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An adaptive and context-driven approach to the water, energy and food nexus

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Since its introduction in 2011, the concept of the water-energy-food (WEF) nexus has quickly taken off in EU external action and development cooperation policy. In a context of climate change and increasing demands on limited resources, the case and need for a more integrated management of water, energy and food security is clear. However, this is easier said than done. Implementing nexus approaches is notoriously difficult. It not only requires a more systemic approach to resource management, but also substantial reforms both in policy and practice.

This paper looks at the often under-studied political economy dynamics of cross-sectoral and cross-border integration, and examines how and why integrated policies often face implementation gaps. It argues for a more adaptive and context-driven approach to the WEF nexus, one that takes the nexus not as the outcome of a perfect masterplan, but as an iterative process of learning through addressing specific problems. This calls for two major changes in the thinking about the WEF nexus, namely (1) bridging technical and political approaches and their respective knowledge communities, and (2) adopting a non-linear, problem-driven approach to WEF nexus reforms and policy implementation. This paper issues a number of recommendations for donor agencies, institutions and the WEF nexus knowledge community to put this into practice.

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Introduction

The concept of a water-energy-food (WEF) nexus has gained considerable momentum and support over the years, both as a research agenda looking into the inherent interdependencies between water, energy and food security, and as an evidence-based and integrated policy framework to bridge different sectoral actors, agendas and priorities in a context of climate change.

The central idea of the WEF nexus approach is that sectoral silos are inevitably inefficient, and lead to unsustainable resource demands. Taking an integrated, nexus, or systems approach to the management of water, energy and food needs (and resources) is intended to increase efficiency and develop more sustainable pathways by maximising synergies (e.g. reusing wastewater), minimising harmful trade-offs (e.g. between different energy and agricultural demands), and by integrating planning, management and governance across sectors and stakeholders.

The theoretical case for WEF nexus thinking is clear, particularly in a context of climate change, environmental breakdown, and growing resource constraints worldwide. Unsustainable resource use has led to large-scale degradation of the natural resource base and severe, and often irreversible modification of

ecosystems in many regions (Hoff 2011: 10). As demands on resources continue to grow along with the human population, a more balanced, efficient and sustainable use of natural resources is urgently needed. The alternative is continued depletion of resources and eventual systems failure due to unsustainable resource management.

In practice, however, nexus approaches are notoriously difficult to implement, as they require more than a recognition of the interdependencies between sectors, the inefficiency of the status quo, or a quantified scenario for more sustainable resource use. This paper discusses the often difficult operationalisation of WEF nexus thinking, focusing particularly on the politics of cross-sectoral and transboundary cooperation. It builds on research carried out in 2017-2019 on the political economy of WEF nexus synergies and trade-offs, and integrated water resource management (IWRM) in African transboundary river basins.

The paper sheds light on the often under-studied political economy dynamics surrounding resource use and cross-sectoral synergies and trade-offs, and argues for a more political understanding of WEF nexus policies and their implementation. This implies bridging scientific and political understandings of WEF nexus dynamics, considering the WEF nexus as a dynamic and iterative process, not an end-goal in itself, and taking implementation, not as a logical conclusion, but as a starting point. The paper concludes with eight recommendations for WEF nexus stakeholders and their partners to integrate these lessons in programme design.

1. The water-energy-food nexus concept

While the WEF nexus concept is a relatively recent addition to the policy lexicon, the idea behind it – a systems approach, integrating water management, agriculture, energy, (and climate) issues – goes back to a growing public and political recognition of the interdependence between human activity, resource use and environmental problems in the 1970s and

1980s, leading up to the influential 1992 Rio earth summit. 1992 was a turning point in that it gave a multilateral mandate for sustainable development and established a firm connection between climate and environmental science, and the more objective-driven realm of global governance and international development. This also led to a much-needed push for science-driven approaches to sustainable development and a search for ways to operationalise systems-thinking for concrete sustainability outcomes. One example is the concept of IWRM, which was launched in 1992 and has since redefined thinking about water management worldwide. While essentially a water sector lens, IWRM is closely related to the WEF nexus concept. It proposes a process for the coordinated development of water, land and related resources (GWP 2000) based on a set of principles¹, and the promotion of a holistic, multi-sectoral perspective on resource use and environmental conservation.

The WEF nexus concept first received critical attention in 2011 in the framework of the World Economic Forum and subsequently the Bonn 2011 nexus conference². The WEF nexus concept builds on a similar demand for coordinated management and systems thinking as IWRM, but takes the interrelationship between water, energy and food systems³ as an explicit starting point, rather than water. Given the shared pedigree of both concepts, their implementation difficulties (discussed below) are very similar.

