden.

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TRANSFORMING SOCIETIES:
CONTESTATIONS AND CONVERGENCES IN ASIA AND THE PACIFIC

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