

Nexus narratives and resource insecurities in the Mekong Region

Louis Lebel^{1,2} and Boripat Lebel²

¹ Institute of Water Policy, Lee Kuan Yew School of Public Policy

² Unit for Social and Environmental Research, Chiang Mai University

ABSTRACT

Several global narratives around resource insecurities have reached the Mekong Region. In the latest reincarnation, experts, bureaucrats, and businesses have called for greater attention to a water-energy-food nexus. It is not clear however, if they are talking about the same thing, with the same purpose, or that decision-makers are listening. The purpose of this study was to identify the key features of nexus narratives globally, and then analyze how they are being used in the Mekong Region. We used the Narrative Policy Framework to explore narrative content and strategies, and Cultural Theory to help identify policy beliefs of competing coalitions in a mixed-methods analysis. Increasing resource scarcity, which undermines security, was a shared setting in all nexus narratives. *Individualist* and *Hierarchist* narratives tend to de-politicize the nexus by promising solutions from innovative businesses and free markets or through technocratic and managerial control of resources and the environment by bureaucrats. *Egalitarian* narratives identify victims and villains to re-politicize the nexus around themes of justice and human security. Nexus narratives were used to support and oppose hydropower, irrigation, and biofuel development, with *Individualist* narratives consistently being the most pro-development. Nexus narratives have been widely adopted by international organizations and foreign experts working in the Mekong Region; however, with a few exceptions, they have as of yet had little direct influence on national policy or plans. Several possible reasons are discussed including limitations of the concept itself.

Keywords: water-energy-food nexus; Narrative Policy Framework; Cultural Theory; Mekong Region; mixed methods; policy narratives; hydropower; irrigation; biofuel

1 Introduction

Water, energy, and food security are so central to human activities that any threat seems to provoke a rhetorical crisis. In the 90's the prospect of 'water wars' in the Middle East captured public attention (Starr, 1991). At the turn of the millennia energy security climbed back into policy agendas over concerns with demand and market 'shocks' (Yergin, 2006). In 2008 sharp increases in food prices raised concerns about 'volatility' and underlined how economic growth had not erased food insecurity (Godfray et al., 2010). Some analysts anticipated that the expansion of biofuel crops would link land, food, and energy systems, leading to 'ripple effects' (Naylor et al., 2007). Others argued that in a human-dominated planet, water, land, and ecosystems need to be jointly managed (Falkenmark, 2001). In the latest wave of global discourses around resource insecurities, experts, bureaucrats, and businesses have called the attention of governments to a water, energy and food nexus (Hoff, 2011; WEF, 2011).

It is not always clear however, when people say 'nexus', whether or not they are talking about the same thing or with the same purpose (Allouche et al., 2015). For some, the key notion is that water scarcity is growing as a result of increasing demand, and that this is in part due to the large volumes of water used to grow food and by power plants to produce energy (Beck and Villarroel Walker, 2013; WEF, 2011). In this perspective the nexus approach is seen as a variant, refinement or an extension of integrated water resources

management (Benson et al., 2015; Muller, 2015). Others adopt a less water-centric perspective, acknowledging that, for instance, pump irrigation requires lots of energy, or that food prices are linked to fossil fuel prices because of energy needed to make fertilizers and distribute food products (Scott et al., 2011; Villamayor-Tomas et al., 2015). Either way, these interactions, it is argued, imply a need for policy coordination or integration in management (Hoff, 2011). Here there is a diversity of perspectives that includes: promoting innovation, markets, and trade (WEF, 2011); developing and applying tools for integrated planning (Kurian, 2017; Leck et al., 2015; Sharmina et al., 2016); protecting natural infrastructure (Hoff, 2011; Keskinen et al., 2015); integrating responses with climate change adaptation (Rasul and Sharma, 2015); and, adopting measures to secure the livelihoods of resource-dependent communities (Leese and Meisch, 2015; Middleton et al., 2015).

The multiple and often ambiguous uses of the nexus term are not necessarily an indicator of carelessness or immaturity of the concept (cf. Keskinen et al., 2015). Loose definitions make it easier for diverse stakeholders to appear to be part of the same conversation; flexible terms make it easier to align agendas of different interests within a coalition. Thus, Cairns and Krzywoszynska (2016) caution that the nexus has become a buzzword with little real content behind it. Nevertheless, a policy idea might become popular because it makes sense, feeds an aspiration or is part of a compelling story.

Policy narratives are stories with a policy stance: they have a setting or context; a plot with barriers to overcome; characters that cause the problem, suffer from it, or fix it; and a moral which provides the policy solution (Jones and McBeth, 2010). The Narrative Policy Framework (NPF) suggests narratives may be important both in changing policy perceptions and in building or containing coalitions (Shanahan et al., 2011). Research suggests that stories can, in some situations, be more effective than analytical arguments at shaping perceptions of policies, for example, on climate change (Jones, 2014) and obesity (Husmann, 2015); but not invariably (Allen and Preiss, 1997). Some of these differences in findings in the persuasiveness of narratives may be related to topic areas and study designs, but they may also be related to the strategic use of characters (heroes, victims, and villains) in policy narratives (Shanahan et al., 2011). Thus, one narrative strategy is to characterize opponents as villains and exaggerate their evilness and influence, or execute a ‘devil shift’ (Sabatier, 1998), a tactic that tends to polarize contests. An alternative strategy is the ‘angel shift’, in which a narrative focuses on a coalition’s solution and their heroic role as a way to recruit others into a dominant coalition (Shanahan et al., 2013).

The conditions under which narratives become dominant, and the mechanisms by which they influence policy in transboundary settings, have not been investigated in detail using the NPF, but there are useful precedents in previous work on narratives and discourses around water conflicts and management of large and transboundary rivers. In the conflict over water allocation from the Upper Jordan River, for instance, Lebanese narratives of following international law and ‘theft of flows’ compete with a more influential Israeli security narrative that precludes any discussion of re-allocation of flows (Zeitoun et al., 2013). A study of the introduction of integrated water resources management (IWRM) in the Yellow and Ganges Rivers Basins suggested that narratives have helped resolve tensions between divergent interests, in part, through normative appeals related to special cultural values of the two rivers (Ching and Mukherjee, 2015). Anti-Chinese narratives on investment in hydropower played a role in halting the construction of the Myitsone dam project in Kachin State, Myanmar, but were also used by Thai investors to secure support for their proposals instead (Lamb and Dao, 2017). More generally, global epistemic networks promote a technocratic discourse in which international and domestic river basin organizations are key actor in IWRM (Molle, 2008; Mukhtarov and Gerlak, 2013).

