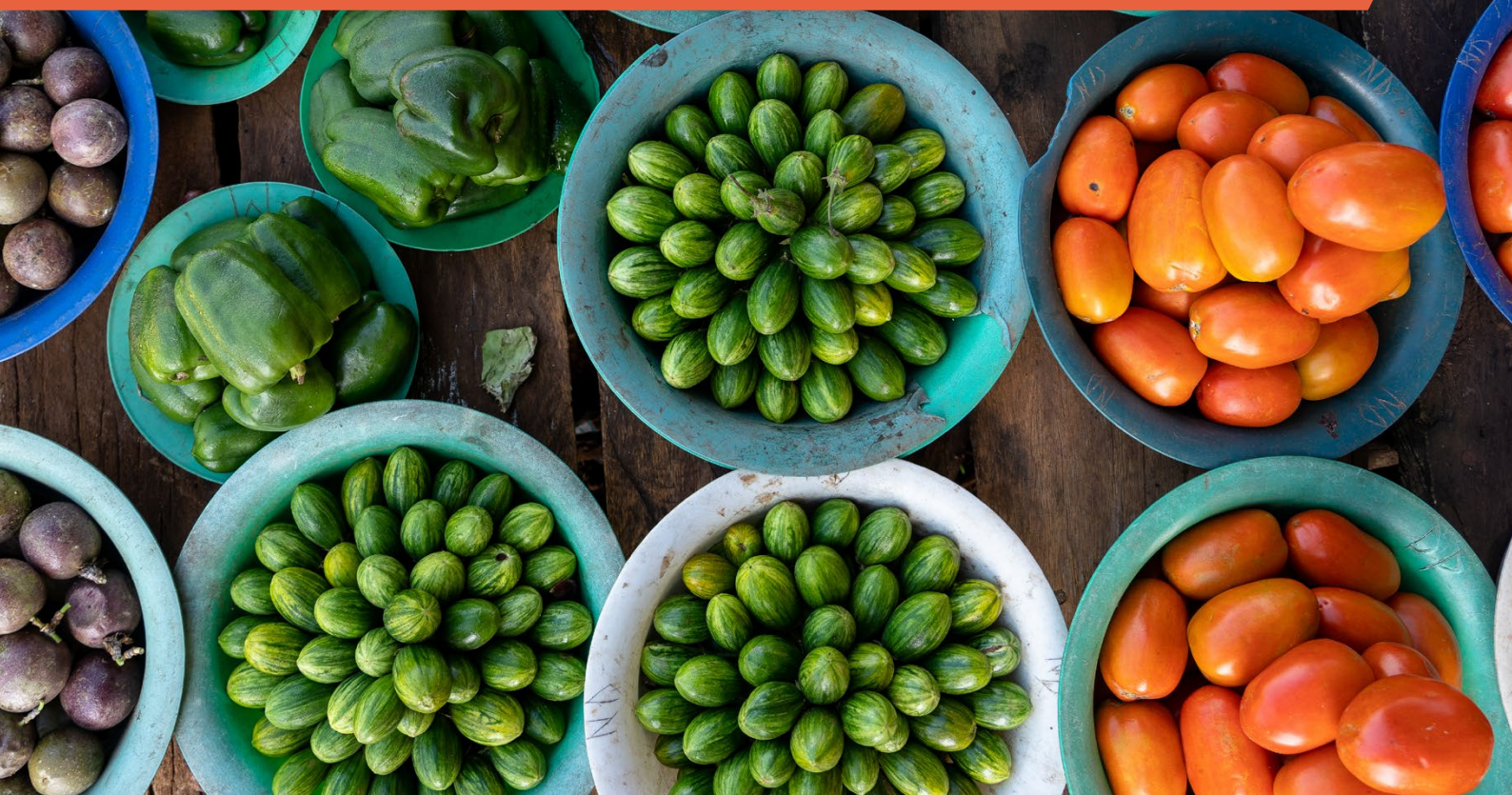SUMMARY REPORT

The Transformation of Agri-Food Systems

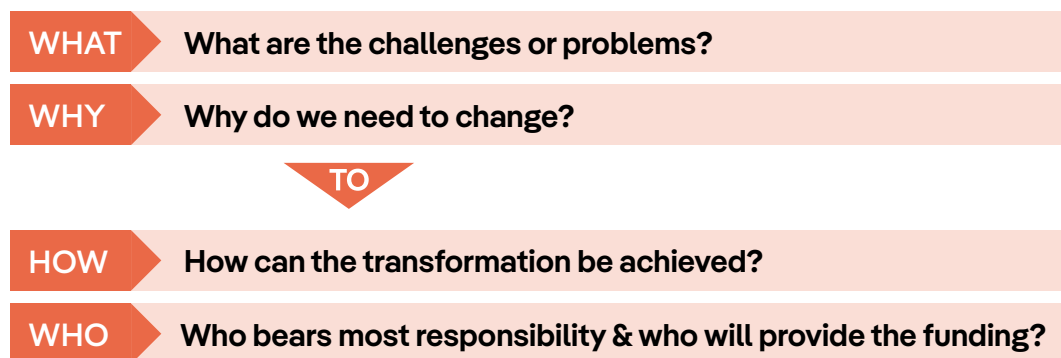## in Times of Multiple Crises

Towards resilient and sustainable agri-food systems.

