



Nexus KAN Research and Engagement Plan - Part I

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Abbreviations

DT	Development Team
KAN	Knowledge-Action Network
SC	Steering Committee
SDGs	Sustainable Development Goals

1. The Nexus KAN overall goal

In the framework of [Future Earth](#), Knowledge-Action Networks (KANs) are networks of people and organisations, collaborating to build the knowledge and tools needed to tackle the greatest sustainability challenges of our time. The Nexus KAN does so in the context of sustainably and equitably delivering water, energy and food for all. This is achieved through better understanding of the interactions between water, energy and food systems and managing their trade-offs and synergies. The Nexus KAN facilitates collaboration between existing projects, networks and individuals involved with nexus issues and builds on their knowledge, expertise and experience.

2. Developing the Nexus KAN Research and Engagement Plan

As all KANs, the Nexus KAN began with a scoping process driven by a Development Team (DT) (see Box 1), with the mandate to develop a Research and Engagement Plan to guide and shape nexus-related activities under the umbrella of Future Earth. After several online meetings in 2016 and 2017, the DT organised a [workshop](#) in June 2017 in Paris. The DT identified and analysed key nexus challenges around the world, their main drivers and strategies to address them by reviewing existing literature and nexus initiatives. The analysis, which will be presented in the second part of the Research and Engagement Plan, provided the basis for defining the guiding principles and key objectives of the Nexus KAN, which take into account both the main research gaps and where the Nexus KAN is best-positioned to bring added-value.

3. The Nexus KAN guiding threads

3.1. Highlighting sustainable and equitable access

In the framework of the KAN, nexus challenges are “*current or anticipated threats to equitable and sustainable access to energy, water and food whose causes and/or consequences are embedded in the interactions between these three components*” (see Figure 1). Informing strategies and policies to address these threats is therefore the underlying objective of all KAN-initiated activities. By highlighting equitable and sustainable access, the Nexus KAN emphasises the systemic nature of nexus challenges, beyond water, food and energy systems, to environmental dimensions, such as biodiversity, climate and land, and social dimensions, such as livelihood, inequalities, governance and the development impacts of policy options.

Box 1: The Nexus KAN Development Team

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- Anik Badhuri, [Sustainable Water Future Programme](#)
- Bruce Campbell, [CGIAR Research Program on Climate Change, Agriculture and Food Security](#)
- Neville Crossman, [Global Land Programme](#)
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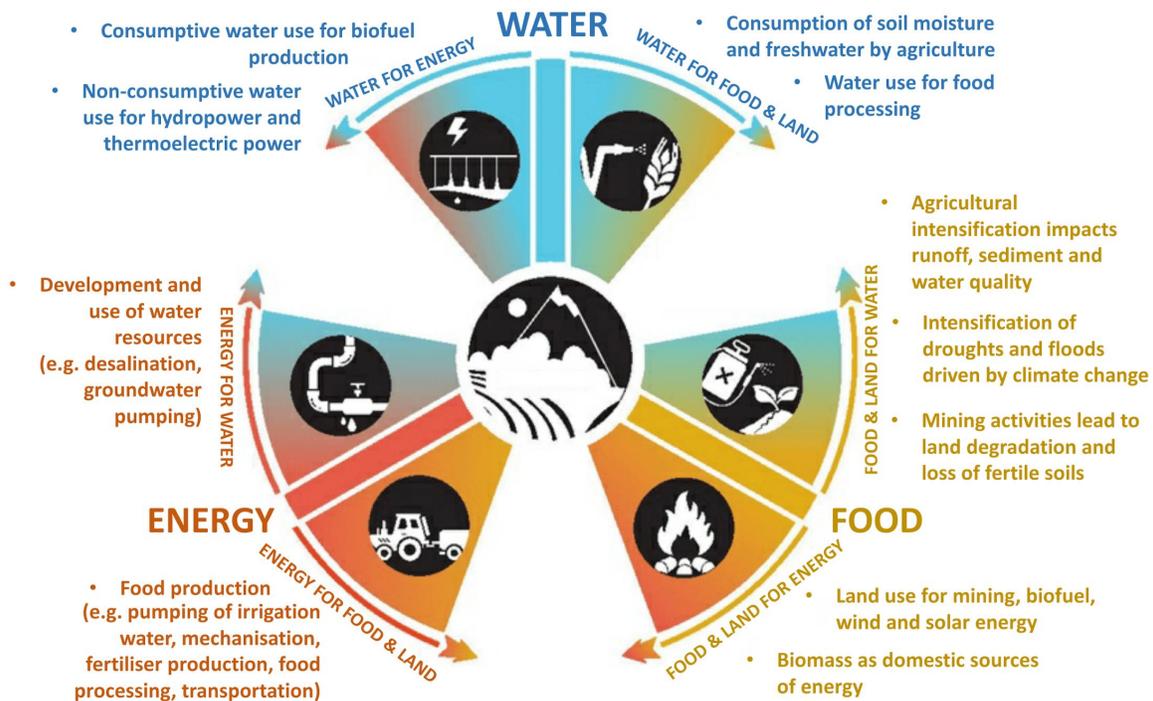
The work of the DT was coordinated by a team of the Future Earth Secretariat composed of Hannah Moersberger, Jon Padgham, Sandrine Paillard and Kaela Slavik, with the contribution of Sebastian Heinz, Emma Langevin, Cliven Njekete, Renee Obregon and Vincent Virat.