The purpose of this study was to evaluate the use of themes and characters in nexus narratives from around the world, and then analyze how they are being used in the Mekong Region. This region is highly suited to an exploration of the role of nexus narratives in a transboundary international setting, as there is a history of concerns regarding water, energy, and food insecurities; in particular, in relation to large-scale hydropower development (Foran, 2015; Middleton et al., 2015; Pittock et al., 2016), but also with respect to irrigation diversions (Blake, 2016; Molle et al., 2009a), biofuel expansion (Bell et al., 2011; Yang et al., 2009) and development strategies in a changing climate (Gerlak and Schmeier, 2014; Käkönen et al., 2014; Neo, 2012). These studies suggest that efforts to achieve security in one dimension of the nexus often risk leading to insecurities in other dimensions and other places. Thus, it is imperative to ask: *security of what, from what, for whom?*

In this study we approach the diversity of expert and policy responses to this question with respect to the nexus using the grid and group dimensions of Cultural Theory (CT), which defines four cultural types or sets of beliefs about nature and people, and therefore how resources should be managed (Thompson et al., 1990). *Hierarchists* view nature and people as controllable by experts and managers. *Egalitarians* view nature as fragile, demand that people care and share. *Individualists* view nature as benign and resilient, and people as self-centered. *Fatalists* view nature as capricious and man as fickle, so it does not matter what people do. CT has been used in several previous micro-level studies of the influence of narratives on individual preferences using the NPF. Jones (2014), for instance, showed experimentally that narratives based on different cultural types of hero characters influenced public perceptions of climate change risks and policy preferences more than if they were just presented with a simple list of facts. Jones and Song (2014) found that that narrative influence was greater than fact lists only when the story was aligned with the cultural orientation of the recipient.

This present study applies the CT typology to a meso-level NPF analysis, that is, one focused on coalitions rather than individual policy preferences. The initial premise was that nexus narratives reflect core policy beliefs of the actors that use them. The strength and coherence of these beliefs, in turn, help shape the membership of coalitions endeavoring to influence policy outcomes. In this study, we are interested in political strategies at two levels: approach to nexus governance, and decisions on large-scale development projects (see Propositions in Table 1). In the first part of the analysis we evaluate the main themes and use of characters in nexus narratives globally. We show that there is a reasonable fit between thematic elements of texts and CT types. In the second part of the analysis we focus on the narrative strategies and stance taken by different CT coalitions (*Individualist*, *Hierarchist*, and *Egalitarian*) with respect to three types of decisions important in the Mekong Region: support for large-scale hydropower, irrigation, and biofuel development. Finally, we examine evidence for uptake of nexus narratives by governments and national think-tanks in the Lower Mekong Region in national development strategies.

Table 1. Propositions about nexus narratives drawn from Narrative Policy Framework (NPF) and Cultural Theory (CT) that were evaluated in this study.

Proposition
P1. Nexus narrative themes cluster around specific CT coalitions and link problem frames with preferred solutions.
P2. Characters are used in nexus narratives in distinct ways that reflect the core beliefs of CT coalitions on roles of bureaucrats, businesses, communities and experts in resource management and governance.
P3. Losing CT coalitions opposed to large-scale development projects will populate their nexus stories with victims and villains, whereas winning CT coalitions supporting such projects will draw attention to heroes.
P4. Stronger, more coherent and stable CT coalitions will have a greater influence on policy outcomes.
P5. CT coalitions that span multiple sectors are more likely to influence nexus policies than those which are sector specific.

2 Methods

This study adopted a mixed-methods (Mason, 2006) approach combining qualitative content analysis with more quantitative sampling and coding of texts.

2.1 Data collection

This paper examined the structure and content of narratives around the water-energy-food nexus in documents available online. As the nexus is an emerging policy idea we sought a representative samples of narratives from different types of authors and documents (Table 2). As we were interested in how nexus ideas may have moved to (and from) the Mekong Region we made additional searches targeting texts referring specifically to the Mekong or Thailand, Laos (Lao PDR), Myanmar, Vietnam, or Cambodia. Searches were done in Scopus, Google Scholar, Google Advanced Search, and online newspaper archives. In each case we preferentially took documents ranked higher in lists by relevance. A document was included in the initial set for identifying and characterizing nexus narratives if it referred to a *nexus* that included at least two of the three resource terms *water*, *food*, or *energy* and mentioned the third term or a close synonym elsewhere in text. With this approach some early texts about the water-energy nexus which also mention high water use by agriculture, for example, were included. Power-point presentations were excluded because they often had list structures and figures with embedded text which could not be recognized by the software. The final set of 350 documents included 180 non-Mekong and 170 Mekong texts (Table S2). To help evaluate the influence of nexus narratives on policy outcomes, a small separate set of key sectoral (water, food-agriculture, and energy) and national development strategy documents from each of the Mekong countries even if they did not make explicit reference to the nexus was compiled.

2.2 Coding of narrative texts

The approach to coding information and data analysis drew on NPF, evaluating content in terms of settings, theme, characters, problem framing, and preferred solutions (Shanahan et al., 2011). The position taken by authors of documents towards how to respond

to nexus challenge were manually classified against the four CT types (Jenkins-Smith et al., 2014; Thompson et al., 1990). *Individualist* texts favored markets and competition which allow individuals and business to act on their own. *Hierarchist* texts made explicit reference to regulations, rules and other types of policy or interventions by government authorities. *Egalitarian* text emphasized communal decision-making and improving outcomes for disadvantaged, poor and highly-affected groups. The *Fatalist-Skeptic* class grouped together authors who remained highly skeptical towards the nexus approach in general. Texts which did not take a clear position, for example, just described analytical tools without discussing management strategies or policy, were classified as ‘ambiguous’ and excluded from some analysis. Documents were also classified manually as being pro- or anti-hydropower (n=115), irrigation (n=57), and biofuel development (n=46). Documents which did not refer to these topics or took no policy stance were excluded from the specific analyses when pro- and anti-development positions were compared.

