Agenda item 4 (c) i. Water-energy-food systems

Progress of the work

Technology Executive Committee, 29th meeting and TEC-CTCN AB Joint session

17-19 and 20 September 2024, Bonn, Germany

Preparation and review process

- Acknowledgements, collaboration between FAO and TEC
- Activity group meetings for discussion and review January to September
- Document preparation and review process
  - TEC meetings 2023, April 2024 and September 2024
  - Draft versions circulated between May and July (FAO and TEC activity group)
- Finalization and preparation for launch at CoP29

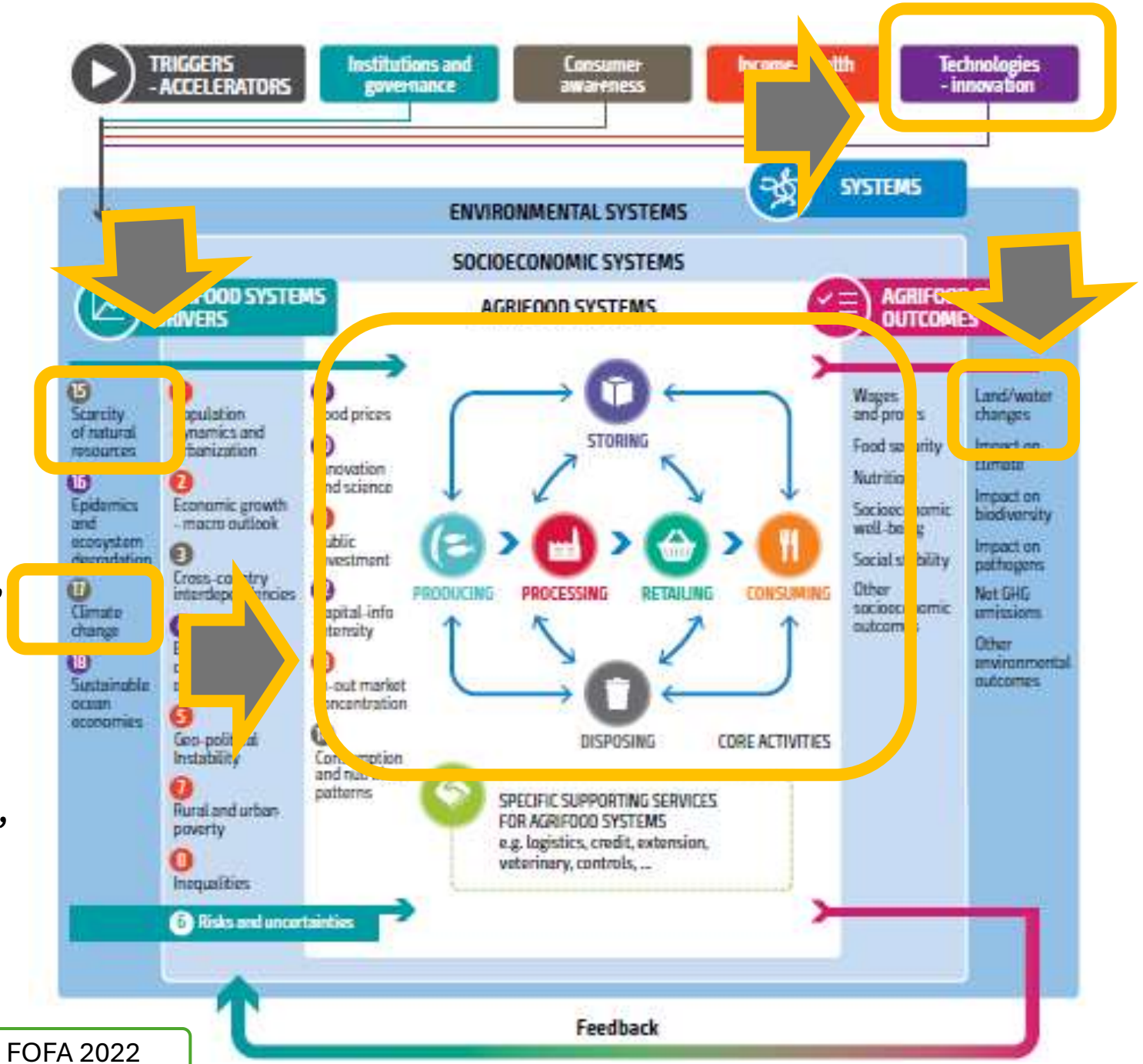
Agrifood systems and climate action

- As the world moves forward in its fight against poverty, hunger and climate change, **agrifood systems will need to play an active part in climate action**, **both through adaptation and mitigation actions**
- Agrifood systems are an important source of income and livelihood. In 2023, approximately 733 million people faced hunger, representing 1 in 11 people globally, with an estimated **1.23 billion people employed in agrifood systems** or an **estimated 63% of the world's poor people work in agriculture** (FAO 2023, IFAD 2023). Growth in agriculture is **two to three times more effective** at reducing poverty and food insecurity.
