

# Aurora's position paper on the future mission “climate mitigation and adaptation including societal transformation”

AURORA would like to help shaping the mission on adaptation to climate change including societal transformation. Climate change and hence mitigation and adaptation are global issues and needs an holistic approach for solutions. The domains mentioned under Cluster 5 (climate, energy and mobility), Cluster 6 (food, bioeconomy, natural resources, agriculture and environment) as well as Cluster 1 (health) in Pillar 2 of the novel Horizon Europe programme describe the introduction, problem, expected impact, R&I strategies and links with future partnerships and mission areas. Although the topics that can be addressed are non-exhaustive, the focus of this mission should in our opinion be on the following themes that need to be further developed in collaboration with the stakeholders including civil society, to ensure a broad support and willingness to adapt. The results from these themes should contribute to the aim of the mission.

- 1) Mitigation of and adaptation to climate change leads to trade-offs with other sustainable development goals. E.g. current attempts to achieve climate goals, biodiversity goals and (economic) development objectives may align, but are, at the same time leading to trade-offs. Where previous research and policy actions have been focusing on synergetic solutions, the large scale of societal challenges requires novel approaches for navigating through and reducing of trade-offs between SDGs. **This mission should aim at approaches and tools that help decision making in a context of trade-offs between SDGs and unintended effects of e.g. the energy transition, or between achieving the 1.5°C or 2°C Paris target and (green) economic growth.**
- 2) Climate change adaptation relates to the local impacts of global scale processes. Locally optimal solutions may be suboptimal, or even counter-effective for achieving SDGs at a global scale. While addressing multiple SDGs at the same time has been given ample attention, the cross-scale dimensions have not been addressed. This mission aims at developing approaches to better connect global challenges to local realities. Understanding how global change impacts on local realities is known, but how local solutions link up to global impacts is largely unknown. **The mission should focus on developing novel tools that bridge the gap between the global climate models and their policy implications and locally specific analyses and policies. In addition, the mission should aim at bridging the gap between policy makers and stakeholders at those different levels, to align the different interventions needed.**
- 3) Accomplishing the goals of the United Nations Climate Conference (COP21, Paris)<sup>i</sup> as well as building national dynamic capabilities for climate change mitigation and adaptation should be based on credible scenarios that reflect alternative futures under policy options.
- 4) This requires a system dynamics perspective, and the integration of local knowledge at the urban or community levels, to close the gap between policy makers and citizens. **This mission should focus on reliable and integrated scenarios on the impact of sustainable urban supply chains and citizen participation on mitigating climate change.** Scenario formulation requires the interaction between different disciplines and should follow a multi-level approach establishing dialogue

platforms with all relevant stakeholders; taking stock of existing initiatives at local level, and (c) scenario analysis. **The multi-level approach favours creating a roadmap, which paves the way for efficient political interventions.**

- 5) There is broad consensus emerging that an important mitigation and adaptation measure to climate change is the transformation of food systems. This requires innovative design, enabling policies and insight in societal behaviour. This mission should aim at designing new food systems that are energy efficient and circular in their use of natural resources, and more resilient against climate related risks. One element in this is to target zero-emission systems, where climate smart agriculture is linked to carbon-neutral transport and distribution systems. Clearly, these systems need to be tailored to local agro-ecological and geographical conditions, but even then, technological innovations are not enough as consumer behaviour also significantly contributes to the current unsustainable food systems. The involvement and co-creation with society, citizens and national governments is mandatory to achieve the goal and sustain the adaptations. **This mission should aim at transformation of food systems to increase resilience and mitigate their impact on climate change. This includes technical innovations as well as achieving behavioural change particularly in consumption patterns.**
- 6) Recent reports (2018<sup>ii</sup>; 2019<sup>iii</sup>) from the International Renewable Energy Agency (IRENA, an intergovernmental organization founded in Bonn, Germany, Jan. 2009) conclude that renewable energy technologies will be competitive on price with fossil fuels by 2020. Horizon Europe should focus on a number of issues related to the **energy transformation in relation to climate change mitigation and societal transformation**. This mission also aims to combine the growing need for renewable energy in developing countries to support sustainable economic development and employment generation. **The mission should focus on appropriate technological solutions for renewable energy sources. Particular focus points are the inclusiveness of technologies, their impact on economic, ecological and societal development and their acceptance by households.**
- 7) Regarding food and nutrition security, trade, and conflicts the Report from the Commission to the European Parliament and the Council on “Implementing EU food and nutrition security policy commitments” (EU 2018)<sup>iv</sup> raises the question how *resilience to conflict* can be built through food and nutrition security policies and programmes. It is well-known that climate change leads to displacement of populations and scarcity of natural resources, particularly water, giving rise to increasing tensions and conflicts. The crucial issue to deal with is the impact of conflict on psychological and physical safety related to food and nutrition, since otherwise, a vicious cycle from scarcity of productive resources and food insecurity, to conflict, to more food insecurity results. The innovation consists of linking theories on psychological resilience and post-trauma coping with more mainstream theories on empowerment of communities, enhancing food security and strengthening institutions. Specifically for women, the choice of safe locations to start and continue enterprises is of vital importance. **This mission should aim at developing tools that help identify such locations and formulate policies to increase their number greatly enhances female empowerment, food production, processing and marketing.**

