



Report

Making finance flow to adaptation in small-scale agrifood systems

The role of the third long-term goal of the
Paris Agreement (Article 2.1(c))

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Key messages

- The third long-term goal of the Paris Agreement – Article 2.1(c) – aims at making finance flows consistent with climate-resilient development. However, the articulation and implementation of this goal have been slow, and focused more on mitigation than adaptation and inclusive, sustainable development. This misses opportunities for Article 2.1(c) implementation to support climate-resilient development in climate-vulnerable developing countries.
- This paper considers whether and how Article 2.1(c) can support increased investment in adaptation and wider climate-resilient development in small-scale agrifood systems. Such systems include an ecosystem of actors: small-scale producers, micro, small and medium agrifood enterprises along the value chain, and poor food consumers.
- Small-scale agrifood systems play a key role in poverty reduction, food security and nutrition, and the health of natural systems. They are also climate-vulnerable. In bringing this focus, the paper seeks to emphasise how implementation of Article 2.1(c) can benefit climate-vulnerable developing countries, and to engage agrifood system stakeholders in efforts to implement Article 2.1(c).
- The paper identifies actions governments can take to pursue Article 2.1(c) implementation to the benefit of small-scale agrifood system actors, including through their fiscal policy, publicly owned financial institutions, financial and corporate regulation and the information signals they send to the market. Examples range from reforming agricultural subsidies to setting taxonomies and standards for investors and corporates, in ways that enable the important contribution of small-scale actors to climate-resilient development.
- The space for governments to take such actions may however be limited by the rules and constraints imposed by the current international financial architecture. Thus, additional reforms supported by higher-income countries and in multilateral fora are required, including to ensure sovereign debt regimes, agrifood trade and international public banking work more in the interests of small-scale agrifood actors.
- A strong focus on climate justice, equity and elevating the voice and decision-making power of the most climate-vulnerable should underpin reform efforts at both the national and international level. This includes participation of small-scale agrifood actors, especially at the national level, as well as representation of their needs and priorities.
- The multilateral climate deliberations, food system transformation fora and related country-level processes provide critical moments to drive implementation of Article 2.1(c) in small-scale agrifood systems. Together, the climate and food system transformation communities will also need to advocate to ensure reform of the global financial architecture, from multilateral development bank evolution to debt relief, supports climate-resilient development in small-scale food systems.

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Acronyms

COP	Conference of the Parties
FIRA	Fideicomisos Instituidos en Relación con la Agricultura
IFI	International financial institution
IPCC	Intergovernmental Panel on Climate Change
GHG	Greenhouse gas
MDB	Multilateral development bank
MSMEs	Micro, small and medium enterprises
PDB	Public development bank
PGS	Participatory Guarantee System
SAC	Seguro Agrícola Catastrófico
SDG	Sustainable Development Goal
UNFCCC	United Nations Framework Convention on Climate Change
UNFSS	United Nations Food System Summit
WTO	World Trade Organization

Executive summary

The third long-term goal of the Paris Agreement aims at ‘making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development’ (UNFCCC, 2015: 3). Climate-resilient development is a process that seeks to achieve and reconcile adaptation, mitigation and sustainable development for all. However, progress in pursuit of this goal has been slow, and focused more on mitigation than adaptation and inclusive, sustainable development.

There is a lack of shared understanding of how the implementation of the goal, expressed in Article 2.1(c) of the Paris Agreement, can be of relevance for all countries, including developing and more climate-vulnerable countries, via adaptation and resilience.

There is therefore a need to consider how implementing Article 2.1(c) can mobilise and shift financial flows in support of climate-resilient development. Furthermore, there is a need to consider whether implementing Article 2.1(c) results in increased positive investment, and phasing down of harmful investments, in the real economy, particularly in key sectors and systems for people and nature.

This is the second of two papers. The [first paper](#) sets out how governments can use ‘consistency makers’ in pursuit of climate-resilient development under Article 2.1(c). Consistency makers are the actions that governments, as Parties to the Paris Agreement, can take either themselves (‘internal’) or through international cooperation (‘external’) to mobilise and shift financial flows at scale, and in turn to increase the quantity and quality of investment for low greenhouse gas emissions and climate-resilient development.

This paper puts those consistency makers to the test, exploring whether and how they can be used to mobilise and shift finance towards climate-resilient development in the context of small-scale agrifood systems. Such systems comprise: a *complex ecosystem of actors including small-scale producers; other value chain actors that provide agricultural inputs, services, product aggregation and market linkages in upstream or downstream industries; and people in poverty who rely on these systems for food security and nutrition.*

Small-scale agrifood systems at once face significant climate risks, and are vitally important for wider climate adaptation and sustainable development because of their role in supporting poverty reduction, food security and nutrition and ecosystem health.

The paper has twin aims: to enhance the relevance of Article 2.1(c) of the Paris Agreement for all Parties; and to engage agrifood system stakeholders in efforts to implement Article 2.1(c).

The scale of the challenge is enormous, implying transformation of both food and financial systems, and requiring transformative as well as incremental adaptation. These challenges are compounded by the small and decreasing levels of climate finance that flow to adaptation in general, and to small-scale agrifood systems in particular, to support enhanced climate-resilient development.