- In the **Global Stocktake**, the agriculture and water sectors have been consistently prioritized and further action on climate technologies called for.
- While climate change is a global crisis, its effects on countries, people and communities are highly unequal. The **details of how climate action is qualified** will significantly matter and be **essential** to meeting the desired outcomes.

Agrifood systems and priority triggers for transformation

Agrifood systems encompass the entire **range of actors** and their **interlinked value-adding activities** in the primary **production** of food and non-food agricultural products, as well as in food storage, aggregation, **post-harvest** handling, transportation, **processing**, distribution, marketing, disposal and **consumption**.

The systems cover **crops**, **livestock**, **fisheries**, **aquaculture** and **forestry**.



Source: FAO, FOFA 2022

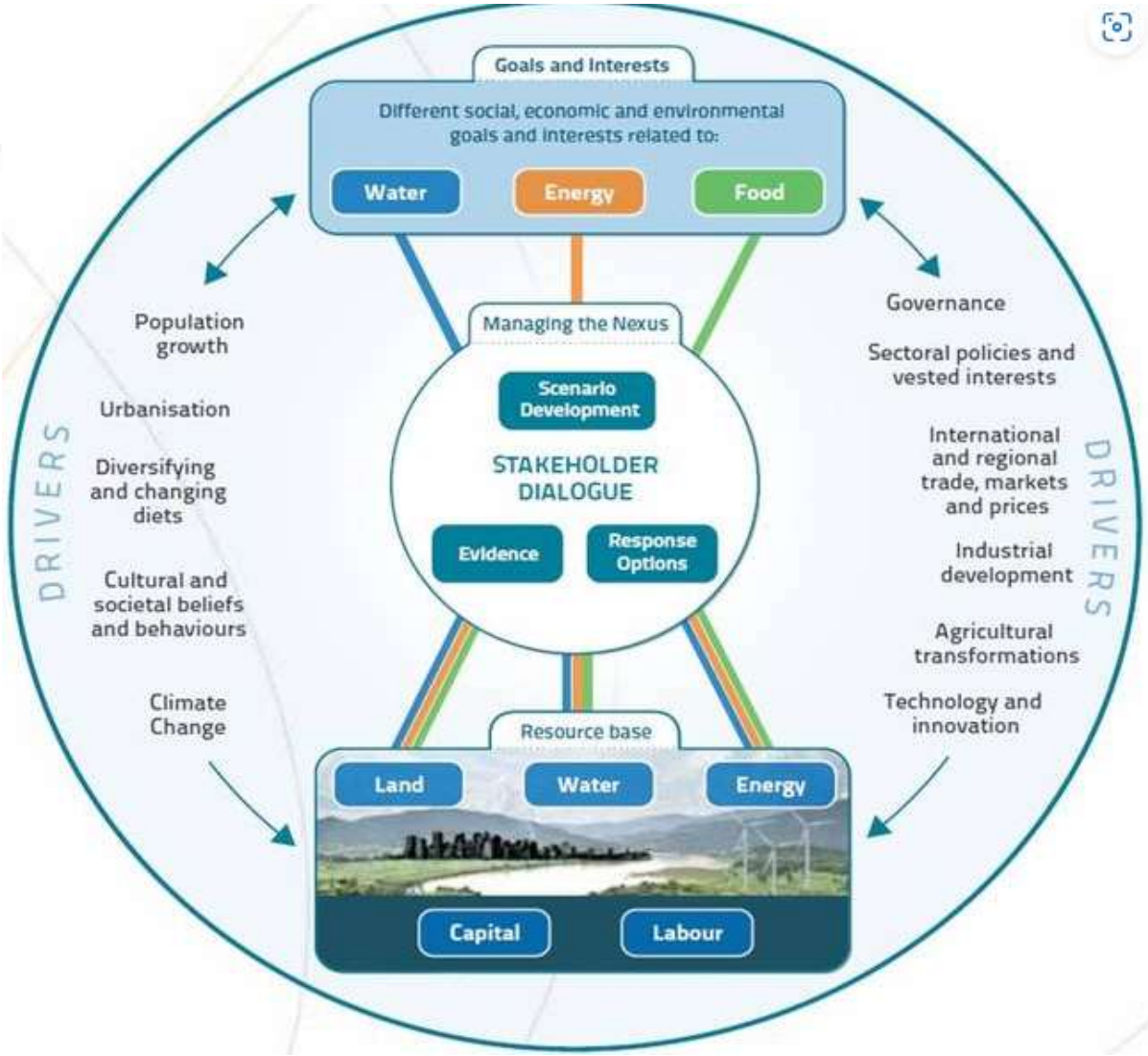
Sustainable Agrifood Systems' Transformation