- 8) To “build resilience” is one of EU’s approaches (EU 2012 - The EU Approach to Resilience: Learning from food crises)<sup>v</sup> to reduce the vulnerability of low-income communities in disaster-prone areas. It is not well known **how climate change impacts on already water scarce environments**, such as the Middle East, where it is the root cause of conflicts between people and states. **The mission should focus on connecting hydrological knowledge on water flows with economic and social analysis of use and governance.** This deals with topics including sea level rise, water security, water shortages, water grabbing and migration dynamics.
- 9) Climate change may lead to a variety of health risks<sup>vi</sup>, directly, because of changing climatic conditions that enable the invasion of parasites and disease-transmitting animals (predominantly insects) to new areas. Clear examples are the spread of Lyme’s disease, malaria, Chikungunya, West-Nile and Zika viruses<sup>vii,viii</sup>. In addition, we have witnessed an increase in summer temperatures and decreased water availability in temperate zones, causing increased death rates among vulnerable people, particularly the elderly, but also those suffering from e.g. heart conditions and COPD. This effect is aggravated when changing weather conditions also impact on air quality, increasing the number of days cities suffer from smog conditions. In addition to the human costs of suffering, it is clear that these impacts also have high economic costs because of the increased need for (long-term) health care. Indirect effects include the impact increasing temperatures have on behaviour of people – staying more indoors, having less physical activity outside, which may lead to an increase in overweight and obesity, with the well-known associated risks of developing e.g. diabetes, and coronary diseases. Again, this carries economic costs, not only for health care, but also since factories, offices, schools and homes need to be adapted to the new climate realities. Finally, “climate” refugees are a special vulnerable group: forced to leave their home territory since livelihoods were no longer sustainable, facing different inequalities, and they may not have adequate access to health care during their forced migration, or even upon arrival in a host country<sup>ix</sup>. **Hence, the mission should aim at approaches to adapt to new climate realities, both in health and health-related areas, but also in broader economic contexts.**
- 10) **The mission should foster a *transdisciplinary* approach across the themes, where training, education and career development in societal transformation as well as skilling (end)users related to climate change adaptation and mitigation includes and acknowledges the value of *many types of knowledge*, not just only the scientific type. This bridges many gaps, not only between different disciplines, but also between groups in society that otherwise may not meet each other or even have dialogues in the discourse (entrepreneurs, civil society, policy makers and governments, scientist, practitioners). Such a broad and inclusive approach is needed to find the innovative solutions that are urgently needed, but also ensure broad support for their implementation and monitoring.**

In summary, the mission on adaption to climate change including societal transformation should also include climate change mitigation strategies and focus on:

- approaches and tools that help decision making in a context of trade-offs between SDGs and unintended effects of e.g. the energy transition.
- developing novel tools that bridge the gap between the global climate models and their policy implications and locally specific analyses and policies.
- bridging the gaps between different societal partners and between different disciplines to allow for co-design and effective implementation and monitoring of innovative solutions
- developing reliable and integrated scenarios on the impact of sustainable urban supply chains and citizen participation on mitigating climate change and improving quality of life.
- transformation of food systems to increase resilience and mitigate their impact on climate change which includes technical innovations and achieving behavioural change particularly in consumption patterns.
- Transform the national & local health systems and policies to accommodate for societal adaptation to the health effects of climate change, and team up with WHO, civil society and other stakeholders.
- Where climate change and/or conflict forces people to relocate, focus on developing tools to identify new safe and suitable locations for particularly females to restart businesses
- Exploring the potential of off-grid renewable energy generation to enhance quality of food production and storage and hence increase food and nutrition security
- connecting hydrological knowledge on water flows with economic and social analysis of use and governance in view of the climate change.
- appropriate technological solutions for renewable energy sources, and in particular the inclusiveness of technologies including digital ones, their impact on economic development and their acceptance by households.
- cross-disciplinary and cross-sectoral including societal approaches across the themes where training, education, skilling and career development are co-created and implemented to achieve real societal transformation related to adaptation and mitigation of climate changes.

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