The urgent need to transform agri-food systems

In recent years the discourse on how to ensure **food security** without compromising **human and environmental health, social justice, climate mitigation, and economic wellbeing** has expanded to include ways to transform our agri-food systems.

These discussions have led in turn to efforts at an international level to develop a better understanding of the problem and **initial proposals for international action** to tackle it through a **food systems lens** (e.g. at the United Nations Food Systems Summit). There now appears to be broad agreement among the key actors on what the main aims of agri-food systems transformation ought to be: food security, nutritious food, resilience, and reduced impacts on the climate and living environment.

However, disagreements and even schisms appear when the discussion shifts from questions of:

| WHAT | What are the challenges or problems? |
| WHY | Why do we need to change? |

TO

| HOW | How can the transformation be achieved? |
| WHO | Who bears most responsibility & who will provide the funding? |

From those disagreements come a variety of approaches that correspond to the overarching values and aims of the actors and derive their legitimacy from carefully curated data.

These reports in the **FORESEE Series** aim at helping inform the debate on agri-food systems transformation in six important ways:

1 Identifying the key issues and hence the need for transformation of our agri-food systems

2 Analysing the conditions that make transformation both urgent and complex

3 Assessing the extent to which the existing policy landscape is suitable for transformative action

4 Analysing the debate to better understand where the actors agree and disagree on transformation pathways

5 Identifying blind spots and neglected issues in the debate

6 Publishing recommendations on how to advance the conversation

Cover photo: Bowls of vegetables. Photo credit: D.Cz..

Economics,
politics,
technology,
society and
natural environments
all shape
agri-food systems.

What are agri-food systems?

Agri-food systems include **all actors and activities involved in the production, aggregation, processing, distribution, consumption, and disposal of food products** as well as the primary production of non-food agricultural products. This is true for food products originating from either agriculture, hunting, pastoralism, forestry, or fisheries.

Agri-food systems are all influenced by the broader economic, political, technological, societal (such as cultures and traditions) and natural environments in which they are embedded. Agri-food systems also vary significantly across the world, depending on size, mechanization, external input intensity, length of supply chain, and the type of labour involved. They range from small-scale, local agroecological, traditional and indigenous agri-food systems to large-scale, highly specialized and industrialized systems with long, global scale supply chains.

Agri-food systems consist of multiple sub-systems as outlined below and these are in turn connected to other key systems (such as energy or health systems). A key point is **a change in one system or sub-system can cause changes in another**; for example, greater use of biofuels in the energy system may have a significant impact on the food system.