- Integrating the Water Energy Food dimensions

….But within a broader perspective for agrifood system transformation including

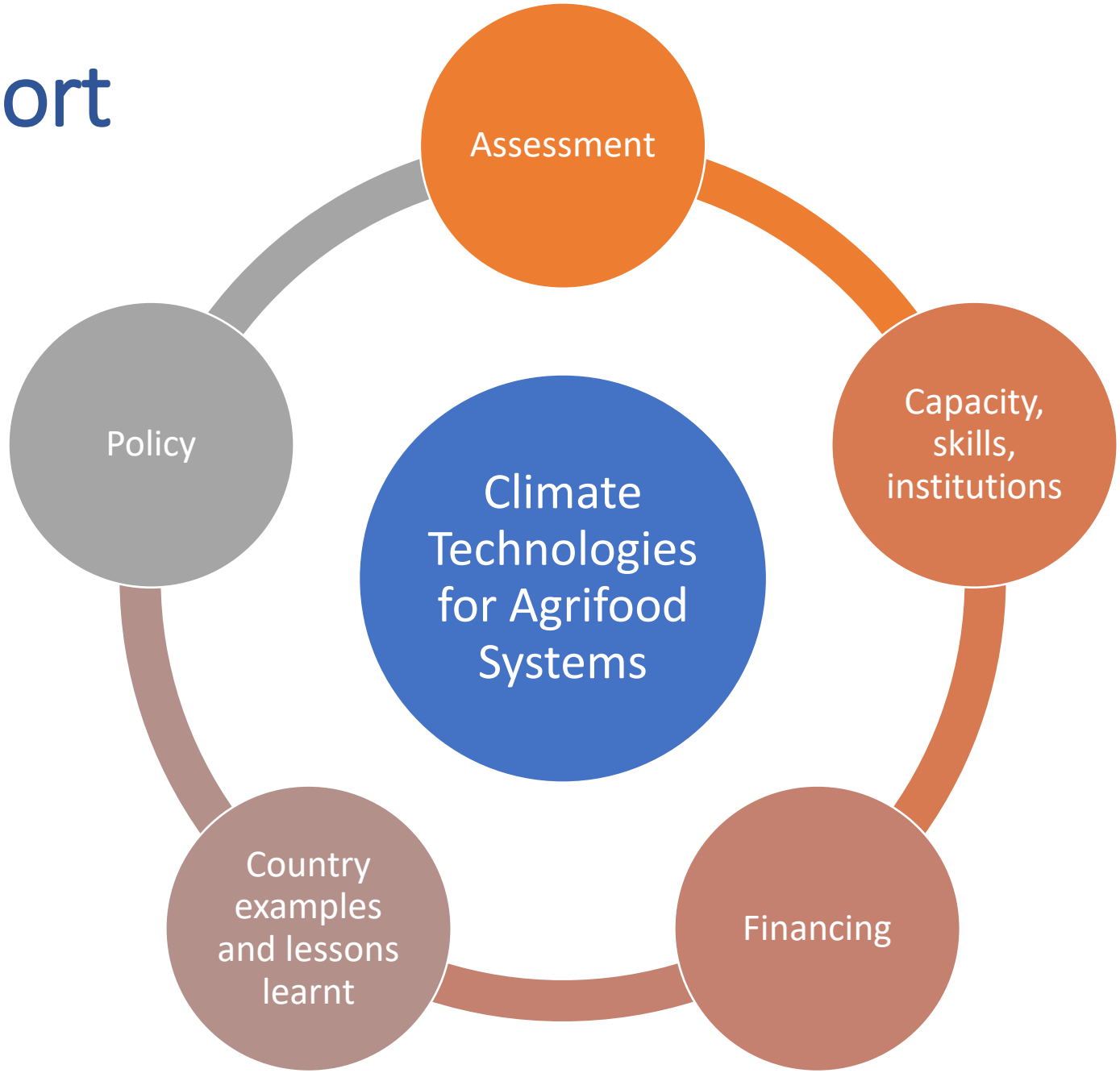
- Natural resources and environment
- Socioeconomic inclusion, smallholders, gender, vulnerable segments of the population, Indigenous People