To help evaluate the propositions (Table 1) several coding and analysis approaches were used. Narrative themes were identified by evaluating patterns in the co-occurrence of key words chosen to cover a wide range of goals, principles and approaches to governance and management of resources. Factor analysis was then done using principal components to explore how references to these key words co-varied across texts. Counts of instances in each document were log-transformed prior to analysis; with this approach, longer texts thus had more weight in the analysis, but not overly so. Factor scores were then used to characterize the main narrative themes (P1).

Problem framing and solutions as well as use of characters were manually coded in NVIVO software using the text fragments around 40 word windows either side of the term ‘nexus’. These were primarily used for in-depth qualitative analysis and to illustrate broader and nuanced claims based on quantitative analysis. The sources for evidence in the form of short illustrative extracts or summary statements are indicated by superscripted references to relevant sources listed in Table S2. For quantitative analysis of characters (P2) they were classified into three roles (victim, villain and hero) and four types (government, people, private, expert and wildlife/fish).

2.3 Data analysis

To help evaluate other propositions (Table 1), some additional indicators were defined (see Table S1). *Coherence* of beliefs within a coalition was measured by the level of consistency in associated theme content across documents assigned to that coalition; *Strength* of beliefs within a coalition was measured by the mean factor scores of the associated themes across documents assigned to that coalition (P4). Devil-angel shift was measured by comparing cross-references to self as hero minus calling others villains (P3).

To get an independent view on possible coalition structure a network analysis (P5) was made by inspecting 20-word windows around the terms collaboration, partnership, and cooperation for statements of joint activities between organizations or governments. Lists of organizations longer than 4 were ignored, as were links between different government agencies within the same country.

In some analyses, documents were classified according to authorship as follows: *governmental actors* = national government, local government, state enterprises, and inter-governmental agencies; *non-state actors* = civil society organizations, non-governmental organizations, and people as producers, consumers or affected; *expert actors* = academics, researchers, and scientists; *private actors* = business and banks; and, *others* = reporters.

A combination of quantitative and qualitative analyses was done. Associations between narrative types or elements, authorship and positions, or use in political debates were examined using standard statistical procedures (e.g. ANOVA followed by Tukey's HSD test when more than 2 means, or logistic regression for binary outcome variables).

Table S1. Definition of measures.

Measures	Formula
Thematic Cohesion	$= 2 * (\max - \sum_{i=1}^4 f_i - f_{mean\ CT}) / \max - 1$ <p>Where f_1 thru f_4 are the four highest positive or negative significant loading thematic factors for the CT type. Index goes from -1 (incoherent) to +1 (coherent)</p>
Thematic Strength	$= 2 * (\sum_{i=1}^4 f_i) / \max - 1$ <p>Where f_1 thru f_4 are the four highest positive or negative significant loading thematic factors for the CT type. Index goes from -1 (weak) to +1 (strong)</p>
Devil-angel shift	$= \frac{SelfAsHero}{TotalHero + 1} - \frac{OtherAsVillain}{TotalVillain + 1}$

3 Nexus narratives

The common setting for nexus policy narratives is one in which water, food, and energy systems are interconnected, and as water is growing scarcer and demand for food and energy continue to rise, it is important to manage these resources in a more integrated way.

UNESCAP, for example, tells us that “*shortages could cause social and political instability, geopolitical conflict and irreparable environmental damage*”, and as a result of interconnectedness of the nexus dealing with only one part, “*risks serious unintended consequences*”.⁶⁵ While most narratives agree there are important connections, perspectives diverge with respect to causes and how people and resources should be governed. Thus, just over half the documents evaluated adopted a *Hierarchist* approach to the nexus, and are treated initially in this analysis as forming the *Hierarchist* coalition (Table 2). *Egalitarian* and *Individualist* approaches also had significant followings, while the remainder were ambiguous or took a *Skeptical* positions towards the nexus idea.