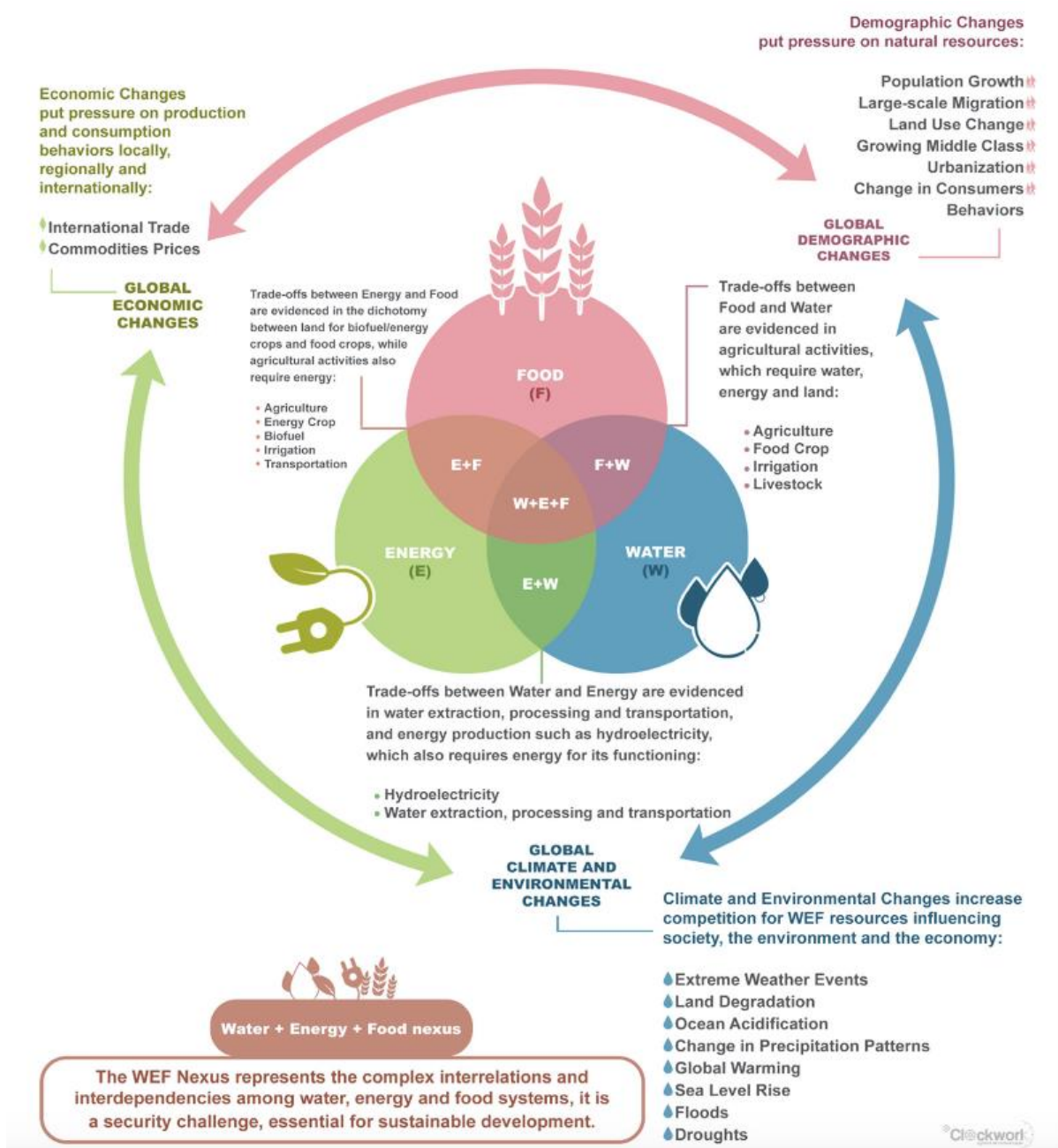
One of the cornerstones of the WEF nexus and related concepts like IWRM is quantifying the interrelations between water, energy and food systems. The WEF nexus concept posits that applying a scientific approach to analysing cross-sectoral synergies and trade-offs allows for a more objective and detailed understanding of resource constraints, but can also help (better) project and manage future risks to water, energy and food security. Using integrated modelling tools also allows scientists to simulate alternative scenarios for optimising the efficiency or performance of a WEF system through technical interventions (e.g. infrastructure) and behavioural change (e.g. resource allocation and agricultural practices, sectoral governance).

