

Comments on the Nexus to the Proposal for Horizon Europe

The General Secretariat of the Council of the European Union published a Proposal for a Decision of the Council on establishing the **specific programme implementing Horizon Europe – the Framework Programme for Research and Innovation**. The Nexus Project Cluster has introduced an internal consultation on the Proposal (8 February 2019, Interinstitutional File: 2018/0225(COD)).

The **Nexus Project Cluster** is a group of independent research initiatives who team up for increased and more impacting communication and dissemination of the Nexus. The Nexus includes sectors like water, energy, food, land and climate, as well as important societal challenges like public health and rural-urban development. We also consider alignment with circular economy projects provided that they are linked to the concept of the Nexus. The Cluster started in 2018 and initially run until 2020. See also: <https://www.nexuscluster.eu/>

Given the relevance of Horizon Europe, we considered it useful to **collect and make a number of Nexus-relevant comments on the Proposal for Horizon Europe**. The Comments have been brought together by the Nexus Project Cluster, with specific contributions from the following participating projects/organisations in the Cluster: [UNU-FLORES](#), [MAGIC](#), [SIM4NEXUS](#) and [CLISWELN](#).

Based on the experience of the Cluster and its projects, we wish to make the **following comments on the proposal for Horizon Europe**.

Overall Comments

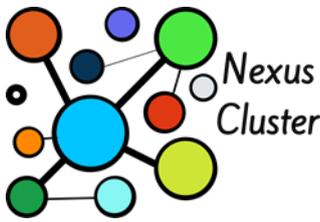
The current approach is to group topics under so-called “Clusters”, and two interesting clusters for the Nexus Project Cluster are:

- 5: 'Climate and Energy ';
- 7: 'Bioeconomy, Food, Natural Resources and Environment',

The term “**water-energy-food nexus**” is only mentioned once (page 130) in the draft document. This might not be the best/sufficient way to deal with the Nexus and resource complexities in the next years. However, there are many moments where the concept of ‘simultaneous security of water, energy and food’ is very pertinent, and we recommend to consider them. On the security issue, we consider this to include Disaster Risk Reduction as well, as called for by the Sendai Framework. Also, there seem to be redundancies in the text, among others in some of the sections e.g. 5.2.6 and 6.2.2. We are not convinced this is really useful, as it may add to the silo thinking – looking at ‘fuel cells’ from the technical standpoint and from its application. We also notice topics related to ‘soil (security)’ is poorly covered, and specific policy areas (e.g. Water Framework Directive) are completely missing. When it comes to ‘raw materials’ or ‘natural resources’ their source, i.e. where they come from is not strongly covered, neither is the impact their production has on the society, environment and economics of the countries of origin (e.g. when the talk is about fuel cells and lithium batteries for new mobility).

The Nexus concept in the Nexus Project Cluster is focused on three features:

- **Interlinkages between natural resources** (i.e. water, energy, food and land) are taken into account, trade-offs among them are made explicit and potential synergies are exploited. The Nexus supports ways natural resources are managed sustainably and in an integrated manner.
- **Governance processes** are an explicit part of the nexus concept, including policy coherence. Policy coherence is an attribute of policy reducing conflicts and exploiting synergies within and across policy areas at different spatial scales. A lack of policy coherence has the risk of trade-offs from inadequate decision-making.



- **Transdisciplinary approaches**, where practitioners (from business, policy and civil society organizations) work with the scientific community and are recognized as co-producers of knowledge, are an essential building block to implement the nexus concept.

In light of these features, we are happy to see a real effort is being made to go beyond technical solutions ‘towards behavioural, societal and economic changes’. But it’s not always consistent throughout. Related to this, we recommend to make use of the scientific terminology of ‘inter-, multi- and transdisciplinarity’ (instead of making up new words e.g. cross-sectorial).

We notice the terms circular economy and bioeconomy are used in the text, which are not the same and do not necessarily strive for the same purpose. Hence, although complimentary they are not useful to bring unity into siloed thinking. We also recommend to consider ambitions to strive towards ‘green economy’ as advocated for by the UN and which is what the Sustainable Development Goals (SDGs) are also trying to achieve.