Overall sustainability (economic, social, environmental)

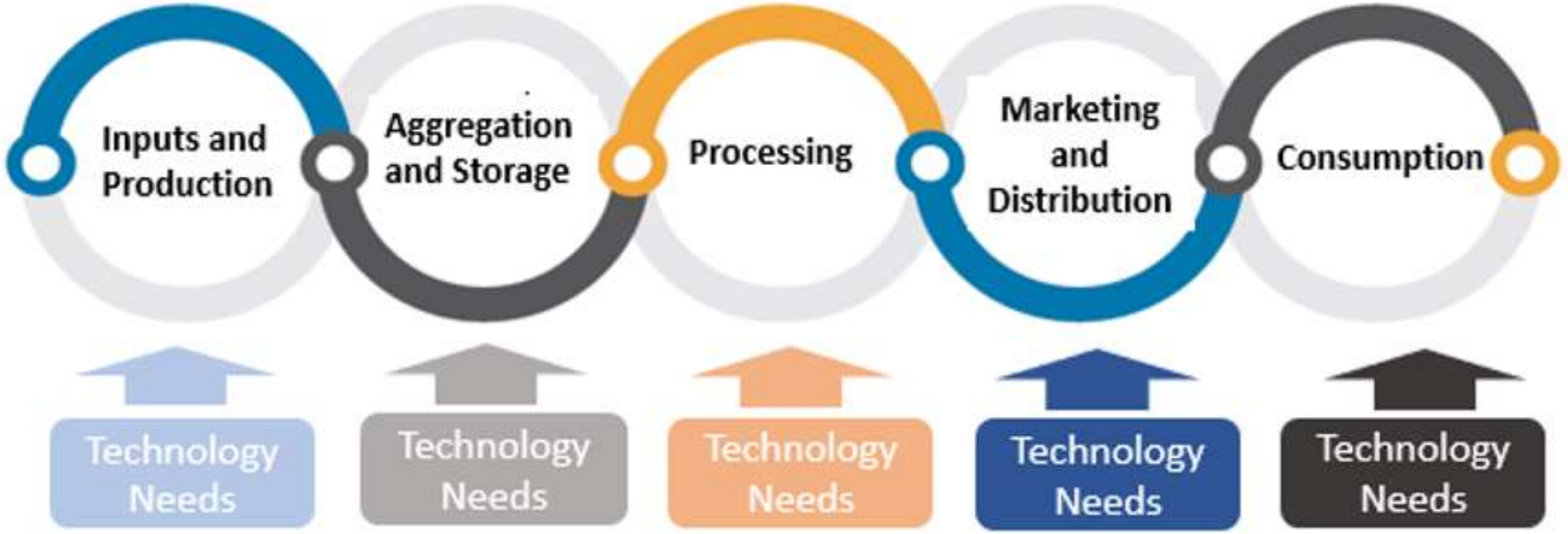


Source: FAO, [Water-Food-Energy Nexus | Land & Water | Food and Agriculture Organization of the United Nations | Land & Water | Food and Agriculture Organization of the United Nations (fao.org)]