Over the years, major advances have been made in refining the scientific and engineering applications of the WEF nexus concept, with more complex and detailed modelling tools, accounting for more climatic, and socio-economic variables (Hedlund et al. 2018), all of which have been developed through the application of the nexus concept on concrete case studies worldwide. There is, however, no single model or systematic nexus approach. Studies and nexus initiatives vary significantly in (geographic) scope, analytical framework, and most importantly in the link they make with decision-making and 'nexus governance'. While a lot of research has been done using the WEF nexus as a conceptual framework, research into the applications of 'nexus methods' is comparatively scarce (Albrecht et al 2018).

Today, the WEF concept is again gaining popularity, riding on renewed ambitions for a green transition worldwide. The EU's Green Deal, presented in 2019, is essentially a cross-sector reform project, covering among others industrial policy, renewable energy transition, and an ambitious reform of the continent's agricultural policy. Even if the concept of the WEF nexus is not at the forefront of the EU's energy transition narrative, the green deal policy framework is based on an explicit understanding of WEF interdependencies and issues a clear call to rebalance resource use across sectors. When it comes to promoting green transition and sustainable development as an external objective in third countries, multilateral donors like the World Bank and the EU and bilateral agencies like GIZ that widely supported the expansion of IWRM worldwide (Medinilla 2018) have all adopted WEF nexus thinking and increasingly make explicit reference to the concept⁴. Continued interest in the WEF nexus concept, particularly from the environmental and development communities is also producing a new generation of nexus programmes, seeking to operationalise the nexus concept in a variety of contexts⁵.

Yet, adopting a WEF nexus approach is a complex undertaking. The different interdependencies and interactions among elements of the WEF nexus are shown in Figure 1, illustrating the challenge faced for bureaucratic structures to arrive at a coordinated and coherent approach.

Figure 1: Complexity of the water-energy-food nexus



Source: de Andrade Guerra et al. 2021

This paper argues that beyond this technical understanding of the interdependencies across sectors, many of the difficulties inherent to operationalising cross-sectoral policy integration are political, and have been insufficiently addressed to date. The following section unpacks some of the challenges, drawing on

recent literature and building on the experiences of promoting nexus-thinking in African basins. Although this paper looks at the WEF nexus specifically, many of the issues raised and recommendations relate to the challenge of integrated cross-sectoral and transnational policies more broadly.

2. Nexus implementation gaps: Revisiting assumptions

African ecosystems present a special challenge for the adoption and implementation of a WEF nexus approach. The majority of Africa's river basins hold massive unrealised water development potential, both in terms of hydro-electric power and agricultural development. Electrification rates are among the lowest in the world and vulnerability to climate extremes is increasing across the continent. All this shows a clear need to integrate the management of resources across sectors and borders. In the past decade, several African regional organisations including ECOWAS (Medinilla 2017a) and SADC (Woolfrey and Muller 2017) and river basin organisations like the Niger Basin Authority, the Lake Chad Basin Commission, or Congo Ubangui Sangha Commission (Medinilla 2018) have adopted integrated approaches, generally with the support of external donors such as the multilateral development banks (WBG, AfDB), EU member state agencies (e.g. AFD, GIZ), and the global environmental knowledge community (e.g. GWP, IUCN).

The rationale behind the majority of these approaches is that an assessment of nexus interdependencies forms a basis for (a) altering or (re-)balancing resources allocations and policy priorities, and (b) setting up evidence-based management and governance systems that stretch across multiple sectors, multiple countries and multiple governance levels. In practice, however, integrated nexus policies and transboundary commitments often prove difficult to achieve in many of the continent's diverse and often conflict prone transboundary river basins, leading to implementation gaps.

Understanding the extent and complexity of engagement of different 'WEF actors' is key to understanding the challenge of nexus approaches. A nexus approach entails bridging across sectors, and thus sector actors. While in one country that means greater coordination and collaboration between, say, the Ministries of Water, Energy and Agriculture, for transboundary issues, this inter-ministerial collaboration is required across multiple countries. Add to that the range of additional public, private, local and civil society actors with a stake in some element of the WEF nexus, and the number of actors, interests and power relations that shape outcomes is further multiplied. While regional and transboundary bodies can seek to coordinate and arbitrate among these different actors, even at that level, institutional silos can be problematic. The network of actors, interests and power relations is also likely to be beyond any comprehensive mapping or understanding, requiring a more targeted, bottom-up approach.

While the barriers to implementation are generally attributed to a lack of (technical) capacity and/or the absence of robust governance mechanisms to oversee implementation, capacity and governance systems are often merely the tip of the iceberg. A closer look reveals that integrated policy frameworks and support programmes are often based on an insufficient understanding of the drivers of change, and an overly technocratic approach to nexus governance, which underestimates the importance of local interests and incentives of key actors operating within and between countries that often go against regional commitments and scientifically sound resource management scenarios.