Comments on Chapter I: GENERAL PROVISIONS

The Nexus Project Cluster appreciates the transparent process towards defining the mission areas and will consider to respond to the open call for expressions of interest. We consider ourselves well equipped to contribute towards the research of policy coordination, seeking synergies between EU policies.

Comments on PILLAR II: GLOBAL CHALLENGES AND EUROPEAN INDUSTRIAL COMPETITIVENESS

It springs as obvious that the nexus is not strongly considered in the programme and its clusters. Climate change, for example, will alter the balances in the nexus, reducing the solution space for achieving the SDGs, and in this respect the cluster 'Climate and Energy' would benefit from approaching the nexus. A few specific suggestions follow for Pillar II:

- The mentioned "climate resilience" in 5.2.2 requires of water temperature, which has a lot to do with what is done upstream with water and land use and management. How upstream water and land use and management need to be approached so that the energy nexus downstream can function in a resilient manner, could be a related research question of interest.
- For section 5.2.5 the nexus between urban land use planning and energy consumption in mobility and buildings is much under researched and crucial for a sustainable urban metabolism and "reduced footprint and pollution" as mentioned there.

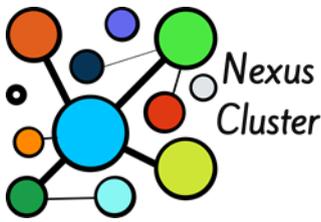
In general lines, the document talks about the nexus as if it was an entity. However, most of the researchers working on the nexus agree that the WEF nexus is an approach to the research of societal challenges that taken into account a systems perspective that highlights the trade-offs in the use and supply of resources.

As such, reducing the appearance of the ‘Nexus Thinking’ or Nexus “approach” to Cluster 7 goes against the same nature of the nexus thinking. The trade-offs are mentioned in other clusters, but not implemented in the proposal for **Areas of Intervention (AoI)**.

Ideally, a Cluster (or any other organizational tool) on “System solutions to Global challenges” should be created to provide a space for managing research on integrated assessment that does not favour any of the nexus elements (water, food, energy, climate, etc.).

Comments on CLUSTER 1 'HEALTH'

Whereas the environmental factors affecting health are included in section 1.2.2 “Environmental and Social Health Determinants”, these are focused only on the emission and pollution side. We therefore recommend to broaden the perspective of the Environmental and Social Health Determinants. Related to this, it is recommended the impacts over health of resource supply strategies and their trade-offs also be included as



broad line of work. While nutritious food of course is an important food, the role of obesity in the context of health cannot be ignored either. Similarly, it is recommended research towards lifestyles and their connection with environmental conditions and also connected with how the food is produced.

Comments on CLUSTER 5 'CLIMATE AND ENERGY'

The water-energy nexus approach is missing in the cluster. Being water a highly relevant component of climate change discussions, the separation of water and energy resources in two different clusters diminishes the potential of the Nexus thinking. We also notice, the cluster seems very techno-driven. Although it endorses 'other non-technological solutions for the decarbonisation' in innovations, the text remains quite vague on the implementation of these non-technological solutions (conversely, the technological solutions are very detailed) and on how citizens' engagement should be integrated in the design of the energy transition. We also recommend the following changes:

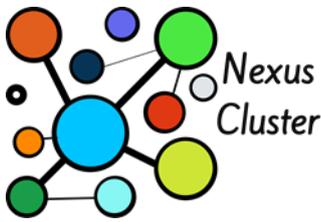
- In Area of Intervention 5.2.2 (energy supply) the constraints faced by energy systems due to the availability of other resources (mostly water and land) also be included as a separate broad line of work. Now is included as "ecological feasibility" in page 102, which can be interpreted as related to biodiversity only.
- In Aol 5.2.5 is included a systemic urban planning broad line. The nexus thinking is included in the assessment of the effects of climate change. It is advisable to include as well the climate change drivers with a nexus perspective. Controlling drivers of climate change will also affect, among others, the quality of life of citizens.
- In Aol 5.2.6 broad lines should mention the constraints posed by (water and other) resource availability to the design and construction of energy storage solutions.
- An Aol that tackles the incoherence/incompatibility of the energy/climate/water formal regulations is missing and recommended to add.