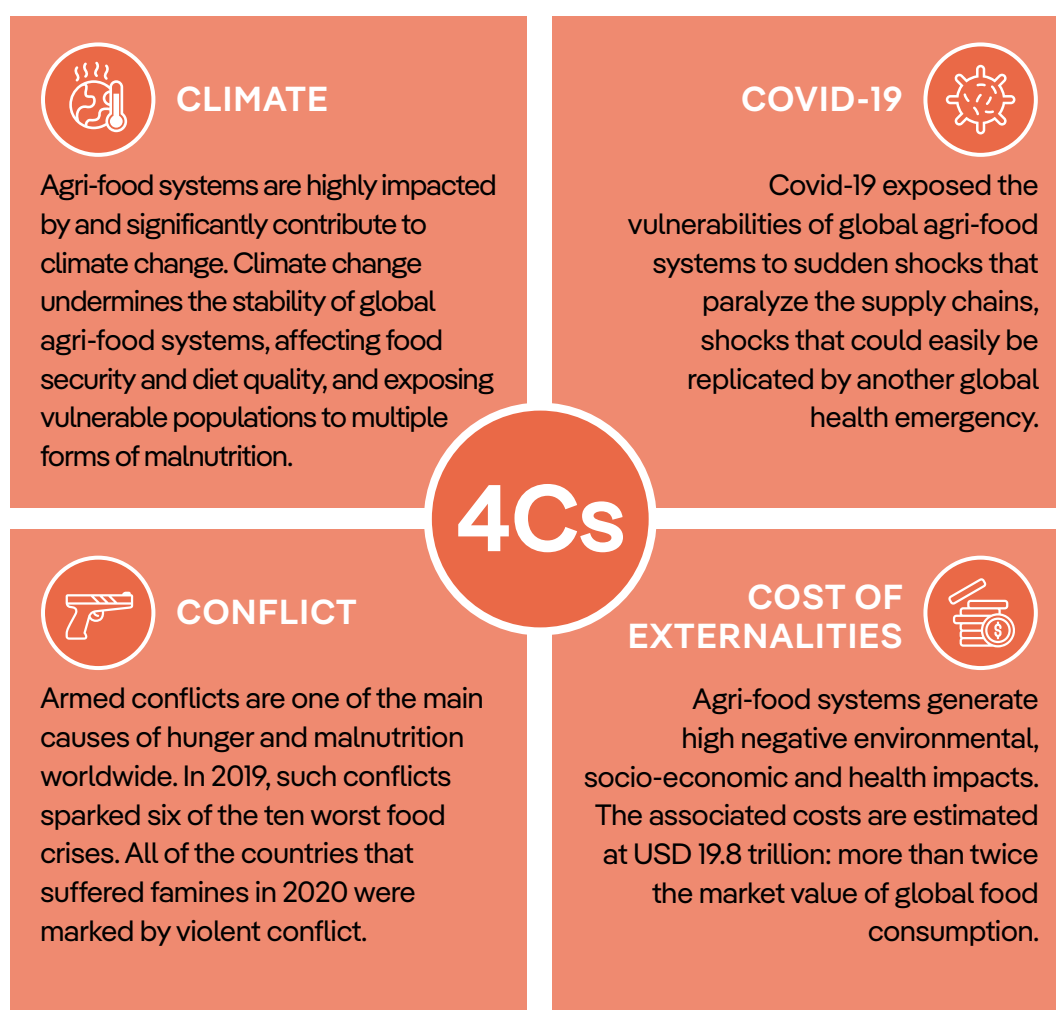## Conceptual framing of agri-food systems
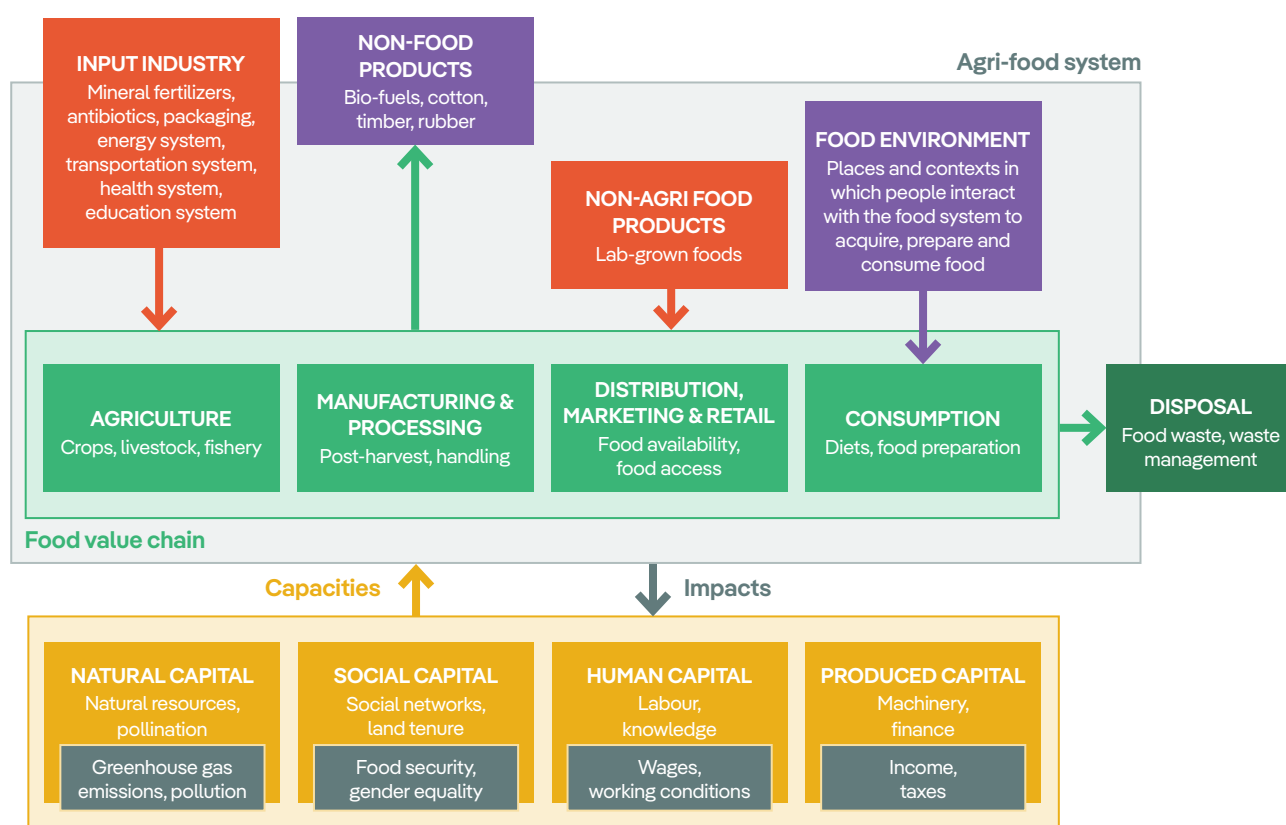
REPORT 1

Current Conditions and Policy Frameworks of Agri-Food Systems Transformation

The first report of the series emphasizes the urgent need to rethink the way we produce, distribute, and consume food worldwide and to build sustainable, healthy and just agri-food systems.