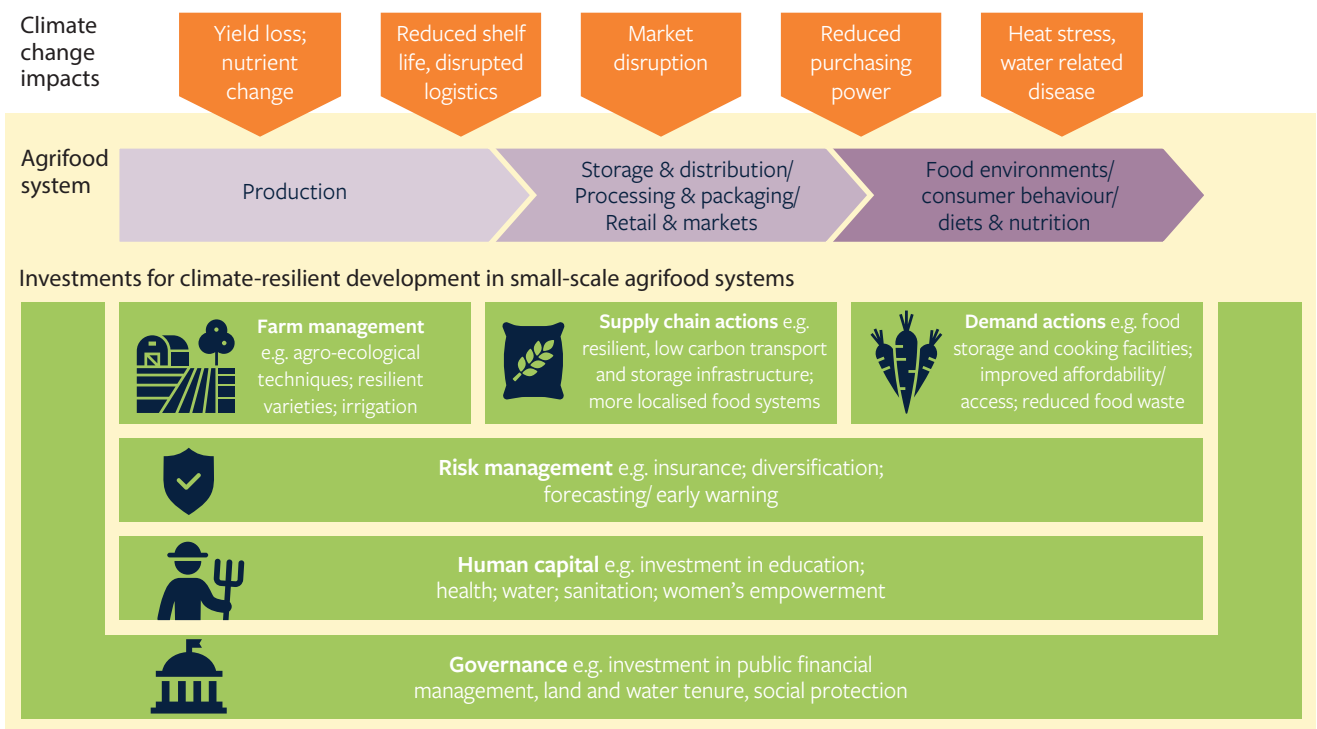
Nonetheless, there are actions aligned with Article 2.1(c) that governments can lead on to shift and mobilise financial flows at scale for climate-resilient development, and especially adaptation,

in small-scale agrifood systems. Many have also been highlighted by work to improve the financial architecture for food systems in general.

To articulate how Article 2.1(c) implementation can concretely support more and better finance for small-scale agrifood systems, we draw a link from the consistency makers to six categories of investment by and for small-scale agrifood system

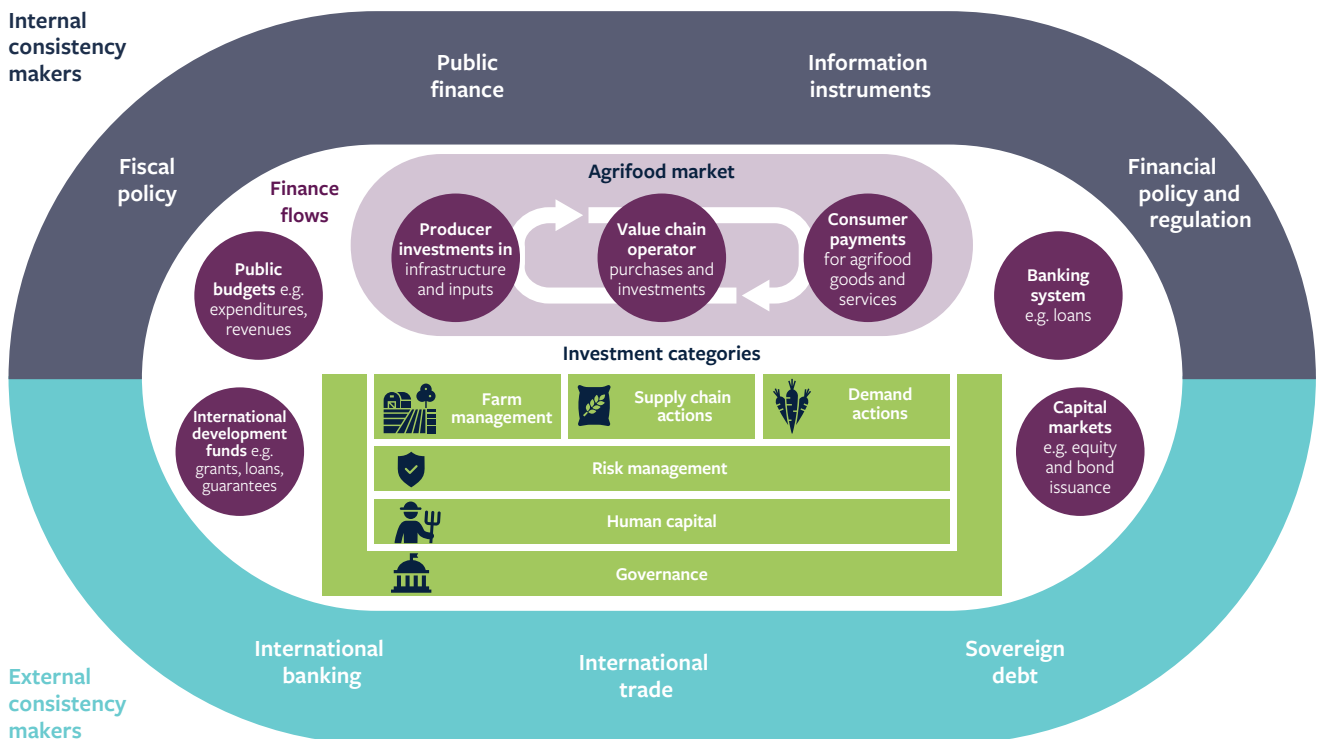
actors. Such investments, shown in Figure ES1 are needed to ensure climate-resilient development in the face of impacts of climate change throughout the agrifood system, from production to consumption, including investments in farm management, through the supply chain, and on the demand side, as well as cross-cutting investments in risk management, human capital and governance.