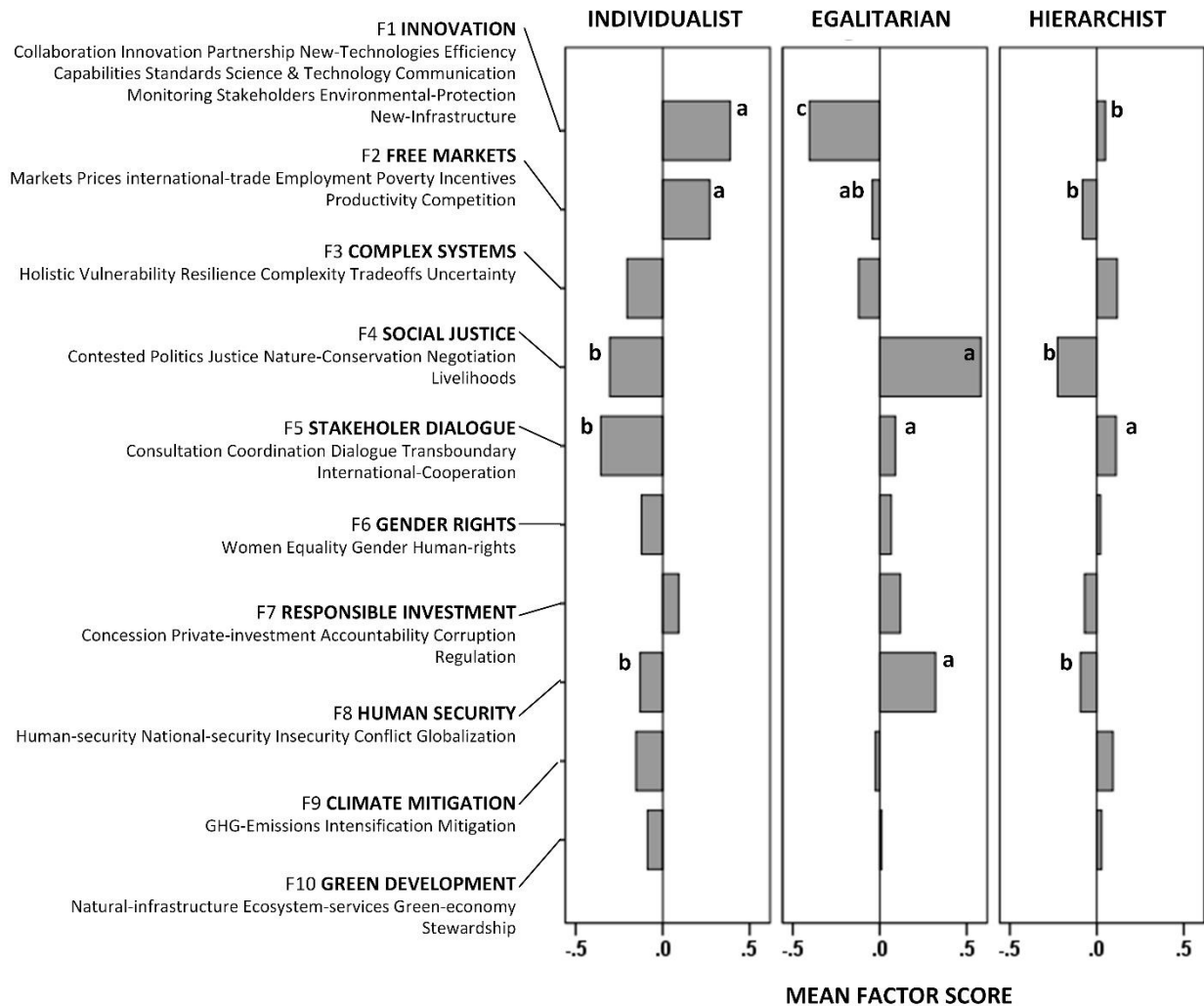
Table 2. Selected characteristics of the documents in primary set which referred to the nexus and used in most analysis (N=350).

Document Category		%
Type		
	Printed Report	36
	Journal Article	29
	Newspaper or Magazine	21
	Other	13
Author		
	Academic	40
	CSO or NGO	22
	Governmental	15
	Private	13
	Reporter	10
Cultural Theory Type		
	Individualist	19
	Egalitarian	25
	Hierarchist	53
	Skeptics	2
	Ambiguous	2

3.1 Narrative themes

Themes are what a story is about. Narrative themes were identified from patterns of co-variation of keywords across documents (Fig.1). Factor 2, for instance, groups words used to describe a ‘Free Market’ perspective on development; and factor 4, groups various principles and situations related to the ‘Social Justice’ theme. It should be underlined that these factors describe the kind of language the nexus is discussed in; they do not definitively indicate whether the author supports or critiques the nexus approach, although former was more common. Some themes are strongly associated with the CT types: thus, Free Market and Innovation themes were more prominent in *Individualist* narratives, whereas Social Justice and Human Security themes were prominent in *Egalitarian* narratives (Fig. 1). Other themes like Complex Systems, Gender Rights, or Green Development were not associated with any of the CT types, suggesting other important dimensions of core policy beliefs were also present in nexus narratives. SHELL for instance talks about stark “*zones of uncertainty*,”³¹⁸ while STEPS see discussions of uncertainty and scarcity as part of “*alarmist rhetoric*.”³⁷⁶ Gender issues were rarely addressed with respect to the nexus, even by *Egalitarian* texts. Nexus trade-offs and synergies affect women and men differently reflecting burdens in managing resources and ease of access to improved technologies.^{171,335} Gender equality, it is argued, would lead to improvements in food security.²⁸⁹ These finding therefore provide only partial support for P1.

Figure 1. Comparison of mean narrative theme factor scores according to Culture Theory classification. Mean bars with different letter as another bars in same row are significantly different ($P < 0.05$, Tukey's HSD). Key words with high loadings on each factor shown under each theme.