Box 1: Under-implementation of integrated policies in African basins

Implementation gaps can take different shapes depending on the context. Common examples in African transboundary basins include the following:

1. **Form preceding function:** External (donor) support and technical assistance facilities are often instrumental in the development of progressive water legislation, integrated regional policies and institutions, shared visions and action plans. In some cases, this has led to a proliferation of 'best practice' governance mechanisms which do not always easily translate into a change in the actual practice of resource management. One example can be found in the Niger basin, where in the 2010s for example, an impressive amount of detailed policies were developed, including provisions for shared regional multipurpose infrastructure, without a clear pathway for applying these policies in the immediate future ([Medinilla 2017a](#)).
2. **'Side projects':** A second common form of under-implementation are "side-projects" or instances where transformative and aspirational policies are reduced to specific, donor-funded projects, while lacking a clear direct impact on the actual dynamics and governance systems they seek to reform. This was common with externally funded initiatives in African river basin organisations in the 2010s, such as the Lake Chad Basin Commission (LCBC) (Galeazzi et al. 2017) and the International Congo Ubangui Sangha Commission (CICOS) (Medinilla 2017b, 2018), and resulted in some of these efforts being carried out in a somewhat virtual environment, often focusing on capacity development, technical assistance and the provision of technical tools, but with limited impact on the actual decision-making on water resource use.
3. **Donor signalling:** External funding has been instrumental in the spread of integrated approaches like IWRM and the WEF nexus. This has both intended and unintended effects on the implementation of these policies and approaches. One common dynamic of externally driven policy integration is a commitment to policy implementation on paper, but where in fact no real changes in intersectoral dynamics or international cooperation (e.g. between countries) is taking place. This is the case for example when countries reframe national initiatives or projects under a regional and/or integrated narrative, while in practice, the regional or integrated component is limited or even absent.

Ten years of nexus experimentation since the 2011 Bonn conference raises a number of key questions which allow us to revisit some of the more common assumptions underpin WEF nexus approaches:

1. **Is the basin or ecosystem always the ideal unit of analysis?** The WEF nexus concept is more scalable than IWRM and puts the water, energy and food dynamics on a more equal footing (Benson et al 2014). There is however still a tendency to conflate the unit of technical analysis (basin/ecosystem) with the primary level of intervention. African river basins, while generally endowed with regional institutions and policies, tend to be extremely large and diverse, stretching across multiple countries with often uneven interests⁶ and positions according to their location up- or downstream. This makes it difficult to move from principles to concrete implementation (Medinilla 2018).
2. **Are transnational institutions always best placed to drive WEF integration?** Similarly, nexus approaches and experts often assume that transnational organisations like river basin organisations are the natural, or ideal home for advancing policy integration objectives. While they can be important conveners of cross-sectoral and regional integration, and a space for agreeing on common frameworks and approaches, it is generally the member states' national authorities that have the real decision-making power and especially, where actual implementation of agreements (or other decisions affecting water flows) take place.
3. **Is 'grand planning' the only way to inspire collective action?** A common feature of WEF nexus and IWRM initiatives is the use of large multi stakeholder dialogue exercises to identify reform scenarios and integrated solutions. This often

results in ambitious, solution-driven- action plans for developing new governance mechanisms and institutional frameworks, and under-utilises more bottom-up demand dynamics, working with coalitions to pilot reform processes, and drive the nexus agenda forward. A better integration between ‘top-down’ and ‘bottom-up’ dynamics may help devise more feasible or better adjusted nexus approaches.

4. **Does scientific knowledge always lead to better political choices?** WEF nexus initiatives often start with the goal of building a common understanding of “nexus” synergies and trade-offs, using new and improved models, against which all (future) interventions can be assessed. While technical data can help inform political dialogue, for example on critical infrastructure, and can even help with political choices, it does not always easily translate into implementation of agreed, or common-interest approaches. Ultimately, nexus approaches, particularly in transboundary contexts, are complex political negotiation processes, where scientific data is but one of the many variables that inform change. Nexus initiatives therefore can benefit from a more nuanced understanding of how policy change takes place, and a more politically sensitive framing and communication of scientific insights.

3. Towards a context-driven and politically sensitive nexus approach

This section argues that many of the abovementioned ‘gaps’ can be addressed by adopting a more context-driven and politically sensitive nexus approach. Doing so calls for two major changes in the thinking about the WEF nexus and the practice of policy integration, namely (1) bridging technical and political approaches and their respective knowledge communities, and (2) adopting a non-linear, problem-driven approach to WEF nexus reforms and policy implementation.