The multiple crises of climate change, Covid-19, armed conflict, and soaring costs linked to social and environmental externalities, commonly refered to as the '4 Cs', have had a disproportionate impact on the functioning of agri-food systems, particularly for the most vulnerable regions and people. **These four interlinked crises pose a profound challenge** for the transformation process as they introduce variables that have not previously been considered in discussions of transformation.

CLIMATE

Agri-food systems are highly impacted by and significantly contribute to climate change. Climate change undermines the stability of global agri-food systems, affecting food security and diet quality, and exposing vulnerable populations to multiple forms of malnutrition.

COVID-19

Covid-19 exposed the vulnerabilities of global agri-food systems to sudden shocks that paralyze the supply chains, shocks that could easily be replicated by another global health emergency.

4Cs

CONFLICT

Armed conflicts are one of the main causes of hunger and malnutrition worldwide. In 2019, such conflicts sparked six of the ten worst food crises. All of the countries that suffered famines in 2020 were marked by violent conflict.

COST OF EXTERNALITIES

Agri-food systems generate high negative environmental, socio-economic and health impacts. The associated costs are estimated at USD 19.8 trillion: more than twice the market value of global food consumption.

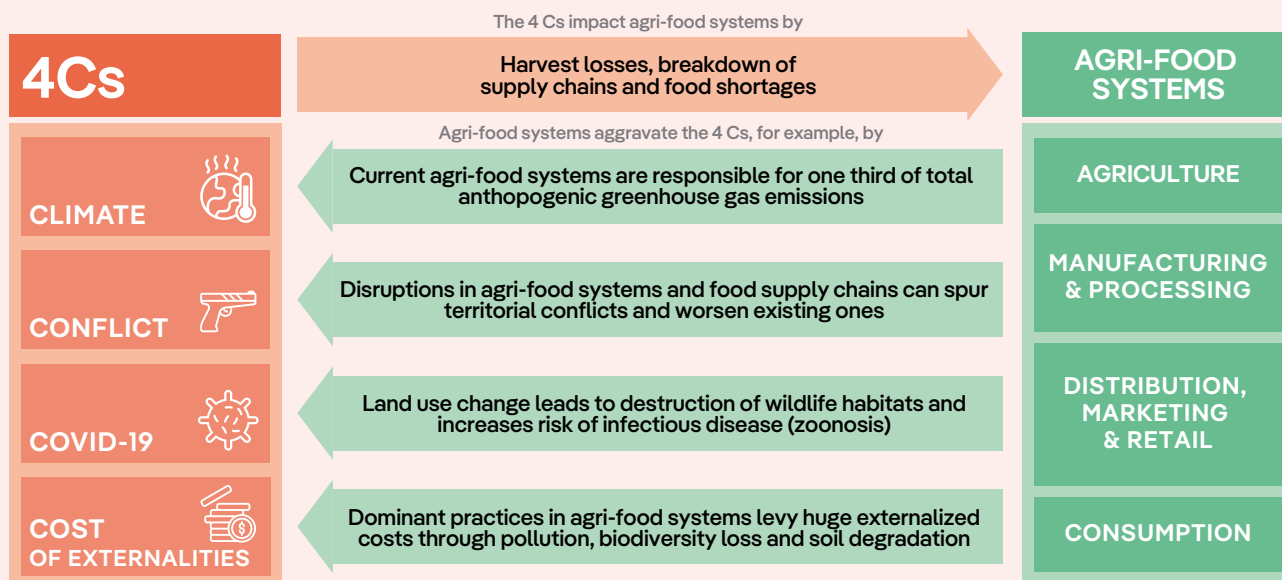# Agri-food systems transformation as part of the solution

The agri-food systems have the **unique distinction of being at once a casualty, an underlying cause, and a potential solution to these crises**. Yet, while different actors need to work together to create pathways through the realities (the new abnormal) that are emerging from the 4 Cs, many actors in the agri-food systems are not yet convinced of the necessity of transformation.

Transformation of agri-food systems not only has the potential to respond positively to the 4 Cs, but in many cases may reduce the intensity of the factors that cause these crises in the first place. For instance, **agri-food systems are responsible for about a third of all greenhouse gas emissions**, thus contributing significantly to climate change. On the other hand, transformative agricultural practices have the potential to make farming a net-negative emissions activity, thereby effectively creating a massive carbon sink right under our feet.

> **Transformation of agri-food systems not only has the potential to respond positively to the 4 Cs, but in many cases may reduce the intensity of the factors that cause these crises in the first place.**

Agri-food systems are among the drivers of the 4 Cs

The negative impacts of current agri-food systems are further driving the crises of the 4 Cs - climate, Covid-19, conflict and the cost of externalities. Responding to the 4 Cs necessitates transforming agri-food systems.