3.2. Addressing complex systemic challenges

While it is important to break down the silos and account for all major dimensions in the system, considering too many may render knowledge irrelevant to decision-makers. Finding the right balance between embracing complexity and being solutions-oriented is at the core of the Nexus KAN, which aims to support decision-makers in addressing complex systemic challenges at the crossroads of many diverse, interconnected factors. The Nexus KAN should foster the development of tools and knowledge to answer policy questions such as:

- What international framing conditions and institutional arrangements best address nexus challenges?
- What similarities exist between nexus challenges and what knowledge should be shared among regions to address nexus challenges? For example, what are the key features of a good urbanisation scheme and its relationship with the hinterland, and how does it minimise trade-offs and foster synergies between water, food and energy systems?
- What should the legal framework (norms, standards, etc.) for nexus solutions look like?
- How could climate or land use policies be designed from the local to global level without endangering food, water and energy security?
- How to create infrastructures which consider system interactions?

Figure 1 Examples of connections between water, energy and food systems (adapted from [UNECE 2016](#))



3.3. *Balancing analyses across different spatial scales*

The Nexus KAN needs to not only balance complexity and relevance for action, but also across different spatial scales. Being solutions-oriented means working on specific challenges at the local level through the engagement of place-based research initiatives. At the same time, the KAN must generate comprehensive approaches and methodologies and put local solutions within the context of the global challenges. The Sustainable Development Goals (SDGs) provide a useful overarching framework in this respect. Successful implementation of the SDGs requires local results to be upscaled by drawing commonalities between the diversity of nexus challenges as well as connecting spatial scales, as trade-offs and synergies between SDGs also occur across different spatial scales.

3.4. *Developing a thoughtful and reflective approach of engagement*

Engaging with stakeholders to define research priorities and needs, co-produce knowledge and find the most effective ways of disseminating and sharing research outputs, i.e. practicing transdisciplinary research, is key to a solutions-oriented initiative. However, it is also a highly challenging endeavour. In particular, it is naive and misleading to assume that the right strategies and policies would be implemented if science were to deliver the right knowledge, even when the needs are defined together with the knowledge users. Actors have conflicting interests and values, and policy decisions are political at heart. Addressing access issues and the social dimension of sustainability requires paying special attention to governance issues and the power relations between actors, particularly in relation to marginal and vulnerable groups.

Identifying which stakeholders to involve and how they should be involved is context and activity specific. The list of relevant stakeholders is long for each nexus challenge, as nearly every type of actor has a stake in water, food and/or energy systems. The KAN must focus on engaging those actors who can really influence outcomes and impacts of the KAN. Furthermore, not all activities of the Nexus KAN need to be co-developed, nor are all areas of interest to the stakeholders. For example, while publishing scientific papers in academic journals does not require stakeholder engagement in most cases, these activities strongly contribute to action and solution by attracting funders, thereby further expanding the knowledge base. In addition, connecting local, traditional, practical knowledge and academic knowledge without using one particular knowledge type to validate the other is a thorny challenge, underpinning trust and sustained fruitful collaboration between scientists and the other concerned actors.