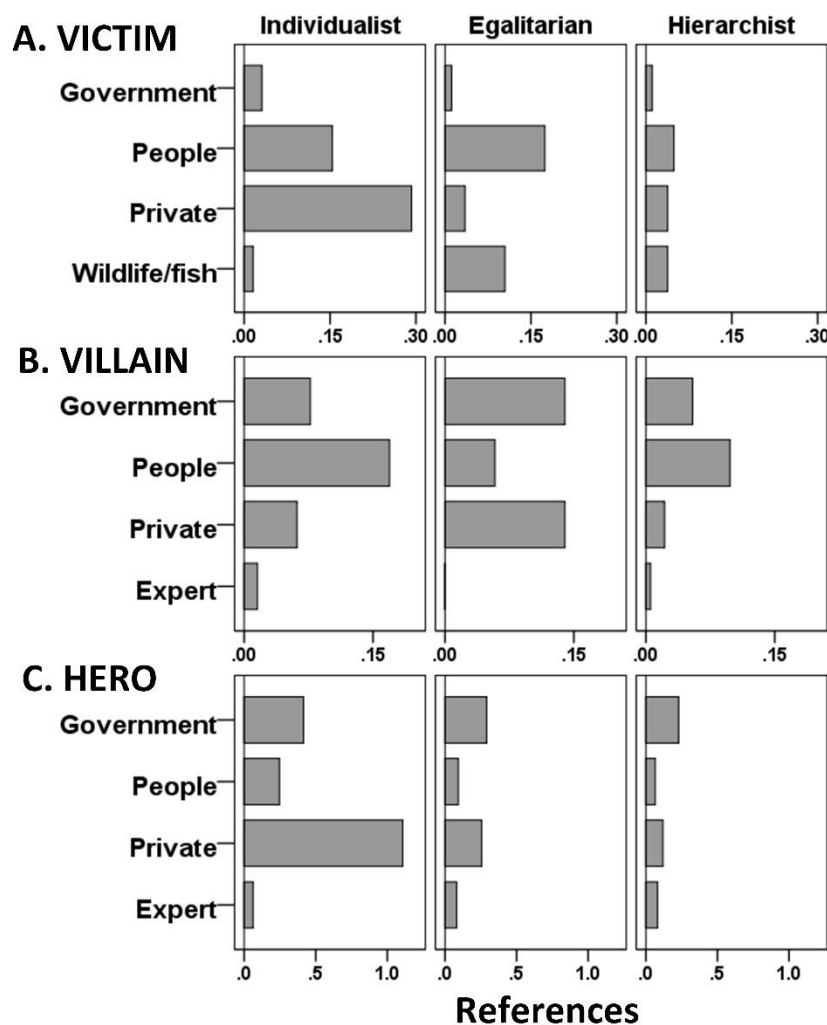


3.2 Framing the problem

Narratives differ in who they claim is at risk (the victim) and why (Fig. 2). *Individualist* narrative texts often argue that risks are global and highlight the challenges big business face from growing scarcity of resources.³¹⁸ Reports are decorated with infographics of the world or satellite imagery of the earth.²⁵⁴ From this vantage point, individuals are not discernible. In contrast, *Egalitarian* narratives zoom-in to the local scale and everyday livelihoods where the victims are the marginalized, resource insecure, rural poor.^{23,342} They show pictures of children around a tap or mothers at a well.²⁵⁴ Fish and wildlife are also important victims.³⁴² *Hierarchist* narratives typically acknowledge nexus challenges at multiple scales, and thus the need for Stakeholder Dialogue; they show pictures of people in meetings.¹⁷⁴ Who is at risk, therefore, depends on the scales chosen to view resource insecurity problems in the nexus.

The sources of insecurity problems also vary across narrative types. *Individualist* narratives bemoan the absence of water markets and claim this is a source of resource insecurity as it leads to poor decisions on use.¹ In *Egalitarian* narratives, Social Justice themes underline contested rights to land and water resources as sources of insecurity.⁹⁹ Villains are identified (Fig. 2). *Hierarchists* point to lack of management knowledge or capacities or failures to implement rules and regulations.^{296,420} These findings on the use of characters in nexus narratives are consistent with P2, while the findings on themes support P1.

Figure 2. Comparison of mean number of victim, villain and hero characters by CT narrative type. Note horizontal scales differ in each panel.



3.3 Moral of the story

The moral of the story in a policy narrative is the preferred solution. *Individualist* nexus narratives often refer to Innovation and Free Market themes (Fig. 1), reflecting problem framings of inefficient technologies, poor allocation, and unpriced resources. In Innovation texts, corporate actors emphasize win-win solutions in stories centered on new technologies, management systems, or value-chain relationships that increase resource efficiencies.^{2,265} Partnerships between companies, governments, and NGOs are praised and suggest that narratives are being used to build alliances across stakeholder groups. The brewer SABMiller and WWF, for example, declared a ‘shared interest’ in nexus governance, encouraging integration in planning.²¹⁹ Free Market texts urge commodification of resources. The Asian Development Bank (ADB) encourages developing countries “*to think differently about water*”, by which it means improving water governance and introducing water markets.¹ In practice, this would shift water away from agriculture to industry.¹² Trade is proffered as a way for countries to deal with nexus trade-offs and increase resilience.²¹⁹ Other texts call for “*aggregation of small farms... and mechanization and modernization of agriculture*”² in order to improve efficiency and access to urban markets.

Hierarchist narratives often argue for resource assessments using models and scenarios to support cross-sectoral coordination and integrated planning.^{8,9} This is a technocratic perspective on the nexus. Stakeholder Dialogue texts shift the arena to international cooperation and transboundary issues, in which both state representation and transnational civil society play roles.¹⁰⁴ These texts also suggest that the management challenges of the nexus could be addressed by River Basin Organizations as conveners of assessments, dialogues, and plans.^{28,252} RBOs have struggled to implement IWRM from a water-centric perspective in the past, suggesting the challenge of how to “*optimize benefits from all perspectives*”²⁸⁴ in the nexus will be even more difficult.

The problem with these aforementioned narratives is that the pursuit of solutions largely ignores the significance of interests, power relations, and politics.²⁴² In contrast, most *Egalitarian* narratives identify victims and villains (Fig. 2), as well as the losers and winners arising from solutions espoused by others.^{104,338} Social Justice texts look for changes in governance that would make decisions around the nexus more legitimate.²³⁴ Claims of benefits and win-win of large scale infrastructure development contested by raising issues of distribution and re-politicizing nexus as the pursuit for human security and livelihoods.^{169,282} Other texts note that farmers and fishers have experience in managing local water, food, and energy systems jointly.¹⁷⁰ *Egalitarian* narratives recognize a role for local knowledge in nexus management.

Beyond the CT categories a prominent theme was how to respond to uncertainties and complexity in the nexus. OECD notes that “*the sheer complexity of these nexus relationships makes it difficult to develop truly holistic policy frameworks.*”²⁹⁵ Some see the solution more in form of decision-support tools that allow assessment of trade-offs and synergies.^{340,411} Many others emphasize need for deliberative processes that foster social learning and iterative adjustment will be useful for dealing with the complexity of cross-sectoral considerations demanded by nexus approaches to governance.^{348,432}

In summary, the key features of nexus narratives globally provided some support for P1 and P2 (Table 1). Many key themes identified, but not all, were associated with CT-like coalitions. In particular, *Individualist* narratives focus more on individuals and private firms as heroes with solutions; whereas *Egalitarian* narratives draw more attention to nexus problems, victims and villains and were thematically less coherent (Table 3). *Individualist*

narratives scored significantly more towards an angel shift than *Egalitarian* narratives, which leaned towards devil shift strategies (Table 3). *Hierarchist* narratives paid more attention to coordination among stakeholders, including international arenas with significant role for governments in stories that were relatively less populated by characters (Fig. 2). Private actors mostly authored *Individualist* texts (72%), whereas governmental actors (73%) and experts (51%) wrote *Hierarchist* texts (Fig. S1). Non-state actors and experts wrote a mixture of *Hierarchist* and *Egalitarian* texts. Private actors as authors readily identified themselves as heroes, an example of an angel shift; government actors also favored this strategy (Fig. S1). Experts and non-state actors (NGOs or local communities), somewhat surprisingly, were rarely identified as heroes even in *Egalitarian* nexus narratives. Nexus narratives are significant for governance, as they assign roles to characters and anticipate the formulation of policy goals.

