6. Interactive sessions

To make sure that the attendees got acquainted with the backgrounds of others, we asked them to provide a Professional Introduction (PI) document, containing their expertise, projects, and vision. We have received PI documents from all tenure trackers and postdocs involved in the DeSIRE project as well as few senior scholars. Based on the documents, we asked the attendees to think about possible future projects with other scholars linked to the DeSIRE project. We have received 36 ideas to start a new collaboration. The majority of the ideas were categorized into:

- Decision-making under uncertainty (long-term investment, gaming, political perspective, …)
- Water systems (design, monitoring, maintenance, testing, …)
- Food systems (design, resilience measures, disruption handling policies,…)
- Evolution in urban systems (resilience transition, evolution, social networks, urban design,…)
- Enhance Governmental Resilience (crisis management, information systems, adaptive governance, social resilience,…)
- Energy systems (design of future systems, interconnectivity, cyber-attack resistance, information systems, monitoring,…).

We organized one brainstorming session for each of the categories. During the brainstorming sessions, scholars discussed different ideas to make the first step in starting new projects.
At the end of our two-day meeting we had a wrap-up session in which we collected the main ideas from the different brain storming sessions, which are shortly summarized below:

Decision-making under uncertainty: Overall many interesting topics have been discussed, including effect of feedback systems in the decisions we make, importance of identifying risk aversion level of the decision maker, how can governments be stimulated toward specific policy, etc. Each idea covers different aspects of decision making and requires multidisciplinary research. It has been decided that a few ideas would be selected to be discussed further in separate meetings with the aim of getting new projects started.

Water systems: During this session, the focus was on the water supply chain. The importance of designing water systems is highlighted and the discussion formed around how prediction methods can affect the system design policy. Moreover, techniques to detect contaminations in the drinking water network have also been discussed. Another topic was on the use of reliability techniques and network analysis to find optimal maintenance strategies for water systems.

Food systems: Based on the discussions, a major question popped up: how to optimize food systems in terms of balancing between efficiency and resiliency against shocks. Due to connectivity of food systems to other systems like energy systems, it can be seen that the decision should be made in collaboration with other infrastructures. Hence, the decision made for regional systems are not useful for international systems. As the main actors in a food system are farmers, it is important to know how to make the decisions such that the farmers will remain active in the future (considering the concerns related to farmers, cows, …).

Evolution in urban systems: The focus of this session was mainly on urban resilience against climate related hazards, impact of COVID-19 on urban systems, how to learn from past, and how to involve stockholders in decision making. It has also been discussed how different qualitative and quantitative methods can be employed to analyze urban systems. To make sure that future collaboration is possible, it has been decided that the base should be around a case study or a specific hazard/disruption.

Enhance Governmental Resilience: It has been discussed on what the link is between governance and learning and how government acquire their knowledge to response to disruptions. Also, it has been discussed how the scenario-based planning can be used in governance since there are various complexities involved. Such complexities motivate decentralized decision making. So, it is important

to know how we emerge the decisions to have a "good" transformation, while there are different mindsets in different subsystems.

Energy systems: the main topic in this session was the energy transition with the focus on cyberattacks or natural disasters. To make sure that the energy system is resilient, the components need to be resilient, the system connecting the components should be resilient against disruptions, and the IT technology used for such systems should be advanced to be able to detect anomalies. As the next steps, it has been decided to continue the discussion to find more stakeholders interested in the topic and prepare a proposal for funding opportunities.

Decisions/Action points:
-   **Decision-making under uncertainty**: select a few ideas to be discussed further in separate meetings with the aim of getting new projects started.
-   **Evolution in urban systems:** Select a case study or a specific hazard/disruption as a base for future collaboration.
-   **Energy systems:** continue the discussion to find more stakeholders interested in the topic and prepare a proposal for funding opportunities.