4Cs

- CLIMATE
- CONFLICT
- COVID-19
- COST OF EXTERNALITIES

The 4 Cs impact agri-food systems by

Harvest losses, breakdown of supply chains and food shortages

Agri-food systems aggravate the 4 Cs, for example, by

Current agri-food systems are responsible for one third of total anthopogenic greenhouse gas emissions

Disruptions in agri-food systems and food supply chains can spur territorial conflicts and worsen existing ones

Land use change leads to destruction of wildlife habitats and increases risk of infectious disease (zoonosis)

Dominant practices in agri-food systems levy huge externalized costs through pollution, biodiversity loss and soil degradation

AGRI-FOOD SYSTEMS

- AGRICULTURE
- MANUFACTURING & PROCESSING
- DISTRIBUTION, MARKETING & RETAIL
- CONSUMPTION

The Rio Conventions as the basis for an international transformation framework

The first report identifies existing international framework agreements, particularly the Rio Conventions of the UNFCCC, CBD, and UNCCD, and their funding mechanisms as a starting point for transformation. **The mandate of the three Rio Conventions cannot be achieved in the absence of a transformation of agri-food systems**, as various externalities of those systems contribute to the problems the Rio Conventions seek to address.

Negative externalities are often the source of many of the challenges that hinder transformation of the agri-food systems, including those originating from the 4 Cs. **True Cost Accounting (TCA) offers a way to include externalities** by calculating the cost of their effects on the natural and social environment in addition to direct costs like raw materials and labour. This allows us to quantify the value that a transformation of agri-food systems can bring to the Rio mandate and to provide information on the economic, environmental, social and health implications, including lost capital and future costs of not achieving the agreed targets.

In this way, **TCA can help set the starting point and direction of the transformation**, with the Rio Conventions acting as a compass for further progress through a agri-food systems lens.
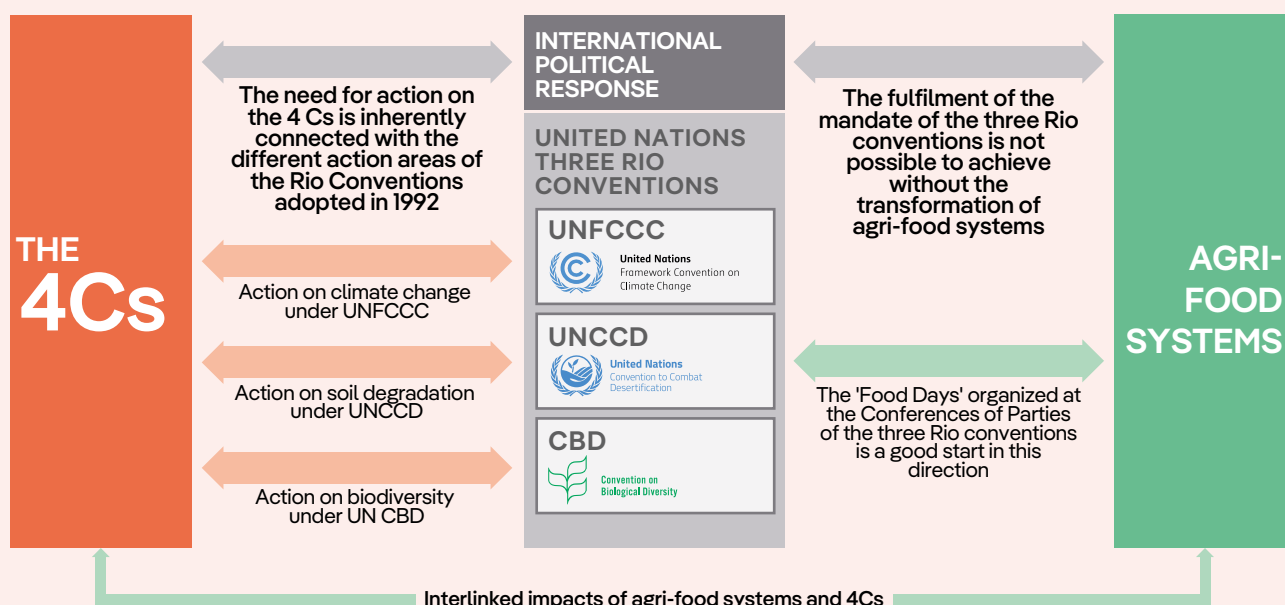
The 4 Cs provide an opportunity and an impetus (a 'perfect storm') to think about the proposed pathways for a transformation of agri-food systems. The failure of short-term solutions that have been adopted in various countries should serve as a sharp reminder of the need to devise sustainable long-term strategies. These must not only make the agri-food systems more resilient and capable of overcoming breakdowns caused by the multiple crises but also contribute to preventing these crises in the first place.