Table 3. Comparison of indicators of narrative strategies by CT-coalition. Means with same letter suffix in the same row are not significantly different (ANOVA, Tukey HSD).

Belief	Nexus Coalition		
	Individualist	Egalitarian	Hierarchist
Thematic cohesion	0.53a	0.40b	0.55a
Thematic strength	-0.53ab	-0.44a	-0.57b
Devil-angel shift	0.06a	-0.05b	0.00ab

4 Use and Influence of nexus narratives

Nexus narratives have been used in debates around hydropower, irrigation, and biofuel development, as well as development strategies at national and international region levels. Overall, global and Mekong Region nexus narratives are similar. In terms of the 8 narrative themes (Fig. 1), Mekong texts referred significantly more to Social Justice and Stakeholder Dialogue themes, and less to the Innovation theme, than non-Mekong texts ($P < 0.05$, ANOVA).

4.1 Hydropower

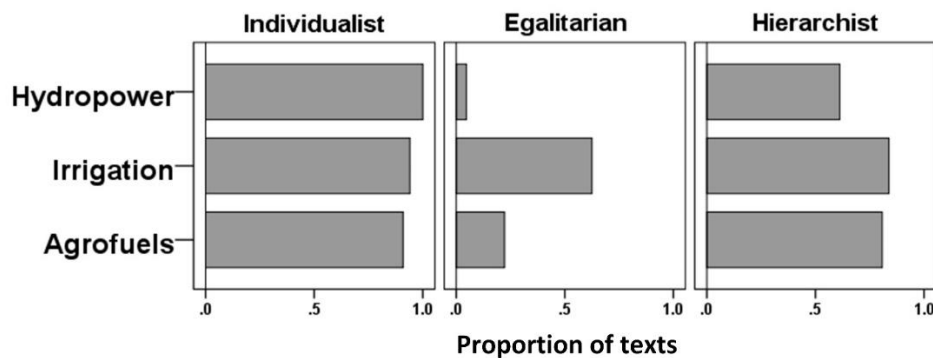
Nexus narratives are used to both support and oppose large-scale hydropower development. Pro-hydropower narratives on the one hand, for example, from Électricité de France (EDF), argue that “*hydropower is at the heart of the water-energy nexus...as reservoirs can also regulate water flows for freshwater supply, flood control, drought mitigation, irrigation, navigation services and recreation*”.⁵⁶ Anti-hydropower narratives on the other hand, for instance by International Rivers (IRN), call on “*governments, banks, and corporations, public and private sector alike to protect life on Earth...investing in true climate solutions for the water-energy-food nexus, rather than greenwashing business-as-usual projects such as large hydropower dams*”.¹¹⁶ The IRN text values ‘*life on earth*’; whereas EDF text values ‘*meeting needs*’. The IRN text implicitly identifies governments, banks, and corporations as villains, and the ‘*multitudes*’ as heroes; whereas EDF implicitly puts hydropower developers

as heroes with large responsibilities. Both EDF and IRN, although they have headquarters based outside the region, are significant policy actors in the Mekong Region.

Overall, *Individualist* narratives were significantly more likely to be pro-hydropower than *Egalitarian* narratives, with *Hierarchist* narratives somewhere in between (Fig. 3). *Individualist* narratives emphasize energy security and economic benefits of investments in hydropower. Hydropower projects in Lao PDR are supported by a coalition of international banks, foreign companies, and the Ministry of Energy and Mines (MEM). With regional power grids and trade, such development may make Lao PDR the “*region’s green and low-carbon battery*”.¹³⁰ *Egalitarian* narratives question the ‘green-ness’ of hydropower, noting the impacts of dams on river ecosystems and fisheries important to food security of low income families.^{96,104} Electricité du Lao, a state enterprise under MEM, makes no reference to the nexus or even interactions with irrigation or fisheries in its 2014 annual report.⁴⁷¹

The transboundary dimensions of the nexus include driving factors that cross borders, for instance, energy demand in Thailand. The Electricity Generating Authority of Thailand is a strong proponent of hydropower investment and purchaser of the electricity produced in Lao PDR; it has not made use of nexus arguments. The Ministry of Energy in which it sits however, refers explicitly to the water-energy-food nexus in a recent outlook report,¹⁷² which also points to the benefits of working together with irrigation and flood management agencies. The report even reproduces a nexus figure that shows links between energy sector, agricultural producers, and water service providers, as well as natural infrastructure. The Ministries’ framing is *Hierarchist*.

Figure 3. Comparison of CT narratives. Mean proportion of texts that take a stance, and which support three types of large- to medium-scale resources development.



4.2 Irrigation and biofuel crops

Individualist narratives that referred to irrigation were often critical of the high and inefficient use of water by agriculture.^{244, 298} Plans for large-scale water diversions from the Mekong River and tributaries for irrigation of seasonally dry areas of Northeast Thailand or Cambodia to improve food security however may pose risks of soil salinization and have impacts on river flows downstream.^{26,73} *Hierarchist* narratives underline the need to improve infrastructure and use advanced technologies as well as need to take into account energy needed for supplying water to crops.³⁴⁸ *Egalitarian* narratives focus on who benefits or is excluded from such system improvements.¹² Nevertheless, irrigation development was more

often supported than not (Fig. 3). Nexus narratives of anti- and pro-irrigation texts did not differ thematically.