Figure ES1 Investment categories for climate-resilient development in small-scale agrifood systems



A range of internal and external consistency makers can mobilise and redirect finance flows towards these types of investments, with relevant flows including those provided by value chain actors within agrifood markets – from smallholder

farmers to food consumers – as well as international and national public funds and private finance provided by commercial banks and capital markets (Figure ES2).

Figure ES2 Linking consistency makers through to investments

Within a country, the examples and ideas collated in this paper demonstrate that governments can utilise the following internal consistency makers to mobilise and redirect finance flows to investments in climate-resilient development for small-scale agrifood systems. For example:

- Governments can **reform their fiscal support** to agriculture in favour of public goods, such as research and extension services and infrastructure – both built and natural – or uptake of risk management tools such as crop and livestock insurance. They can ensure smallholder farmers and other small-scale food system actors do not lose out from subsidy reform, strengthen human capital and increase wider buy-in by decoupling subsidies from production or inputs and prioritising general social protection measures based on principles of financial and digital inclusion. And they can utilise public procurement to favour diversified, agro-ecological small-scale production systems and healthier diets on the demand side, for example in school meal provision.
- **Publicly owned financial institutions** such as public development banks and credit guarantee agencies already play a vital role in providing finance to agrifood systems. However, they can be further encouraged and enabled to reach small-scale actors, especially the ‘missing middle’ of small-to-medium agrifood enterprises in the supply chain, which can fall between commercial finance and microfinance. They can also act as market shapers, redistributing climate risks and encouraging private financial institutions to invest in climate-resilient development. For example, they can issue green bonds on capital markets, aggregating and refinancing portfolios of loans that enable small-scale agrifood producers and other enterprises to invest in water and energy infrastructure.

- **Financial regulators** can shape financial markets and influence financial institutions and corporates more directly through their mandates. For example, central banks can establish policies or credit lines that specifically encourage on-lending to small-scale agrifood system stakeholders (with consideration of wider mandates such as inflation control). Financial regulators can encourage or directly require financial institutions and corporates to give due recognition to the investment opportunities – and scientifically assessed risks – in small-scale agrifood systems. This could start with sustainable finance taxonomies that explicitly capture climate-resilient development activities undertaken by smallholder farmers and agrifood MSMEs, not just larger commercial farms and corporates.
- Governments can also use a variety of **information instruments** to signal to financial markets and firms that they intend to prioritise climate-resilient development in small-scale agrifood systems. At a high level these could include policies and strategies relevant to the financial, agrifood and climate sectors (not least Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs)). At a more detailed level of implementation, examples include labelling systems that stimulate demand for healthier and more climate-resilient consumer choices and favour sourcing from small-scale agrifood systems.

Several governments are already taking such actions. Many actions are also complementary to other efforts to align food system finance with sustainability objectives, including SDG2 and ending hunger.

However, the scope for many countries, including climate-vulnerable developing countries, to utilise internal consistency makers is limited by

inadequacies and inequalities in the international financial architecture and related regimes, such as for international trade and debt. These arrangements can result in reduced access to liquidity and finance, increased borrowing costs, restricted export markets and constrained fiscal space for investment in climate-resilient development, including in small-scale agrifood systems. As such, encouraging and facilitating governments to take action through internal consistency makers must be matched by multilateral cooperation – and by considering and managing the potential impacts of unilateral measures by larger economic powers – including on the following **external consistency makers**:

- **Sovereign debt regimes** that reduce the fiscal pressures on climate-vulnerable countries, and permit sustained investment in diversified, climate-resilient small-scale agrifood systems. This requires breaking the cycle in which food and fertiliser import dependency drives up debt while repayment obligations jeopardise affordability of those imports and incentivise commodity cash crop cultivation for export. Instruments like debt disaster pause clauses and debt-for-climate and debt-for-nature swaps can play a role as short-term solutions, though they create new challenges. Systemic debt relief remains urgently needed.
- An **agrifood trading system** that maintains the adaptation benefits of open and fair trade, while checking the outsize influence of multinational firms in agrifood value chains and the distorting effect on world prices from agricultural support programmes, especially in high-income countries. Furthermore rich countries' efforts to regulate value chain actors to tackle climate challenges – for example deforestation – should not come at the expense of small-scale producers and other agrifood actors.

- An **international public banking system** that can support countries to invest in small-scale agrifood systems. This includes ensuring ‘Paris Alignment’ in agrifood lending operations, with equal attention to climate-resilient development and emissions reduction; targeting a share of any expanded multilateral development bank lending capacity to these systems; fostering management of climate-related risks within and above the country level, for example by developing regional agrifood climate risk insurance markets; and using the full suite of policy tools – including appropriate policy conditions, technical assistance and partnerships with national institutions – to help countries strengthen the fundamentals for strong, climate-resilient small-scale agrifood systems.

The prevailing political economy limiting small-scale agrifood system actors’ voice and influence, access to natural and financial resources and markets, at both national and international level, creates cross-cutting challenges to these types of reform. Climate change can exacerbate those challenges, and efforts to reform internal and external consistency makers can create unintended consequences and trade-offs – even between the adaptation, mitigation and sustainable development objectives within climate-resilient development. Rights-based, locally led and climate justice principles must be embedded within reform efforts. Specifically:

- **Governments** can include marginalised food system actors in country-specific design and implementation of reforms to consistency makers, and ensure policy coordination between line ministries, especially those responsible for agriculture and climate, and finance ministries and central banks.
- **Corporations, private financial institutions and investors** can address mounting concern

and declining trust over greenwashing by improving the robustness and granularity with which they assess, and mitigate, risks and benefits to small-scale agrifood actors in their supply chains and investments.

- **Small-scale agrifood actors** can themselves organise and act collectively to demonstrate alternative models that encourage finance to flow to activities consistent with climate-resilient development, such as participatory guarantee systems (locally focused certification schemes).