Photo: Delegates fill the plenary hall of UNCCD COP 15 in Abidjan, Côte d'Ivoire. Photo credit: IISD/ENB | Kiara Worth.

The need for a more holistic political response

The nexus relationship between UN Rio Conventions and agri-food systems transformation in view of the 4 Cs, highlighting the need to take a systems approach

THE 4Cs	The need for action on the 4 Cs is inherently connected with the different action areas of the Rio Conventions adopted in 1992	**INTERNATIONAL POLITICAL RESPONSE**
	Action on climate change under UNFCCC	**UNITED NATIONS THREE RIO CONVENTIONS**
	Action on soil degradation under UNCCD	**UNFCCC** — United Nations Framework Convention on Climate Change
	Action on biodiversity under UN CBD	**UNCCD** — United Nations Convention to Combat Desertification
		CBD — Convention on Biological Diversity

The fulfilment of the mandate of the three Rio conventions is not possible to achieve without the transformation of agri-food systems

The 'Food Days' organized at the Conferences of Parties of the three Rio conventions is a good start in this direction

AGRI-FOOD SYSTEMS

Interlinked impacts of agri-food systems and 4Cs

> **" Since the 4 Cs are global crises, their solutions require concerted international efforts. "**

Since the 4 Cs are global crises, their solutions require concerted international efforts. **In the absence of an international agreement dedicated to agri-food systems transformation, the Rio Conventions can form a basis for transformative action.** This follows logically from the fact that the aims of the Rio Conventions with respect to desertification, biodiversity loss, and climate change are directly dependent, to different extents, on how the dominant agri-food systems function. The 'Food Days' organized at all three Conferences of Parties (COPs) in 2022 provide a potential entry point to the conventions from an agri-food systems perspective.

The Rio markers system used by the European Commission as part of its funding mechanism for action to achieve the Rio mandates can serve as a model funding framework for transformative action on agri-food systems. This can be a synergistic arrangement whereby funding dedicated to action on the Rio Conventions can be diverted to agri-food systems transformation, which in turn leads to a reduction of the externalities that severely affect progress on the goals of the Rio Conventions.

REPORT 2

State of the Debate on Agri-Food Systems Transformation

The second report discusses the different perspectives on agri-food systems transformation promoted by actors from the sector and provides an analysis and comparison of the different pathways proposed.

These pathways, although divergent, tend to broadly agree on the need to change the way food is produced, valued, and consumed. **There is consensus that incremental changes are no longer sufficient** given the urgency of the 4 Cs, and that we need to transform our agri-food systems to render them capable of providing nutritious food for all without compromising human and planetary health. The pathways proposed by the different actors entail different solutions, but their stated aims converge around the three themes highlighted in the speech given by the UN Secretary General at the conclusion of the UN Food Systems Summit in September 2021:

Photo:
Farmers plows field near Mount Elgon National Park, Kenya. Photo credit: Belikova Oksana / Shutterstock.com

PEOPLE
Nourishing everyone for health & wellbeing

PLANET
Producing in harmony with nature

PROSPERITY
Inclusive, transformative and equitable recovery for Agenda 2030

> ❝ We need to transform our agri-food systems to render them capable of providing nutritious food for all without compromising human and planetary health. ❞

The report analyzed the agri-food systems transformation agenda of fifteen different international or intergovernmental organizations. Based on their overarching policy and action approaches, we can identify three main categories of actors:

1 Those that advance structural change

2 Those that advance technical or technological fixes

3 Those that combine both approaches

Several issues were found to be absent or neglected in the debate; these are explored in detail in the third report.

The governance of agri-food systems can be understood as:

The ability of actors ranging from

| civil society | expert groups | corporations | government agencies | intergovernmental organizations |

to steer the agri-food systems to

| achieve food security | enhance resilience | facilitate adaption | or to instigate transformation |