Nexus-related policy narratives about biofuels in the Mekong Region were rare. *Individualist* narratives call for legal changes and incentives for investment in biofuels.⁶ In Thailand, dry season sugarcane, by-products which are processed into bio-ethanol, may require subsidies and access to low-cost labor, state support for which would likely “*favour better-capitalised smallholders and agribusiness investors, they might not alleviate poverty.*”³³⁰ *Egalitarian* texts raise concerns about “*land-grabbing and water grabbing,*”¹⁶⁶ noting that conversion of land to biofuels reduces land available for food crops, which in turn, could impact food prices.⁵ The land required to meet government targets in Vietnam, for example, are huge, and may not be available because of forest cover and agricultural policies.⁶ Moreover, biofuels typically use more water than other energy sources, and so could also adversely impact water security in some locations.^{74,451} Pro-renewable, *Hierarchist* narratives argue that with appropriate technologies, planning and resource management, the use of land for energy and food “*can be made compatible*”,¹¹⁴ and even “*reduce the vulnerabilities that lead to food insecurity, through increasing energy security, diversifying incomes and improving local infrastructure.*”³⁴⁰ This coalition also accuse opponents of biofuel development of simplistic analyses, “*mislead the public and policymakers because they obscure the main drivers of local food insecurity and ignore opportunities for bioenergy to contribute to solutions.*”³³⁷ There were no strong associations between individual narrative themes (Fig. 1) and stance on large-scale biofuel development.

4.3 Development Plans

Development plans are by definition multi-sectoral and thus an area of policy where the nexus idea may be especially salient. At the international level nexus narratives have helped build coalitions supporting the ideal of integrated planning and management of natural resources. The 2016-2020 plan for the US-supported Lower Mekong Initiative agreed to by Ministers highlights the water-energy-food nexus alongside gender, health and education issues.¹⁵⁴ In October 2016, the Cambodian PM listed the nexus first in a set of six priority items at a the 2nd Asia Cooperation Dialogue summit.⁰³³ International organizations and national overseas development agencies collaborate on reports or events to promote technically-oriented, often *Hierarchist*, approaches to the nexus to national governments in the Mekong Region.^{109,223} The Mekong River Commission (MRC), for instance, has run several meetings with nexus themes, largely driven by the need to address concerns with hydropower development, but also touching on diversions for irrigation.

The collaboration network identified in *Hierarchist* texts (Fig. 4) is the largest and shows that the MRC has a central role in links to rest of the world. The MRC argues that addressing nexus security at the transboundary level could bring countries more closely together, economically and politically.¹⁷⁹ The *Individualist* network places ADB at the center of connections in the Mekong Region with USAID and FAO providing links to other sub-networks outside the Region (Fig. 4). The *Egalitarian* network is centred on Laos as this the country authors are most worried about due its hydropower development plans. The network is sparse with few connections between the Mekong Region and elsewhere apart from EDF which operates Nam Theun 2 dam.

The influence of nexus narratives on the emergence of coalitions at the national level, for instance, among ministries in developing strategic plan, is much more limited than at the international level. *Hierarchist* narratives call for “*high-level councils and inter-ministerial task forces*”⁰⁵⁷ and “*cooperation among energy and water agencies*”;¹⁵⁶ but there is not much

evidence of calls being heeded. Several texts argue that river basin organizations might be appropriate platform to gather stakeholders with different interests in the nexus.^{179,284} An environment Minister from Thailand, for example, saw the nexus as a confirmation of the continuing relevance of IWRM: “*water is a cross-cutting issue and therefore needs to be recognized as the nexus where various development objectives are linked*”.¹⁷⁸

Key national development strategy documents from the region which might be expected to refer to the nexus linkages did not. The Green Growth Strategy of the Government of Vietnam (2012) does not refer to the term ‘nexus’, and concerns with energy security or water scarcity are dealt with separately.³¹⁰ The 2014-2018 National Strategic Development Plan of the Government of Cambodia does not refer to the nexus or water security; references to energy security focus on electrification, and make no links to the water sector.³¹¹ The 2011-2015 National Development Plan of the Government of Lao PDR mentions food and energy security, but does not link them to each other or to water-related concerns or water resources management.³¹² The 2012-2016 National Economic and Social Development Plan of the Government of Thailand does not mention ‘nexus’, but it does call for “*integrated water management to support sustainable food and energy security*”.³¹³

National policy think-tanks and large private companies in the Mekong Region, like governments, have not paid much attention to nexus narratives. The Thailand Development Research Institute does not cross-reference the term ‘nexus’ in any of its published reports although it often studies water and energy issues.⁴⁷¹ The Cambodian Development Research Institute uses the term ‘nexus’, but in relation to poverty-environment interactions and not water-energy-food issues.⁴⁷² The Thailand Environment Institute does not use the term nexus either,⁴⁷³ but in a 1998 assessment report it did argue the need for policy integration based on “*a proper conceptualization of the linkages within and among food, water, clean air and energy security*”, quintessentially a nexus approach.³⁵⁵ The private sector from the Mekong Region has also been silent on the nexus.

In summary, nexus narratives were used to both support and oppose large-scale water resources development. The findings related to use of character were consistent with P3 (Table 1). *Individualist* coalitions populated their nexus stories with heroes, and strongly supported all three types of large-scale development projects. *Hierarchist* coalitions had a more nuanced or mixed position on projects, whereas *Egalitarian* coalitions were more likely to oppose hydropower and biofuel development. *Egalitarian* coalitions appear to be less cohesive than *Hierarchist* and *Individualist* coalitions and this may have reduced their influence on policy elites as suggested by P4. In terms of uptake of nexus narratives in the Mekong Region, the acceptance and use by international and foreign organizations is high, whereas inclusion in national deliberations, policy or planning has been much more limited – as a consequence it is difficult to conclude that one particular approach to the nexus has been more influential than others at this level.

5 Discussion

In nexus narratives what is to be secured from what and for whom falls mostly into three clusters. *Individualist* narratives are about securing water and energy resources, that are becoming scarce because of inefficient uses, for big business. *Egalitarian* narratives are concerned with securing land and water resources, that are being taken over or transformed by big business, for local livelihoods. *Hierarchist* narratives aim to maintain or increase resource security, that are at threatened by over-use, for the state and its citizens.