Ultimately, governments, as Parties to the Paris Agreement, have responsibility for implementing Article 2.1(c), both at the national and international levels. As such, and backed by the investment, business, civil society and research communities, they need to coordinate across financial, climate and food systems agendas. To drive progress:

- The **climate negotiations and related country-level processes** must pay closer attention to equitable implementation of Article 2.1(c) in critical sectors and systems, such as small-scale agrifood.
- **Food system fora**, including follow-ups to the UN Food System Summit, should engage with Article 2.1(c) and harness its full potential, as a goal of a legally binding international treaty, to drive finance flows towards resilient, sustainable food system transformation.
- Together, the climate and food system communities need to motivate **other key stakeholders with influence over the financial system**, including ministries of finance and central banks at the national level, as well as the fora for deliberating and guiding the many aspects of the global financial architecture which need reform, from multilateral development bank evolution to trade reform and debt relief.

1 Introduction: What is Article 2.1(c) and why does it matter for small-scale agrifood systems?

1.1 Objectives

This paper is the second in a pair of reports exploring how climate-resilient development can be supported through the implementation of the third long-term goal of the Paris Agreement, Article 2.1(c). As identified in the first paper, acknowledging the importance of climate-resilient development within Article 2.1(c) requires that implementation does not focus solely on climate change mitigation, but equally supports adaptation and sustainable development for all (Robertson *et al.*, 2023).

This paper looks at how this could be done in the context of small-scale agrifood systems, which play a key role in climate-resilient development, support the livelihoods of 2–3 billion people and supply up to 70% of food consumed in low- and middle-income countries (IFAD, 2021b). The paper has two, interlinked objectives:

- To enhance the relevance of Article 2.1(c) of the Paris Agreement by exploring how it can be implemented in a way that can support climate-resilient development – including by increasing finance for adaptation investments – in small-scale agrifood systems.
- To engage agrifood system stakeholders in efforts to implement Article 2.1(c) as a key, internationally agreed long-term goal that can support food system transformation as well as climate action.

1.2 Key concepts

1.2.1 Article 2.1(c) and ‘consistency makers’

Article 2.1(c) of the Paris Agreement is as follows:

2. This Agreement, in enhancing the implementation of the Convention, including its objective, aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by ...

(c) Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

(UNFCCC, 2015: 3)

The technical Dialogue for the first Global Stocktake indicated that Article 2.1(c) is increasingly understood to encompass the entire financial system, including international and domestic as well as public and private flows; requires redirecting financial flows away from activities and infrastructure that lack resilience; and means unlocking additional finance in support of climate-resilient development (UNFCCC, 2023e). We adopt this expansive framing and, in line with the latter point, identify

how Article 2.1(c) can be used both to mobilise and shift finance.¹

In principle, Article 2.1(c) has equal prominence with the long-term goals relating to limiting global temperature increases and fostering adaptation – Articles 2.1(a) and (b). By implication, it is also essential to achieving those other long-term goals. However, Article 2.1(c) has remained contested and has not been formally incorporated into negotiations on finance under the United Nations Framework Convention on Climate Change (UNFCCC). National governments (i.e. Parties to the UNFCCC) and non-state actors have varying interpretations of Article 2.1(c), and its relationship to other parts of the Paris Agreement regarding finance, for example the concern that it could be used by developed countries to distract from their commitments to provide and mobilise climate finance for developing countries under Article 9 (Zamarioli *et al.*, 2021; Watson, 2022).

Much of the research and dialogue around Article 2.1(c) has also focused on ensuring consistency with a pathway towards low emissions. Climate-resilient development, which in the framing of the Intergovernmental Panel on Climate Change (IPCC) requires simultaneous consideration of sustainable development, poverty alleviation, adaptation and mitigation,

has received less attention (Schipper *et al.*, 2022; Naidoo *et al.*, 2023; Robertson *et al.*, 2023). There has also been little consideration of how it might be implemented in practice, for example in specific sectors or systems, including agrifood systems.²

COP28 in December 2023 saw agreement to continue a series of dialogues in 2024 and 2025 on Article 2.1(c) and its relationship with Article 9 (UNFCCC, 2023b). The outcome of the first Global Stocktake – the Paris Agreement’s mechanism for ratcheting up ambition – recognised the importance of Article 2.1(c) and its complementarity with (but not substitutability for) Article 9, as well as noting limited progress to date and the need for further understanding (UNFCCC, 2023c).

In the absence of formal, negotiated consensus on how to approach Article 2.1(c), the first report identified an initial set of ‘consistency makers’ – the institutions, rules and regimes that govern and regulate finance flow owners, and the incentives and disincentives that influence their decision-making, including with respect to climate-resilient development (Robertson *et al.*, 2023).

We highlighted four categories of ‘internal’ consistency maker, largely determined by national governments through their laws and public

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- 1 Article 2.1(c) is often discussed as a call for ‘shifting’ finance away from harmful and into supporting activities, recognising that the issue of financing climate action is not a general lack of finance available in the financial system, but that this finance is going to the wrong investments. This logic fits well into the push for more finance for mitigation action, where the discussion is often about shifting finance away from fossil fuel-related investments and into renewable energy and energy efficiency investments. In the case of climate-resilient development, however, and particularly if we look at specific systems like small-scale agrifood, this redirection of finance is not the sole priority. In these cases, it might not be enough to shift finance within the system from harmful to supporting activities; it will also be necessary to increase the overall levels of finance going into these systems, and to focus on the quality of this finance and the way it is deployed to, among other things, avoid maladaptive practices.
 - 2 See for example FAIRR (2021) and Galt *et al.*, (2021) for consideration of aspects of the relevance of Article 2.1(c) to the agriculture sector, though with less focus on climate-resilient development, small-scale actors or food systems.