3.1. Bridging technical and political approaches to the WEF nexus

The first major change is to rethink how WEF interdependencies and ‘nexus problems’ are framed. The origins of the nexus concept lie in environmental sciences, with major implications for how nexus trade-offs are understood, but also for how the solutions to nexus problems are conceptualised. A technical-managerial approach to the WEF nexus – framing nexus problems first and foremost as inefficiencies – favours technical measures to optimise nexus systems, and the creation of new integrated governance structures around an ideal, optimal nexus scenario.

Treating nexus approaches as systems optimisation can lend itself to under-implementation, as it is often somewhat disconnected from the very sectoral and resource governance processes and dynamics it seeks to influence (Weitz et al 2018). Nexus literature and initiatives generally recognise that governance is crucial, yet rarely take explicit account of the interests, incentives and power relations between those engaged in and affected by resource governance processes, and often fails to fully grasp a number of critical factors⁷ such as:

1. **The political conditions for cross-sectoral cooperation and coordination:** In essence, the WEF nexus approach constitutes a negotiation process between sectoral stakeholders with often competing sets of objectives. WEF nexus policies are therefore the result of a profoundly political process subject to its own formal and informal rules, including interests and power relations between and within countries, which – often more than capacity and knowledge – define the enabling environment and ultimately the scope for reform. This includes the question of how policy-makers value different WEF objectives. Industrial development ambitions, for example in the SADC region (Woolfrey and Muller 2017) or Ethiopia in the Nile basin (Knaepen et al. 2017) often clash with the environmental community’s vision of optimal resource management.
2. **Dynamics outside the WEF sectors:** WEF decisions are also heavily influenced by factors outside their

respective sectors and the control of WEF actors. These include the peace and security objectives behind an infrastructure project⁸, or the key role of external funding and partners.

3. **Different narratives in the WEF nexus:** The values, norms and beliefs of key nexus actors play an important role in the WEF Nexus, but are often badly understood, or difficult to reconcile with the scientific – seemingly neutral – approach to the nexus. This plays out in different ways. The way communities think about water resources, for example colours their engagement in regional frameworks. Countries like Egypt and DRC for example have a hegemonic narrative on shared watercourses that stands in contrast with the public goods narrative that underpins nexus initiatives. Nexus approaches also often implicitly reproduce a Western concept of single scientific rationality (Wiegleb and Burns 2018) as the basis for ‘good nexus governance’, which is incompatible with a pluralistic approach to policy integration, or ignores existing systems of resource allocation and interaction between nexus stakeholders (Merrey 2009).

All of these factors are key determinants of WEF nexus dynamics and the decisions made by policy-makers and sectoral stakeholders in any given context, yet they are often understudied, or insufficiently considered in relation to the WEF nexus. To develop a fully context-driven WEF nexus, one therefore needs to bridge the traditional technical approach to the WEF nexus with a more political one.

Table 1 compares the ‘traditional’ understanding of the WEF nexus as a technical, engineering challenge with one that frames the nexus as a political challenge, drawing from ECDPM’s political economy analysis framework, as applied to regional cooperation (Vanheukelom et al. 2015). Each on their own is insufficient and will result in incomplete nexus approaches. A purely technical approach may produce scientifically sound and environmentally optimised, yet also wildly unrealistic, politically unfeasible reform proposals. Conversely, taking a purely political approach to nexus issues, may result in a lack of ambition, or a failure to address actual WEF vulnerabilities.

Table 1: Conceptualising nexus challenges – A need to balance two extremes

	WEF nexus as a technical, engineering challenge	WEF nexus as a political challenge
Trade-offs framed in terms of	<ul style="list-style-type: none"> - Inefficiencies in the nexus system - Lack of knowledge/capacity 	<ul style="list-style-type: none"> - Collective action problems - Conflicting interests and priorities - Political myopia and risk management
Approach to nexus assessment	<ul style="list-style-type: none"> - Use of hydrological, climate, and increasingly integrated modelling (more sectors, socio-economic variables) - Use of participatory assessment and scenario planning to promote adoption of more efficient nexus approaches 	<ul style="list-style-type: none"> - Political economy analysis to analyse interests, incentives, and power dynamics - Assessment of the enabling environment for policy integration and cross-sectoral reform - Analysis of local conceptualisation of ‘nexus problems’
Conceptualising solutions	<ul style="list-style-type: none"> - Optimisation through technical measures - Ideal nexus scenarios as the starting point - Creating integrated governance structures 	<ul style="list-style-type: none"> - ‘Working with the grain’ - Negotiated compromise - Ad-hoc governance mechanisms - Subsidiarity and bottom-up interventions
Benefits	<ul style="list-style-type: none"> - Environmentally sound - Direct link to technical interventions - Long-term perspective 	<ul style="list-style-type: none"> - Explains persistent implementation gaps - Short term reforms and quick wins - Identifies change agents
Risk factors	<ul style="list-style-type: none"> - Systematic under-implementation - Reform fatigue and missed opportunities - Path dependency 	<ul style="list-style-type: none"> - Lack of ambitious reform objectives - Perpetuating/deepening power imbalances - Failure to address long-term climate vulnerability

Only by combining the two can one start developing a WEF nexus approach that is both environmentally sound and rooted in an understanding of the political and societal context. This is more difficult than simply adding more variables to a nexus assessment as it involves bridging different knowledge communities in the design and implementation of a nexus programme or initiative.