Comments on CLUSTER 7 'BIOECONOMY, FOOD NATURAL RESOURCES AND ENVIRONMENT'

In Chapter 7.1, the current text makes a reference to the term "water-food-energy nexus" (page 130) Our assessments indicate agriculture is often notified as driver on the other nexus sector (e.g. water and energy), with water being the main sector that is affected by the other nexus sectors.

This cluster could be more critic with the idea of circular economy. It is a fashionable concept, but one with proven conceptual issues within the sustainability science epistemic community. Maybe aiming for a less linear economy, instead? Also a more thorough explanation of what is meant by integrated approaches would be useful. Here the nexus thinking could play a very relevant role. The nexus approach is intrinsically linked to multi-level studies and policies, which is not reflected in the cluster (and largely missing in other clusters as well). We also recommend the following changes:

- In Area of Intervention 7.2.1 (environmental observation) the issue of Nexus-related database design is missing. Energy, water, food (and other) data follow different semantics and levels of disaggregation. The multi-scale character of these databases makes them difficult to organize and make operative where a high volume of separate data already exists.
- In Aol 7.2.4 (water) the nexus thinking is missing. The Aol is too focussed on marine environments. The challenges for the water system of new energy systems would be relevant here.
- In Aol 7.2.6 (bio-based innovations) the last broad line should include the increased understanding of the nexus constraints of the bioeconomy to better coordinate with Aol 7.2.7 need for a systemic transition to a more circular economy.



- In Aol 7.2.7 the broad line on metric and indicators should cover the multi-scale or multi-level character of the nexus, especially if the aim is to define these indicators with a systemic approach and to enhance governance with a nexus perspective and multi-stakeholder collaboration.

The WEF nexus is again included within the water broad topic and is referred to as an entity. A clearer, more explicit way to address this is to create an own broad line for a WEF nexus approach to the assessment of circular and bioeconomy challenges or, even better and own Aol within the Cluster.

We also notice an Aol (or broad lines within each Aol) that tackles the incoherence/incompatibility of the energy/climate/water formal regulations is missing.

We notice an Area of Intervention is missing, that tackles the issues of using information from participatory methods into quantitative modelling with a nexus approach. Such an approach is considered essential to make relevant contributions that foster participatory approaches. This knowledge gap is identified and already covered in some current H2020 projects on the Nexus (e.g. MAGIC, SIM4NEXUS and DAFNE).

Other comments

Regarding the “Possible Areas for Missions and Areas for institutionalised European Partnerships to be established under Article 185 or 187 TFEU” (page 168), we consider:

- It would be interesting to propose a **mission area on “resource responsible definition of policies” or “coherent resource policy-making”** which would provide a space for the promotion of the nexus thinking and trade off assessment in the development of food, water and energy related policies (to begin with).
- The **concept of inter and transdisciplinary** seems rather undervalued:
 - o Interdisciplinary is mentioned twice in CLUSTER DIGITAL SPACE (page 87 and 97) in relation to ‘interdisciplinary environment’. It would be important recognizing ‘interdisciplinarity’ as a general cross-cutting issue in sustainability and innovations. Delivering sustainability means being able to take multiple non-equivalent perspectives of the systems so as to be able to include within the framing of the analysis all the necessary perspective. This avoid the perils of narrow reductionism of potentially knowing more and more about less and less. Single or narrow framings of analysis can exclude crucial factors and multiple imperfect views at a range of scale may give more insights than any single view however refined.
 - o Transdisciplinary is mentioned in relation to ‘excellence’ (WIDENING PARTICIPATION AND SHARING EXCELLENCE).
 - o Nevertheless, despite such promising outcomes, inter and transdisciplinary research faces many stumbling blocks in terms of internal academic organization and individual career opportunities. Developing a successful scientific career path outside the single disciplinary structure, as the Programme for Research and Innovation endorses, collides with the scarcity of interdisciplinary departments in academia, and the perceived lack of outlets for the publication and dissemination of interdisciplinary research results.

Fur further contact, please approach the Nexus Project Cluster via <https://www.nexuscluster.eu/>.