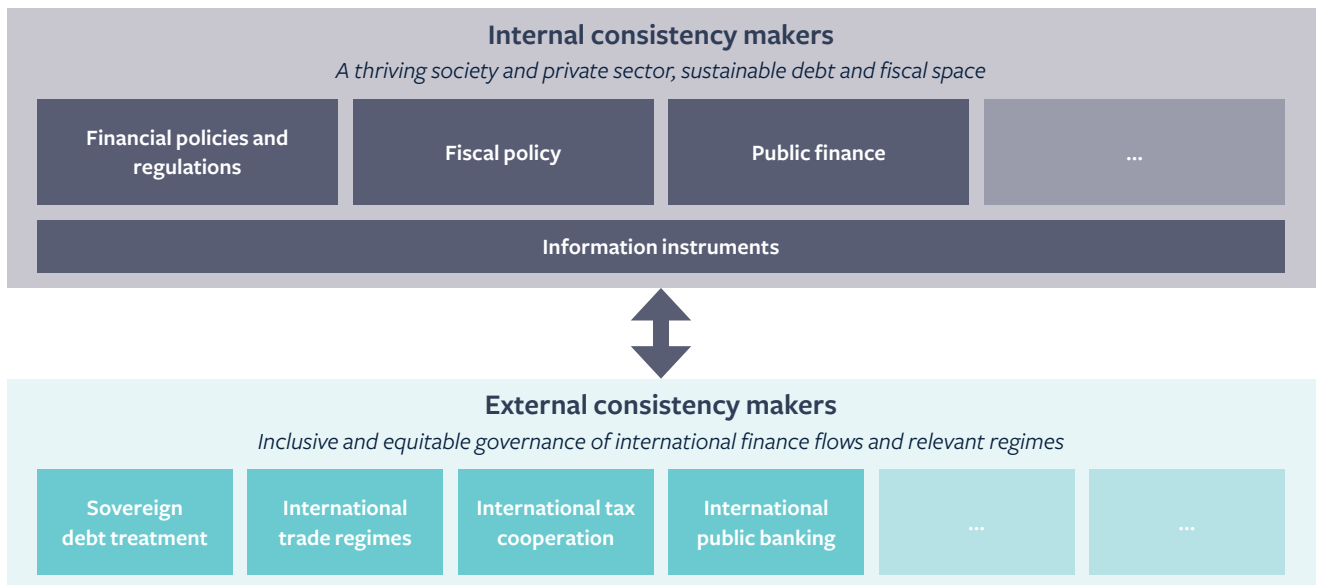
policy;³ **financial policy and regulation** shaping the behaviour of banks, insurers, corporations and other financial actors; **fiscal policy** tools like subsidies and taxes; **public finance**, which here means the policy and spending influence of majority public-owned financial institutions like development banks (rather than public budgets as a financial flow); and **information instruments** that work by building awareness (Whitley *et al.*, 2018).

We also identified that many developing countries face challenges in putting internal consistency makers in place to advance climate-resilient development, especially for adaptation. Their ability to do so is often constrained by ‘external’ consistency makers arising from internationally agreed regimes or from the policies of other

states – including regarding **sovereign debt treatment, trade regimes, tax cooperation** and **international banking** (Figure 1).

The previous report provides more detailed definitions of consistency makers, as well as several examples of their successful reform and proposals for how they need to be reformed further (Robertson *et al.*, 2023). It also highlighted the extent of the challenge – involving transformation not only of financial systems, but also of adjacent systems such as trade. Indeed, transformation is a widely claimed objective, but is still poorly defined. For this paper, the terms ‘transformative adaptation’ and ‘food-system transformation’ also require definition (Box 1).

Figure 1 Examples of internal and external consistency makers



Source: Robertson *et al.* (2023)

3 While the financial system involves a multitude of actors – public and private – we focus primarily on governments, individually and collectively, as having responsibility for fulfilling the objectives of the Paris Agreement, including making finance flows consistent with climate objectives.

Box 1 Defining ‘transformation’

The IPCC defines transformational adaptation as ‘adaptation that changes the fundamental attributes of a social-ecological system in anticipation of climate change and its impacts’ (Lonsdale, Pringle and Turner, 2015). This is in contrast to incremental adaptations, which are ‘understood as extensions of actions and behaviours that already reduce the losses or enhance the benefits of natural variations in extreme weather/climate events’ (Möller et al., 2023: 2,898).

Transformation of food systems is often defined in terms of a desired set of changes compared to the current state (e.g., FSEC, 2024). Others have tried to define the core sense of the term – for example, the Scientific Group for the UN Food System Summit (UNFSS) argue that food system transformation ‘refers to the objective of pursuing fundamental change of food systems ... Transformation is a never-ending process in food systems’ (von Braun et al., 2023: 13). In a changing climate, addressing vulnerabilities and risks to livelihoods is a prerequisite for inclusive agrifood system transformation.⁴ Transformative adaptation should thus support a shift towards an agrifood system that generates higher welfare for people in poverty, and better nutritional and environmental outcomes (Lipper et al., 2021).

In the context of small-scale agrifood systems, principles put forward to support transformative adaptation include addressing risks across multiple time horizons; enhancing cross-sectoral and multi-level integration; and addressing vulnerability of livelihoods within the wider farming and ecological systems and landscapes within which they are situated (Fedele *et al.*, 2019; Loboguerrero *et al.*, 2019; Lipper *et al.*, 2022). Transformative adaptation may not be possible *in situ*, and could involve significant disruption and dislocation (Lipper et al., 2021; FSEC, 2024).

Finally, some authors have investigated the role of finance in transformative adaptation in agrifood systems. This suggests a need for further transformation in financial systems, including much greater prioritisation of investment in local-level knowledge and information services; tolerance for uncertain and delayed returns; and compensation for small-scale farmers and other food system actors for losses incurred, including arising from transformative adaptation itself (Vermeulen et al., 2018; Lipper et al., 2021). As important, but less emphasised, is the need to redirect finance away from activities that undermine transformative adaptation, for example investment in production systems that could boost income and household resilience in the near term but are unsuited to future climates.

4 In this paper transformative adaptation is used to refer to a process supporting an outcome – including transformational adaptation and food system transformation (following Vermeulen et al. (2018)).