and involves not only the actors and activities of the agri-food systems itself but also the actors and activities of related domains such as
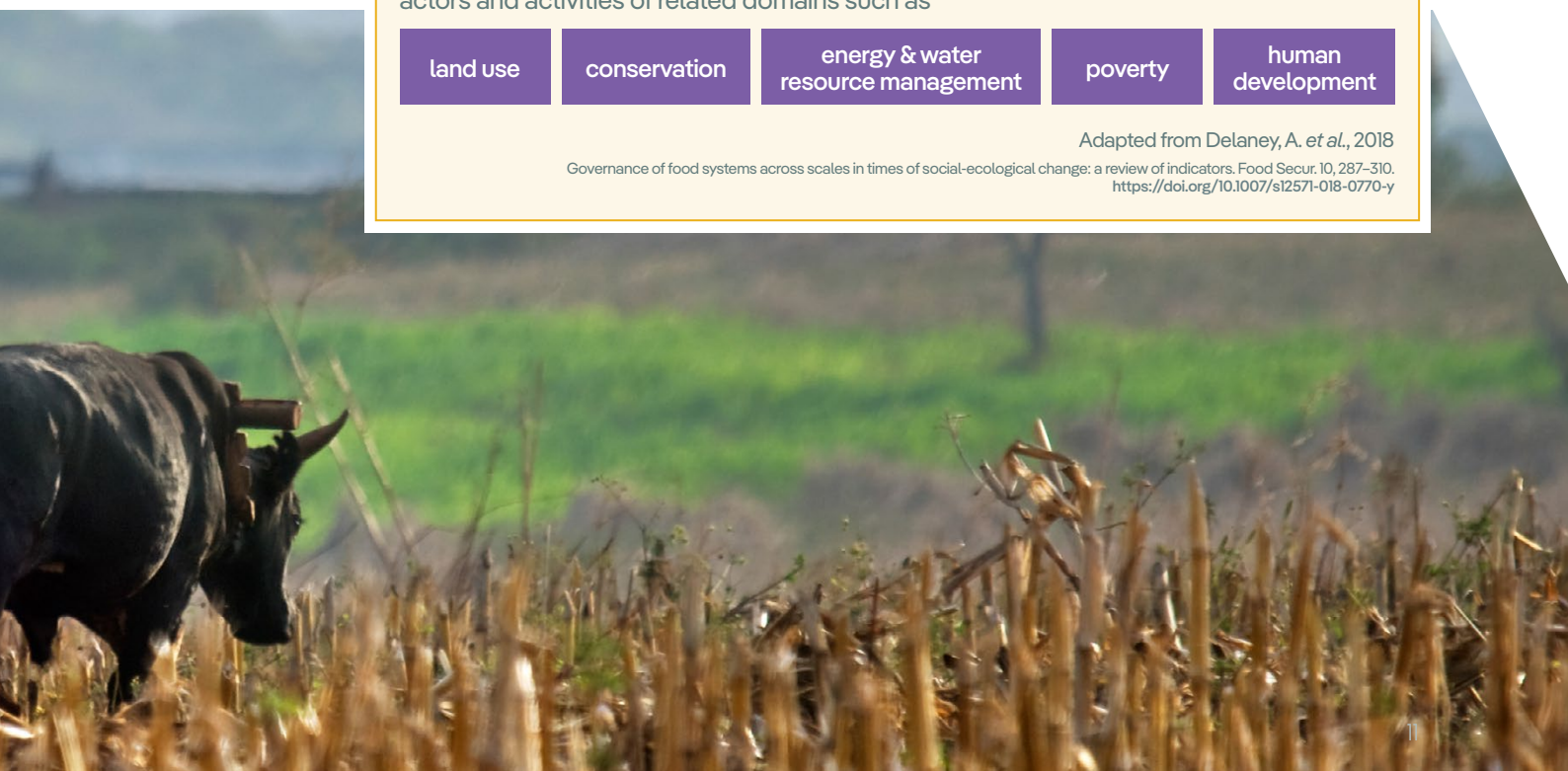
| land use | conservation | energy & water resource management | poverty | human development |

Adapted from Delaney, A. *et al.*, 2018
Governance of food systems across scales in times of social-ecological change: a review of indicators. Food Secur. 10, 287–310.
https://doi.org/10.1007/s12571-018-0770-y

REPORT 3

Blind Spots in the Debate on Agri-Food Systems Transformation

The third report presents a detailed discussion of areas that are essential to the agri-food transformation debate but are either ignored or only marginally addressed in the current transformation discourse and recommends ways that the science, policy, and research communities can address them.

The debates on agri-food systems transformations are, necessarily, dominated by question of ensuring food security for all, as well as the environmental, social, and technical aspects of the necessary change. There is, however, **not enough emphasis on how to manage the just transformation of agri-food systems**. Those blind spots that are crucial for the success of the transformation can be addressed in a variety of ways, as summarized below:

IDENTIFIED GAPS & BLINDSPOTS		Relevance to agri-food systems transformation
1	Governance	Empowering people and communities to engage with **decisionmaking** in agri-food systems
2	Corporate interests	Resolving the **power imbalances**, particularly, in view of the multistakeholder approach
3	Polarization	Addressing polarization by bringing **everyone** to the table
4	Human rights-based approach	Approaching agri-food transformation from a **human rights** perspective
5	Resilience	Building resilience in the agri-food systems to **avoid breakdowns** in the face of crises and shocks
6	Indigenous & traditional systems	Acknowledging the role of **Indigenous and traditional systems** in the transformation
7	Accounting for externalities	**True Cost Accounting** (TCA) of the externalities of the agri-food systems
8	Trade dynamics	Modifying **trade regulations** to acknowledge food as more than a trade commodity

1 Addressing the weak governance of agri-food systems and their transformation processes: A common vision on good governance of agri-food systems is needed at local, regional, and global levels. This can be advanced by dedicated deliberations on the issue of agri-food systems' governance at relevant international forums.