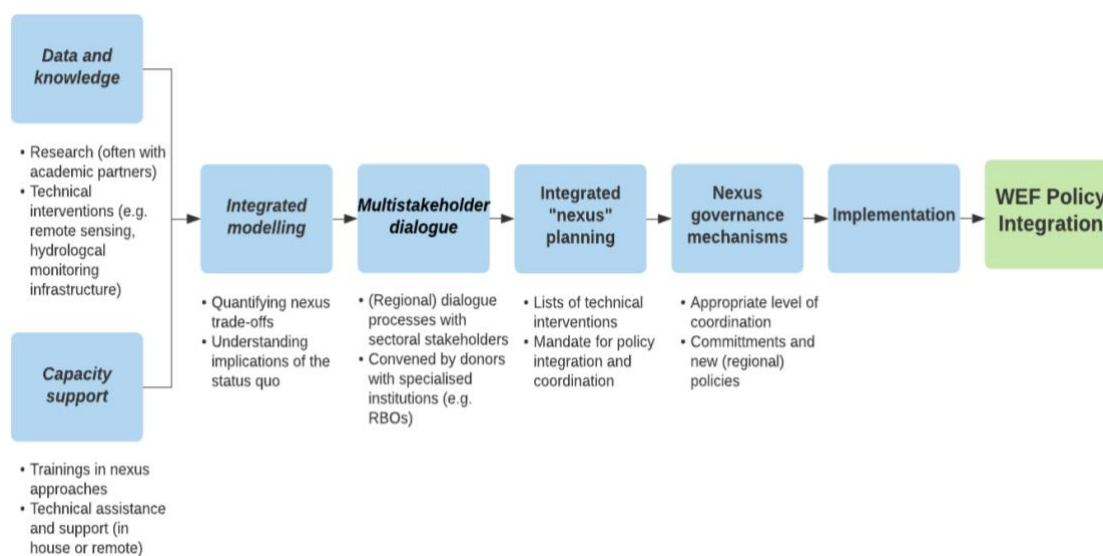
3.2. A non-linear approach to WEF nexus implementation

The second major change is rethinking the sequencing of interventions of a WEF nexus approach. Figure 2 below gives a simplified version of the implicit ‘theory of change’ underpinning many nexus programmes, the core idea of which is to work towards WEF policy integration (or policy coherence) as an outcome. Interventions are structured along a mostly linear process from knowledge generation to dialogue and planning, and ultimately implementation.

pressure in the 2000s and 2010s, not least from the water management community, that saw major limits to how this had been put in practice (Lankford et al. 2007; Merrey and Cook 2012). The basic elements, however, are still part of the playbook of many policy-makers and development partners.

An alternative way is to look at WEF policy integration as an iterative process of learning, which takes place through cross-sector interaction in response to specific problems⁹. This starts with the acknowledgement that the WEF approach has all the characteristics of a so-called ‘wicked hard problem’, namely one that is simultaneously “logistically complex, politically contentious (i.e. implementing them generates potentially hostile resistance), has no known solution prior to starting, and contains numerous opportunities for professional discretion” (Andrews et al. 2015: 126).

Figure 2: The linear approach to WEF nexus implementation



Source: Author

Of course, this is rarely how policy change happens, let alone in a complex environment with conflicting transboundary and cross-sectoral interests. This rather orthodox approach to integrated resource management has also come increasingly under

This means that the intended outcome of an optimally balanced WEF nexus system through cross-sectoral policy integration is unlikely to be achieved through a single masterplan, nor can it be simply willed into existence through a deliberative planning process.

Regardless of their formal mandate, technical prowess and training, policy-makers are often limited in their ability to enact policy change, and perhaps more importantly, to ensure implementation and follow the ensuing effects and implications. In some cases this is due to an implicit hierarchy between different sectors (e.g. energy needs trump conservation and agriculture). In other cases this is due to specific historical circumstances (e.g. long-term state-run irrigation systems in Egypt or Mali), or political interests (e.g. short-term gains from realising a specific infrastructure project). But overall, it is because of the complex interdependence of nexus

actors and policies. As a result, change is a generally gradual and messy process that involves altering the power dynamics and sectoral conditions that define the status quo.