1.2.2 Small-scale agrifood systems

This paper focuses on the transformation of small-scale agrifood systems, where food systems encompass the ‘demand side’ as well as supply, recognising the impacts of climate change on food security and nutrition and the importance of food consumption and diet to climate-resilient development (HLPE, 2017; Bezner Kerr *et al.*, 2022; Fanzo and Miachon, 2023). In turn, small-scale food systems are defined as :

a complex ecosystem of actors including small-scale producers (typically managing less than 2ha); other value chain actors (e.g., cooperatives, farmers’ associations, and agri-MSMEs with no more than 250 employees and USD 5 million in annual turnover) that provide agricultural inputs, services, product aggregation and market linkages in upstream or downstream industries; *and people in poverty who rely on these systems for food security and nutrition.*

Chiriatic *et al.* (2023); text in emphasis added⁵

Whether Article 2.1(c) can be implemented to benefit small-scale agrifood systems is a

key test of its relevance for climate-resilient development more widely. While small-scale agrifood system actors can have high climate vulnerability, they also play a key role in climate-resilient development. Smallholder production systems provide over two-thirds of food calories in Asia and sub-Saharan Africa. They generally operate in genetically diverse production systems, reducing risks from climate change and ecosystem degradation and nutritional deficiencies (Fanzo, 2017). Most of the world’s poor people depend on agrifood systems for livelihoods (Lipper *et al.*, 2022), and the scale of employment and engagement of MSMEs in these systems means they are vital for tackling poverty and distributing economic opportunity (IFAD, 2021b). Countries increasingly recognise the role of small-scale agrifood actors in their NDCs – or at least the role of smallholder farmers, which appear in 50 of 134 updated NDCs, compared to 24 previous NDCs (Bakhtary, Tucker and Fleckenstein, 2022). Despite this, there has been limited attention to climate-resilient development in small-scale agrifood systems within the main multilateral fora for climate change and food system transformation (Box 2).

⁵ While Chiriatic *et al.* (2023) do not explicitly include food consumers in their definition, rural families and communities around small-sale farmers are noted to be implicitly included.

Box 2 Small-scale actors in UN climate and food system fora

International climate change negotiations have only superficially explored small-scale agrifood systems, and less so the equitable implementation of Article 2.1(c). More in-depth work commenced with the establishment of the Koronivia Joint Work on Agriculture in 2017, which had a particular focus on ‘the vulnerabilities of agriculture to climate change and approaches to addressing food security’ (UNFCCC, 2018, p. 19). As such, small-scale agriculture is not specifically addressed or distinguished from larger-scale or industrial agriculture.

The Covid-19 pandemic and the start of the Ukraine conflict in 2022 increased attention to food security within the climate negotiations. COP27 recognised the key priority of tackling the issue by designing climate-resilient agrifood systems and ‘applying a systemic approach in line with the long-term global climate objectives, further recognizing the importance of long-term investment in agriculture focused on this objective’ (UNFCCC, 2023c: 17). This saw the establishment of the Sharm el Sheikh Joint Work on Agriculture and Food Security. The decision from COP27 also emphasises ‘the urgent need to scale up action and support with regard to ... access to finance ... with a view to enhancing the adaptive capacity and resilience and reducing the vulnerability of farmers and other vulnerable groups, especially small-scale farmers, women and youth, in relation to climate change’ (UNFCCC, 2023c: 19). However, negotiations to establish a roadmap for the Sharm el Sheikh Joint Work on Agriculture and Food Security at COP28 in Dubai did not progress (Brunton, 2023).

COP28 did see an important development in the adoption of the UAE Framework for Global Climate Resilience, which sought to guide the achievement of the Paris Agreement’s Global Goal on Adaptation (UNFCCC, 2023a). This included a bespoke target affirming that, by 2030, the world would attain ‘climate-resilient food and agricultural production and supply and distribution of food, as well as increasing sustainable and regenerative production and equitable access to adequate food and nutrition for all’ (UNFCCC, 2023b: 2).

This target did not distinguish the particular needs and contribution of smaller-scale actors. It also lacks specificity and measurability, and leaves open several definitional questions (e.g. how climate-resilient, sustainable or regenerative food and agriculture is to be defined or measured). However, it went further in recognising the food system as a whole, including both supply- and demand-side elements.

Turning to the main UN forum addressing food systems, the UNFSS, the UN Secretary-General’s Chair Summary and Statement of Action placed climate change – both adaptation and mitigation – as a defining challenge for food system transformation. It also recognised the potential for food system transformation to help in ‘realizing the objectives of other international agreements, including ... the Paris Agreement’ (UN, 2021). The Secretary-General’s report on UNFSS+2 identified that, of 101 countries voluntarily reporting progress on transforming their food systems, over half recognised the urgency of adapting to climate change, though only a few indicated that they were mainstreaming food systems in their climate strategies (e.g. NDCs), and/or climate action in their food system transformation pathways (UN, 2023a). While small-scale (agri)food systems receive limited explicit mention in either the UNFSS or UNFSS+2 summaries, the vital importance of inclusion and equity is well recognised, especially in the action area *Advance Equitable Livelihoods, Decent Work, and Empowered Communities*.

1.3 Report overview

Section 2 of the paper focuses in further on small-scale agrifood systems and considers the status of climate-resilient development in these systems – including the interlinked aspects of adaptation, sustainable development and mitigation. Section 3 explores how action on consistency makers could be instrumental in increasing the quality and quantity of finance for climate-resilient development in small-scale agrifood systems, making a link to a set of specific investment priorities. Section 4 considers challenges and opportunities for implementing Article 2.1(c) in this context. Section 5 concludes the paper by proposing some priorities for climate and food

system fora to better leverage Article 2.1(c) in support of climate-resilient development in small-scale agrifood systems.

This report is an initial, largely conceptual mapping, albeit illustrated with tangible examples where possible. Larger-scale actors or components of the agrifood system are not the main focus, though they can play a role in supporting (or undermining) climate-resilient development for small-scale agrifood system actors. We do not attempt to quantify current or potential financing flows to climate-resilient development in small-scale agrifood systems.⁶ We offer a broad menu of relevant actions and options to make better use of consistency makers, but not a country-specific blueprint – which will require much deeper country-level research.