Nexus narratives are constructed around themes which link problems with a moral (P1) and assign roles to characters (P2) depending on the status of the associated coalition (P3). Thus, *Individualist* narratives put the spotlight on business as heroic innovators in a world where governments let markets allocate resources. The focus on heroes and solutions reflects an Angel Shift; a strategy to further expand a coalition that is not yet dominant. In the Mekong Region, in contrast to the global arena, a bank (ADB) rather than large private companies, was the key proponent of this approach to the nexus.

Hierarchist narratives also turn to the technology and models of experts, but expect these to be applied according to the standards and rules of bureaucrats and diplomats. The position is reflected in the often prescriptive and technocratic interpretation of IWRM (Mukhtarov and Gerlak, 2014). The focus on governments and dialogue represents an optimistic perspective on cooperation aimed at consolidating the numerically dominant coalition. In the Mekong Region, this optimism is not always warranted given the often deep contestation of water and energy policy (Dore and Lebel, 2010; Molle et al., 2009b). An analysis of nexus discourses in the United Kingdom also found most gave attention to integration, technology, and management solutions, while avoiding consideration of power relations or politics (Cairns and Krzywoszynska, 2016).

Egalitarian narratives, in contrast, identify victims and villains in their stories, not just heroes, to re-politicize the nexus around themes of justice and human security. The focus on problems leans on the Devil shift as a strategy to erode support for other winning coalitions. Devil shifts have not been so widely studied (Weible et al., 2009), but have been shown to be important in the urban water sector (Ching, 2015). In the Mekong context such an explicitly political perspective must struggle against professional norms of natural resource managers and planners who when faced with difficult decisions are adept at turning them into apolitical, technical exercises (Käkönen et al., 2014).

Tracing the nexus term through texts and network structures, for instance, implies relatively effective transfer of global narratives into the Mekong Region through international organizations (MRC), international financial institutions (ADB) as well as developers (EDF), consultants and experts in the epistemic community, an observation made by previous studies (e.g. Middleton et al., 2015). Nexus narratives have been used to support, as well as oppose decisions important in the Mekong Region, such as large-scale hydropower, irrigation, and biofuel expansion. *Individualist* narratives were coherent and strongly pro-development of all types; whereas *Egalitarian* narratives were often anti-biofuel and anti-hydropower. *Hierarchist* narratives were somewhere in between. Taking these observations together suggest nexus narratives appear to have some potential in bringing cross-system impacts or synergies to the attention of policy elites in the Mekong Region. Nexus coalitions that were stronger and more coherent (P4) or spanned multiple sectors (P5) had greater influence on policy positions taken in international arenas, but these did not easily translate into policy or planning at the national level.

Key national development policy documents did not show much influence of the water-energy-food nexus logic. Policy think-tanks and the private sector in the Region, have

also not taken up the nexus language. This deserves explanation. It may simply be a question of time. Policy narratives need time to influence policy elites, as new ideas need translation to fit into existing institutional structures (Mukhtarov, 2014). Water bureaucracies are notoriously conservative, and shaped by narrow organizational interests that make integration and change from existing planning paradigms difficult (Molle, 2009). It might also be a question of capacity. Most nexus narratives seem to flow towards the low and middle income countries where institutional capacities to govern resource insecurities and bargaining power on international trade and investment are modest. In these countries, water, energy, and food systems often seem barely governable taken one at a time, let alone in complex interacting combinations. The nexus sets very ambitious research and policy agendas given that many more modest integration efforts have stumbled (Leck et al., 2015). Finally, it might be a question of salience. Nexus narratives promise solutions but often do not provide much detail or pragmatic guidance for planning or policy and so may be dismissed as largely irrelevant. Viewed historically the nexus looks like just another variant of the integration motif. Thus, it is understandable that some decision-makers see the nexus as a reincarnation of IWRM (Benson et al., 2015), or are wary of grabbing at what may just be another buzzword (Cairns and Krzywoszynska, 2016). It is also not clear that the water-energy-food combination is the highest priority (Wichelns, 2017).

For actors hoping to better understand or influence decision-making in the Mekong Region these findings on narrative strategies are significant and of concern. First, they imply a need to pay much greater attention to the divergent policy beliefs held by different coalitions and to tailor communication and political strategy accordingly. Second, they suggest that need for alternative narratives that pay attention distribution of risks and benefits (Suhardiman et al., 2014), in particular, following the commencement of construction of the controversial Xayaburi and Don Sahong hydropower dams on the mainstream of the Mekong River (Cronin and Weatherby, 2015; Hensengerth, 2015). Third, it is important for scholars to unpack the content of nexus narratives used in debates and to justify projects or policies to reveal hidden interests and undeclared consequences (Allouche et al., 2015; Kurian, 2017). Even self-evident claims of scarcity and insecurity warrant scrutiny as the winners and losers shift with scale and storyline.

The key simplifying assumption of this study was that the CT clusters of narratives reflect and help build and maintain three corresponding coalitions. Moreover, these coalitions were understood to hold different beliefs on how interacting resource insecurities in the nexus should be governed. With this assumption it was possible to make a number of propositions about the themes and characters used in narratives and what was likely to influence policy based on tenets of NPF and CT (Table 1) and to test them empirically. While many of the qualitative and quantitative findings were consistent with the propositions, there were important exceptions and nuances too.

This study expands the application of the NPF (Jones and McBeth, 2010; Shanahan et al., 2011) to a novel transboundary and cross-sectoral policy context, and finds that global nexus policy narratives have so far had much more influence on the rhetoric of international organizations and debates than on national policies or plans in the Mekong Region. In terms of scholarship on policy change this study confirms the value of the NPF for systematic exploration of environmental and transboundary issues. Given the diversity of political systems in the Mekong Region, the simplifications provided by CT were a useful foundation from which to start a meso-level analysis of policy narratives – consistent with recent suggestions for expanding applications with the Advocacy Coalition Framework (Jenkins-Smith et al., 2014). At the same time there is clearly scope for a deeper examination of the dynamics of policy beliefs and narrative development beyond the confines of CT, for instance

in how they approach issues of uncertainty and complexity. Further research is also needed on nexus governance whether these are prominently labelled with the nexus term or not.

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