For a WEF nexus programme to be successful, therefore, these elements need to be reflected in both the programme design and its implementation. Figure 3 below gives a generic and scalable example of the WEF nexus as an iterative, learning process, which can be used by WEF nexus stakeholders and their partners. It proposes an iterative process based on the following key principles¹⁰:

Box 2: Key principles of a problem-driven iterative approach to the WEF nexus

1. Focus on local (bottom-up) problem definition and identification: Nexus programmes often rely on a solution-driven approach. Problems are defined in terms of the 'lack of' standardised interventions such as a suitable nexus governance mechanisms, legal instruments and institutional frameworks. A problem-driven approach starts with the articulation of so-called 'useful problems', problems that are difficult to ignore, and are able to motivate and drive change. Local problem definition is ideally a participatory process in which challenges are broken down, and problem-solving coalitions are created, with the problem being continually reassessed. In the context of the WEF nexus this can mean focusing on those sectors and actors that are most affected by inaction and build up the momentum for change from there.

2. Build and sustain an authorising environment for change: To put a context-relevant, problem-driven approach into practice, agents (e.g. institutions, sectoral actors, leaders) need to be able to act and have bureaucratic space to develop practices that deviate from what is currently considered acceptable. The power to move is rarely vested in a single person or function, and is subject to both formal (e.g. chain of command, procedure) and informal rules (implicit hierarchy, sectoral power dynamics). To operationalise a context-driven WEF nexus approach, one needs to first understand the authorising environment that underpins nexus problems, and carefully 'grow' authorisation for cross-sectoral initiatives over time. In some cases, this boils down to creating political momentum for a nexus programme. More often than not, nexus programmes require authorisation across multiple domains, levels, and jurisdictions. This calls for coalitions of reformers that can create spaces for authorisation, and sustain cross-sectoral support for the nexus agenda.

3. Build in means for iterative adaptation: Nexus policy implementation is a gradual process of building functionality (cross-sectoral synergies, regional cooperation), while also creating the necessary legitimacy that makes change take root. This approach to the WEF nexus calls for a different approach to supporting reforms. Rather than planning everything at the start, expecting stakeholders to implement top-down innovations to the letter, an adaptive programme focuses on experiential learning through experimentation, creating agency. This calls for sufficient flexibility in programme design (objectives and measures) as well as flexibility in the way that activities are funded.

4. Ensure possibilities for continuous process facilitation: While nexus programmes or initiatives need to be led and implemented by the actors and institutions that are concerned, they also require a different kind of process facilitation. A major difficulty with cross-sectoral and transboundary initiatives is to build and keep the momentum for reform, and follow-up on agreements and joint objectives. Given the importance of modelling applications, one also needs to ensure continuous translation of technical data for use in policy-making. Similarly, a political approach to articulating nexus problems and solutions calls for specific methodological expertise and the use of dedicated decision-support mechanisms. This process facilitation is ideally observed by a mixed team of stakeholders and (external) experts and part and parcel of the design of a nexus approach.



Problem (re)definition

- Translating technical and political knowledge
- Local articulation and prioritisation of nexus problems
- Building on past successes and failures



Scenario development

- Stress testing technical interventions
- Identifying and prioritising solutions
- Proposals for policy reform and nexus governance mechanisms



PROCESS FACILITATION

- Accompanying problem definition and scenario development
- Connecting technical and political communities
- Translating technical knowledge



Implementation and policy experimentation

- Focusing efforts to maximise political traction
- Building in evidence-based feedback systems
- Real-time adaptation (steering)
- Favouring partial results over complete blockage



Building an authorising environment

- Creating an environment - within and across organisations - that encourages behavioral change and experimentation
- Incentivising national and sectoral contributions



Key knowledge inputs



Technical analysis

- Integrated WEF modelling
- External variables (interconnected risks)
- Vulnerability analysis (to shocks)



Political (context) analysis

- Understanding political traction and nexus blockages
- Assessment of enabling environment (for policy integration)
- Understanding multilevel governance mechanisms

4. Eight recommendations for WEF nexus design

The popularity of the WEF nexus continues to grow, and more (regional) institutions and donors are adopting the WEF as a part of their day-to-day lexicon. This paper identifies a need for a qualitative shift in how organisations and partners seek to implement the WEF nexus, and proposes a more context-driven and adaptive approach to do so. It outlines a number of principles and a generic, scalable process that can help inform the design and implementation of WEF nexus programmes, while avoiding the most common ‘implementation gaps’.

Based on this, we issue seven key recommendations for donor agencies, institutions and the nexus knowledge community engaging in WEF nexus programme design, be it from a research or practitioner’s point of view.