6 For an estimate of finance flows to food systems in general see Díaz-Bonilla (2023b).

2 What is the status of climate-resilient development in small-scale agrifood systems?

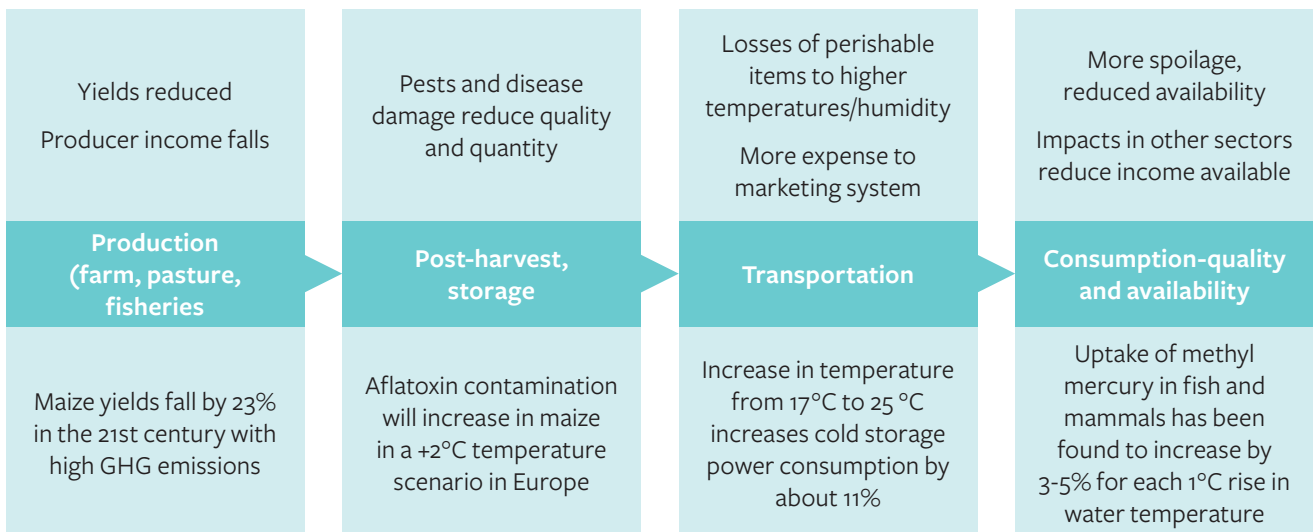
2.1 Observed and future climate change impacts on small-scale agrifood systems

The IPCC 6th Assessment Report found that climate change is already stressing agrifood systems, with negative consequences for livelihoods, food security and nutrition. Agricultural productivity growth has slowed in mid and low latitudes, due to human-induced climate change. Warming has also negatively impacted food quality and harvest stability by altering the distribution, growing area suitability and timing of key biological events, such as flowering and insect emergence. Additionally, climate impacts can affect other parts of the supply chain, from post-harvest to food consumption, including activities

like storage and transportation (Figure 2). Impacts along the value chain can alter the four dimensions of food security: availability, access, utilisation and stability (Bezner Kerr *et al.*, 2022).

Although the observed impacts of climate change affect everyone, some groups are more vulnerable than others, due to intersecting factors including gender, location (including options for mobility or the presence of other risks such as conflict), livelihood strategy and income (Bezner Kerr *et al.*, 2022; Ayanlade *et al.*, 2023). It is expected that small-scale producers and the agri-MSMEs that serve them will face some of the most severe impacts of climate change but have limited capacity to address them (Chiriack, Vishnumolakala and Rosane, 2023).

Figure 2 Examples of impacts of climate change on the agrifood system



Source: Bezner Kerr *et al.* (2022)

Future impacts of climate change on agrifood systems will often differ from current observable impacts, including on crops, cropping systems and livelihoods. For example, future climate scenarios indicate significant changes in patterns of suitable areas for crops currently sustaining smallholder farmers across Central America. Some crops will gain suitability at higher altitudes but suffer significant reductions in total suitable areas, while others are expected to gain suitability over new areas currently dominated by higher-value crops. These impacts of climate change have implications for the design of adaptation strategies and responses across farming systems (Ovalle-Rivera *et al.*, 2015; Bouroncle *et al.*, 2017; Hannah *et al.*, 2017).

2.2 Climate-resilient development in small-scale agrifood systems

Climate-resilient development seeks to achieve and reconcile adaptation, mitigation and sustainable development for all. Small-scale agrifood systems present a range of challenges and opportunities for each of these objectives, and particular tradeoffs, as well as synergies, can arise between them.

Adaptation

Adaptation actions in small-scale agrifood systems could include autonomous adaptation, which refers to behavioural changes by individuals and households in response to climate change impacts (Petzold *et al.*, 2023). The IPCC identifies varying levels of evidence and confidence in the ability of autonomous adaptation actions to address climate risks and different SDGs. There are also barriers to using several of the options, for example socioeconomic and political limitations to increasing the uptake of climate-resilient crops

and breeds (Bezner Kerr *et al.*, 2022). Overall, climate-resilient and low-emission irrigation systems and infrastructure, agroecology and agroforestry practices, better soil management practices and crop diversification are particularly relevant to small-scale farming (IFAD, 2023b).

Beyond autonomous adaptation, there are an increasing number of government-led planned adaptation initiatives, such as coordination mechanisms, disaster and emergency planning and social safety net interventions. However, as for autonomous adaptation, government-led adaptation support has often been insufficient due to disenabling policies and an inability to mobilise the finance needed (FAO, 2023a).

To enable the adoption of adaptation options across the most vulnerable farmers, there is a need for increased access to finance, strengthened institutional capacities and networks, policies and regulations, value-chain development, subsidy reform and enhanced access to markets (Bezner Kerr *et al.*, 2022). As explored below, these priorities overlap considerably with the required actions to make finance flows consistent with climate-resilient development in small-scale agrifood systems.

In addition to adaptation by and for food producers, adaptation actions are needed along the value chain. Elsewhere in the supply chain, responses that have high adaptation potential include improved food service infrastructure, improved efficiency and sustainability of food processing and retail, reduced food loss and urban and peri-urban agriculture. Demand management actions that have high adaptation potential include dietary changes, reduced food waste, packaging reductions and transparency of food chains and external costs (Rosenzweig *et al.*, 2020).