The report


Assessment
Capacity, skills, institutions
Financing
Country examples and lessons learnt
Policy
Climate Technologies for Agrifood Systems

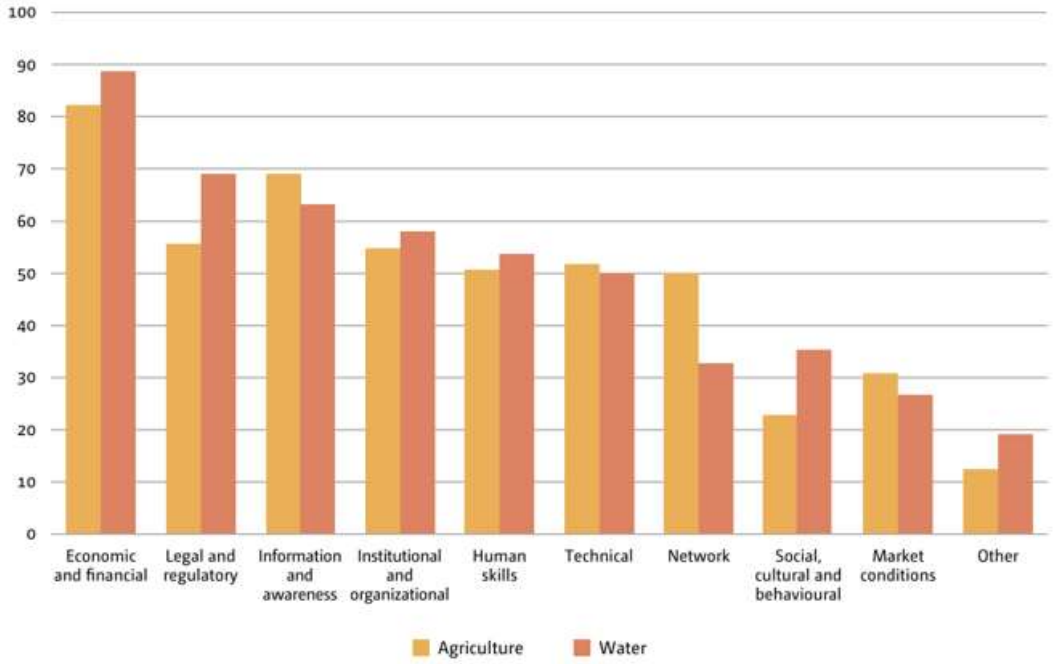
Assessment and climate technologies



- Need to focus on the **relevant value chains**, identify **technology options**, assess **viable** and applicable technologies

Capacity and institutions and climate technologies

- **Capacity building efforts** for climate technologies need to support **multiple objectives** of agrifood system transformation, including overcoming technology lock-ins, where they exist
- **Lack of capacity for uptake is a significant barrier within agrifood systems**, with gender-based constraints and limited access for marginalized groups
- The **informal sector** plays a major role in agrifood systems. Engaging with this sector is needed for broad uptake.
- **Weak financial institutions** are a consistent barrier in a number of countries.



Source: Reproduced as shown in **TEC.** 2022. *Enabling Environments and Challenges to Technology Development and Transfer Identified in Technology Needs Assessments, Nationally Determined Contributions, and Technical Assistance Provided by the Climate Technology Centre and Network.*

Finance and climate technologies

- Overall, **agrifood systems receive a small fraction of climate finance**, as compared to the vulnerability of the sector and to its share in global GHG emissions.
  - According to CPI (2023), in 2019/2020 only **4.3 percent** of the global climate finance tracked at the project level (or 28.5 USD billion) went to agrifood systems, with this share dropping to around 1 percent when referring only to adaptation finance (CPI, 2023)
- Financial data is fragment and limited estimation of amounts needed for climate technologies
- **Financing mechanisms unsuitable to enable uptake and realize technology action plans**
  - Timeliness (too long to access finance), timelines not matching between financing and technology investment returns
  - Insufficient grant financing