1. **Include a strong political component from the start:** Nexus problems should be explicitly framed as political problems, as well as a question of efficient resource use. This means including an in-depth analysis of the political economy of WEF dynamics at the project or programme identification phase, and mainstreaming it throughout the initiative.
2. **Invest in interdisciplinarity:** While the WEF nexus concept has its roots in the environmental science community, in order to operationalise the concept greater efforts are needed to bridge the science-policy divide. This includes using mixed teams, combining scientific analysis with (political) analysis, and improving the interface between complex scientific knowledge and political decision-making (e.g. through visualization, storytelling, communication tools and media engagement).
3. **Invest in brokerage and facilitation:** Donor agencies in particular should reserve some of the means for technical assistance and capacity development to process accompaniment and brokerage, seek out specific ‘political’ expertise

and support mixed teams of local change agents and (external) experts to pilot and oversee the process.

4. **Rethink the scale of nexus approaches:** The WEF nexus is promoted as a scalable approach, yet in many initiatives focus on the regional (basin) sphere which is a common unit of analysis. A closer look however, shows that nexus problems, as well as the opportunities for greater collaboration exists at the bilateral or even local level. Regional organisations like river basin organisations have a key role to play, but in order to be successful a nexus initiative needs to have an explicitly national component, which is where most decisions are taken.
5. **Connect regional and local initiatives:** Linked to the above, partners should ensure greater synergies between the programming of their regional and national funding. Housing a nexus programme in a regional organisation alone without engaging and supporting national actors can condemn nexus programmes to a virtual environment. The existing donor infrastructure often remains underused and organisational structures can encourage fragmentation.
6. **Adapt programme design to real nexus challenges:** Nexus programmes often rely heavily on a sequence of dialogue and technical assistance. Nexus programmes should adopt a problem driven and adaptive approach, which allows working on specific WEF nexus challenges, adapt and redirect means and support to where there is greater traction. This requires a different approach to programme design.
7. **Focus on potential synergies and quick wins:** In order to break free from cycles of under-implementation of integrated approaches, nexus programmes should prioritise outcomes with clear and immediate cross-sectoral benefits. This can help illustrate the usefulness of a nexus approach and incentivise future collaboration.

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8. **Think long-term:** The WEF nexus is not an outcome but a learning process. This means that the timeframe of most donor-funded projects is ill-adjusted to the challenge posed by the WEF nexus. Nexus initiatives should not seek to achieve full integration within the scope of a 3–4-year programme, but instead set feasible objectives and take a gradual and longer-term approach to change. This does not preclude achieving concrete results within the timeframe of a specific programme, it does, however, call for a phased approach and long-term accompaniment of WEF nexus processes.

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¹ See: <https://www.gwp.org/en/gwp-SAS/ABOUT-GWP-SAS/WHY/About-IWRM/>

² The Bonn 2011 Conference: The Water Energy and Food Security Nexus – Solutions for the Green Economy was organised by the German Federal government in collaboration with the World Economic Forum, the World Wildlife Fund (WWF) and the International Food Policy Research Institute (IFPRI).

³ Food systems are the multifaceted and multi-layered processes that link food production, processing, distribution, and consumption. A food systems approach recognises that these processes are underpinned by complex political, economic, social and ecological relationships ([Dekeyser 2019: 14](#)).

⁴ The EU for example makes explicit reference to the WEF nexus as a guiding concept in its recent Green Deal call for research and innovation proposals around green transition and renewable energy.

⁵ One notable example is the German cooperation and GIZ, which have been piloting nexus programmes in a range of countries, and have curated an online resource platform and knowledge hub for a number of years (GIZ nd.).

⁶ The DRC for example is a full member of the Nile Basin Initiative, its interests, however, are almost exclusively linked to the Congo basin.

⁷ For a detailed, theoretical understanding of WEF nexus governance gaps, see Weitz 2017, on which this list is partially based.

⁸ The choice of the Malian government, for example, to pursue a costly dam in the South-East of the country, is first and foremost informed by the need to stabilise and better integrate a remote region that has suffered from persistent insecurity and violence in the past decade. Water, energy and food security do play a role, but security concerns mean that technical shortcomings of the project (e.g. high evaporation) are more likely to be accepted ([Medinilla & Ronceray 2019](#)).

⁹ This relates to the common critique and call for the water community to refocus efforts on a “problem-shed” as opposed to pursuing ideal solutions at the level of a full river basin (Mollinga et al. 2007; Cohen and Davidson 2011), but goes beyond the question of scale and problem definition, and looks at how policy integration can be incentivised and sustained.

¹⁰ This list is loosely based on the Problem-Driven Iterative Adaptation framework, proposed by Andrews et al. 2015 and Samji et al. 2018.

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