2 Addressing corporate power, power asymmetries and multi-stakeholder pressure in the agri-food systems debate: In addition to intensifying the debate on the governance of agri-food systems, it is necessary to create a discussion space to address power asymmetries, and specifically the influence of corporate power on the transformation.

3 Overcoming the polarization of opinions and positions that hamper a coherent strategy of transforming agri-food systems: In an implementation landscape that is highly polarized and devoid of consensus, transformative measures are difficult to sustain. Hence it is important to understand and address the schisms behind the diverging transformation pathways.

4 Adopting a human rights-based approach: A human rights-based approach to food and nutrition security can guide the transformation process while building on existing international human rights frameworks and deriving legitimacy from them.

5 Learning from traditional knowledge and practices, including indigenous knowledge systems: The role of Indigenous peoples' knowledge, traditional practice, and local solutions to improve resilience needs to be acknowledged as essential to the transformation of agri-food systems.

6 Enhancing the resilience of agri-food systems: We can no longer afford to subordinate resilience to sustainability in the agri-food systems discourse. The 4 Cs have highlighted the importance of resilient agri-food systems and the role they play in feeding the world.

7 Adopting True Cost Accounting as a tool to address negative impacts and externalized costs: The transformation of agri-food systems needs to be effectively supported by governments adopting True Cost Accounting to address the issue of externalized costs through a agri-food systems lens.

8 Understanding the role of trade in agri-food systems transformation: The influence of international trade dynamics on agri-food system transformation needs to be better understood. Modification of regulations around the trade in food are required to approach food as more than just another commodity.

CONCUSION

Transforming agri-food systems at scale

Time to prioritize the urgent need of transforming agri-food systems and go beyond defining problems and instead focus on the implementation of transformative solutions.

For a sustainable transformation to succeed at all levels, **we need to go beyond establishing a common understanding** of the different problems and issues within agri-food systems. Current outputs from deliberations at international level are mainly **vague definitions of change which fail to analyze the potential pathways and where these might lead**.

We instead need to outline concrete, practical solutions, identify common ground and differences, and integrate this information into international agreements and policies that would immediately impact agri-food systems. The immediate aim should be to create an internationally agreed framework for the transformative actions needed in agri-food systems.

Photo:
Crops growing on agricultural terraces in Uganda. Photo credit: MehmetO

> " The immediate aim should be to create an internationally agreed framework for the transformative actions needed in agri-food systems. "

Such analytical work needs to be based on a systems approach to agri-food systems. Moreover, Indigenous, traditional, and agroecological systems that have succeeded at the local level should be included in policy frameworks and international agreements as part of an approach that treats food as an essential life-support system and not just another commodity.

Among the existing international framework agreements, **the Rio Conventions can act as the driver of a sustainable, resilient, and equitable agri-food systems transformation**. They could form the starting point for an overarching framework that ensures a systems approach is taken to achieve the goals and targets of the Rio Conventions and any other relevant international agreements. **The transformative actions under the framework can be financed through the Rio mandate** and in return the transformation will contribute to achieving the goals of the Rio Conventions by reducing the externalities associated with the current system. **True Cost Accounting (TCA) can act as an effective tool** to measure the success of such interventions.

Find out more

For more detailed information on everything in this summary report, please read the full reports of the *Assessment and Communication of Climate Impacts of Food (CLIF)* project listed below. Two more reports will be published in by the end of 2024. Report 4 will discuss the possible agents and drivers of the agri-food systems transformation, while report 5 will focus on linking sustainable consumption and production through policies and consumer information.

REPORT 1	REPORT 2	REPORT 3	REPORT 4	REPORT 5
Current Conditions and Policy Frameworks of Agri-Food Systems Transformation	State of the Debate on Agri-Food Systems Transformation	Blind Spots in the Debate on Agri-Food Systems Transformation		

For more general information, including ongoing developments in the area of agri-food systems transformation, please regularly check the TMG Research **Food Systems** webpage or the **Impacts of Food** project webpage through the links below.

tmg-thinktank.com/programmes/food-systems	food-impacts.com

ABOUT THE PROJECT

TMG Research gGmbH aims to help develop a more systematic understanding of how agri-food systems can be transformed as part of a project on the Assessment and Communication of Climate Impacts of Food (CLIF), funded through the International Climate Initiative (IKI) of the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) and jointly implemented with corsus and WWF Germany. This project promotes sustainable consumption patterns and helps companies, policymakers, and consumers choose more sustainable options in relation to food. The main contribution of TMG to this project is in developing a more systematic understanding of how to transform agri-food systems by publishing a series of strategic reports on the current status of agri-food systems and the likely drivers and agents of their transformation.

This is a summary of the FORESEE (4C) series on The Transformation of Agri-Food Systems in Times of Multiple Crises, which explores the current agri-food systems in light of challenges linked to the four crises known as the 4 Cs (Climate, Covid-19, Conflict, and Cost of Externalities). The series of reports was drafted by TMG in consultation with an extended group of experts.