4. Nexus KAN activities

Future Earth is a strong international research programme, which, through its [Global Research Projects](#), gathers a great diversity of scientific communities working on multiple facets of global environmental change and sustainability. The broad range of expertise, in terms of discipline, research tools and fieldwork, provide multiple complementary entry points and is a strong asset in addressing the complex system interactions which characterise nexus challenges. Another core feature of the KANs is openness, which facilitates collaboration between the traditional global environmental change research community and scientists from other fields, such as the humanities and social sciences or engineering, which are often key in effectively addressing nexus issues. Furthermore, openness enhances collaboration and interaction between scientists, practitioners and decision-makers working on nexus issues, thereby encouraging both the co-creation of new knowledge and the application of knowledge into practice.

Given these assets, the Nexus KAN is well positioned to bring added value through activities aiming to:

- Build community and mobilise capacity to collaborate on water-energy-food nexus research and innovation;
- Facilitate, co-design, synthesise and amplify research on the water-energy-food nexus to scale solutions across sectors and geographies.

These activities must contribute to the underlying objective of the Nexus KAN, by informing decisions to best address threats to sustainable and equitable access to water, food and energy, whose causes and/or consequences are embedded in the interactions between these three components. Decisions refer not only to policies and strategies, but also to behavioral change, new practices, technologies and institutions, across all spatial scales.

Initial priority activities for the Nexus KAN are proposed by the DT in three areas:

4.1. *Synthesis of knowledge on system interactions*

Synthesis activities provide an overview of existing initiatives, approaches, knowledge and gaps. They are a necessary first step in identifying concrete needs and opportunities. The scientific literature, as well as the public policies, referring to the nexus approach are actually not built on a clear and shared nexus concept. Relying on the existing literature and the Global Research Projects, the Nexus KAN would bring significant added value by analysing and confronting the conceptual frameworks on which the various research communities investigating interactions between food, water and energy systems are based, whether the “nexus” label is used or not. Once synthesized, knowledge should be made available and useful. The Nexus KAN can therefore be considered as a vehicle for bringing together and sharing knowledge as well as identifying knowledge gaps.

4.2. *Building capacity for integrated approaches*

Education programmes and university curricula are still largely discipline-oriented, meaning that young researchers and practitioners - particularly in the Global South - are usually not provided with the tools to develop systematic interactions with colleagues from outside their own sector and/or field. The Nexus KAN should develop activities such as training courses, networking and community-of-practice building programmes to mobilise capacity for integrated nexus approaches. The activities should be developed in collaboration with the Global Research Projects and the relevant regional institutions, targeting both researchers and practitioners.

4.3. *Integration of knowledge and perspectives across regional and global scales*

Nexus challenges typically differ depending on the relevant spatial scale, whether it be local, national, regional or global. Each spatial scale is liable to have its own objectives and priorities, depending on their socio-economic and environmental context. Better integration of regional and global approaches is a first step towards balancing nexus analyses across different spatial scales. Regional activities should be developed by regional actors, allowing them to share the nexus challenges they are currently facing as well as their priorities and knowledge needs. By analysing regional experiences through a global lens, such as the SDGs, the Nexus KAN will facilitate learning and advance the design of tools and approaches for a better integration of knowledge across scales and ensure that nexus approaches or solutions also support, or at least not harm, other SDGs. This approach will allow for a better integration of regional nexus challenges and knowledge in the global sustainability agenda. Moreover, it will help in avoiding solutions to nexus issues that simply displace the tradeoffs across scales, or solutions based on global visions which generate negative externalities when implemented at local scales. Integration of knowledge and solutions across scales needs to connect systems understanding and solution-oriented research.

5. Nexus KAN governance

The Nexus KAN governance structure is adapted to its main objectives and activities. The DT opted for a light two-layered structure:

- 1) Individuals, organisations and/or initiatives, from research and other sectors, may propose and lead activities to the benefit of the larger community. Such activities would engage individuals from multiple organizations and should be aligned with the Nexus KAN goals and guiding principles described above, which make them clearly innovative compared to traditional research activities;
- 2) A Steering Committee (SC) ensures the coherence of its portfolio of activities, including by deciding which activities should be initiated, supported and

developed under the Nexus KAN umbrella. The SC keeps regular contact with the [Global Research Projects](#) to engage their communities in the Nexus KAN and facilitate cross-cutting work on nexus relevant topics between these Global Research Projects.

Both layers (i.e. activity leads and the SC) are supported by the Future Earth Secretariat. Membership to the Nexus KAN SC is normally three years and may be renewed for an additional three years. SC members are strongly encouraged to propose and lead activities.

The size of the SC will be kept small (8 members) during the first phase of operation as the number of activities will be limited. The SC will be able to establish a larger committee when and if needed to support the activities of the community as a whole.