Climate technologies across countries in varied agrifood systems

Asia and Oceania
Lebanon - Treated wastewater for climate-resilient agriculture
Mongolia - Seasonal prediction systems, selective breeding, and sustainable pasture management
Papua New Guinea - Cold storage and ice-making using renewable energy
Thailand - Climate technologies to reduce food loss and waste
India - Water and land management system

Latin America and Caribbean
Chile - Climate technologies for agrifood SMEs
Saint Kitts and Nevis, Antigua and Barbuda, and Jamaica - Protected cultivation systems
Paraguay - Environmentally conditioned cash transfers with tailored technical support
Central and Latin America (Belize, Peru, Colombia) - Indigenous agroforestry techniques

Africa
Djibouti - Protected cultivation systems
Senegal - Agroforestry
Mozambique - Advancing agroforestry production and accessing carbon credits
Kenya and Uganda - Agricultural programmes for females
Uganda - Solar-powered milk chillers
Malawi - Deep-bed farming tractors; Farmer field schools
Ghana - Mud silos
Kenya - Asset-collateralized loan model
Ethiopia - Water and land management system
Somalia and Uganda - Technology action plans and needs assessments supporting forestry transformation

Other regions
Global, with applications in Africa, Asia and the Americas - Seasonal prediction systems, selective breeding, and sustainable pasture management
Slovenia - Improving irrigation practice
Spain - Crop diversification (climate risk assessment) (Box 10)

Policy and climate technologies

- **Urgent need** for **consolidating** climate action and agrifood system transformation policy
  - High costs of climate damage to agrifood sector
  - Adaptation needs growing but consistently underfinanced
  - Agrifood system transformation essential for food security and poverty eradication

- **NDCs and TNAs consistently prioritize agrifood systems**
  - **94 percent of NDCs have adaptation in agrifood systems.**
  - 80 percent of climate technologies for agrifood systems are conditional of provision of external support

- **Scaling up** and going forward
  - Building on TNAs lessons, including stronger coordination across sectors
  - Move from ad hoc to consolidated approaches
  - Increase level of ambition and scale

Overall conclusions on moving forward with climate technologies and agrifood systems

- ✓**Climate technologies in agrifood systems are an essential means of accelerating needed progress** on adaptation, building in structural resilience for agrifood systems, and supporting emissions reduction;
- ✓**Effective implementation of climate technologies must be embedded within the broader objectives of agrifood system transformation** including improving production, nutrition, natural resource management and livelihoods. There is often complementarity but trade-offs also exist and need explicit attention;
- ✓**It is important to consider the entire agrifood value chain** including processing, distribution and consumption in climate technology needs assessments. Until now, much of the focus has been on production, yet there are many opportunities in other segments of the value chain

Overall conclusions on moving forward with climate technologies and agrifood systems

- ✓**Capacity building is needed to realize the benefits of climate technologies** already available for deployment.
- ✓**Scaling up and effective implementation** of climate technologies requires not only a major increase in available financing, but also **financing tailored to support investments**;
- ✓**Better integration across sectors,** building on experiences and results from TNAs and TAPs **flowing into NDCs.** Focusing on **context specific** barriers and **aligning the results of the TNAs and TAPs with financing** investment criteria.

Recommendations going forward

a. Undertake **robust assessments** that account for natural resource use and the nexus with water, energy, biodiversity and food. Assessment of climate technology uptake within agrifood systems also need to be strengthened. As such and given the significant differences across agrifood systems, accurate and context-specific assessments of the local agrifood systems are needed to define and underpin the climate technology options to be used, deployed, taken up and expanded;
b. Ensure **capacity-building strategy** and effort are tied to the technology assessment, which identifies suitable and correct skill sets, especially for smallholders and vulnerable segments of the population;
c. **Finance flows provided under terms suitable to the nature of the technology investment and capacity of countries need to be increased and further targeted**, building in particular on the technology assessment blocks and on the capacity needs of the country;
d. **Coordination at the policy level across sectors** clearly targeting climate change and agriculture, along with the linkages with broader development and environment elements.

Thank you!

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