Sustainable development

Small-scale agrifood systems are important for sustainable development as they can provide opportunities and address challenges around poverty reduction and income equality, food security and nutrition, and environmental sustainability. For instance, the role of small-scale production systems in providing employment, creating and distributing wealth and stimulating economic growth mean they can play a central role in poverty reduction (Arulingam *et al.*, 2022). In low- and middle-income countries, small-scale farmers are the foundation of food supply and play a significant role in ensuring national food and nutrition security (IFAD, 2021b). When compared to large, mono-crop plantations, small-scale farmers are more likely to save and protect biodiversity and employ regenerative and nature-based techniques (Lario, 2024).

Mitigation

Small-scale agriculture in developing countries, including agriculture and land use change, is estimated to contribute to approximately 5% of global emissions (Vermeulen and Wollenberg, 2017). The per capita CO₂ emissions from smallholder production and consumption are very low, but small farms sometimes produce agricultural crops and livestock that have relatively high greenhouse gas (GHG) intensities (Cohn *et al.*, 2017). Therefore, despite these small contributions, putting small-scale agrifood systems on pathways to low emissions still presents an opportunity to mitigate climate change (Chiriack, Vishnumolakala and Rosane, 2023). Across the food system, there are several actions with high emissions reduction potential. On the supply side, these include improved crop management responses such as increased soil organic matter content, precision fertilizer management and the use of alternatives to synthetic fertilizers, agroforestry, changes in cropping area, land rehabilitation

and perennial farming (Rosenzweig *et al.*, 2020; Calvo, 2022). Reducing food loss while tackling food waste is a key mitigation intervention on the demand side (Rosenzweig *et al.*, 2020).

Key synergies and trade-offs in pursuing climate-resilient development in small-scale agrifood systems

There are multiple adaptation, mitigation and development objectives and actions that can be taken to pursue synergies across them and co-benefits between each. Adaptation, mitigation and sustainable development interventions can be implemented in portfolio packages rather than as discrete options (Schipper *et al.*, 2022). This holds true for food systems, as adaptation and mitigation can be simultaneously achieved with a portfolio of practices, which can sometimes have additional sustainable development co-benefits to livelihoods, biodiversity and others. For example, crop management practices can increase crop production (thereby increasing food supply) (SDG 2), but can also increase resilience and reduce greenhouse gas emissions (SDG 13) from agricultural systems (Rosenzweig *et al.*, 2020; Trisos *et al.*, 2022). Different types of irrigation including drip and small-scale irrigation can contribute to increased agricultural productivity (SDG 2), improve income (SDG 1) and food security (SDG 2) and increase resilience to long-term changes in precipitation (SDG 13) (Bjornlund, Bjornlund and Van Rooyen, 2020; Trisos *et al.*, 2022).

However, while there are synergies in mitigation, adaptation and sustainable development, there are also trade-offs. Some adaptation strategies could exacerbate existing poverty and vulnerability or introduce new inequalities, and can undermine greenhouse gas mitigation and broader development goals. Mitigation efforts can be maladaptive, and some sustainable development

efforts can increase vulnerability in certain segments of the population (Schipper *et al.*, 2022). For example, at a local level agroforestry in cocoa and coffee production can support food and fuel provision, sequester carbon and enhance a range of ecosystem services. However, depending on how it is implemented, it may also result in higher water demand, disrupt hydrology, reduce biodiversity and reduce resilience of certain plants (Schipper *et al.*, 2022). At a national level, participatory modelling suggests that several countries in Southern and Eastern Africa may need to expand agricultural areas if nutrition security is to be secured by mid-century, a process

that has often historically resulted in increased greenhouse gas emissions (Jennings *et al.*, 2024).

Potential synergies and trade-offs thus need to be identified and managed. Those synergies and trade-offs will vary just as stakeholders in small-scale agrifood systems vary (Box 3). The spatial and temporal boundaries over which synergies and trade-offs arise will also need to be carefully considered – for example by addressing climate-resilient development of smallholder farmers in the context of the wider social and ecological systems supporting their well-being (Fedele *et al.*, 2019).

Box 3 Acknowledging variation in small-scale agrifood systems

Even for small-scale producers farming under 2ha, or MSMEs with less than 250 employees and \$5 million turnover (as per our definition), there is huge variation – as there is among poor food consumers who rely on these producers and intermediaries. In the context of climate-resilient development, this variability also means significant variations in adaptation, sustainable development and mitigation capabilities and opportunities.

On the production side, a range of typologies attempt to capture this variability, including by farm system, livelihood strategy or socio-ecological system (Malek *et al.*, 2019; Stringer *et al.*, 2020).

Although this paper necessarily simplifies the diversity of actors within small-scale agrifood systems, in practice differentiated approaches are key to close the significant gaps in adaptation.

- Recent assessments for Northern Central America (USDA and CATIE, 2023) led to differentiated approaches targeting a typology of farming systems. Smallholder farmers growing staple grains, livestock, coffee and vegetables suffered high impacts from multiple climate extremes and showed lowest adaptive capacity. Proposed adaptation approaches focused on long-term investments in building on-farm natural capital for improved fertility and water availability, synergies with food security and nutrition needs and stronger reliance on government assistance.
- Vegetable farming systems tended to be more integrated to markets, enabling a role for agri-business in providing services for adaptation practices combined with value-chain development.
- Agroforestry systems (coffee, cocoa, cardamom and fruit trees) showed lower climate impacts and higher adaptive capacity. Integration into complex value chains offered potential opportunities for adaptation responses through access to finance and payment for providing ecosystem services benefits.

Source: CATIE

2.3 Climate finance to small-scale agrifood systems

Although ‘dedicated’ climate finance is not the sole focus of Article 2.1(c), as understood in this paper it plays an instrumental role in climate-resilient development in small-scale agrifood systems.

The share of adaptation finance in ‘dedicated’ climate finance remains small, and in some years has tended to decrease. For example, the Organisation for Economic Co-operation and Development (OECD) estimated in 2023 that adaptation finance declined in 2021, reaching \$24.6 billion out of \$89.6 billion provided and mobilised by developed countries for climate action in developing countries (OECD, 2023b). Considering increasing adaptation needs, UNEP estimates put the adaptation finance gap at \$194–366 billion per year (UNEP, 2023). While adaptation finance has not increased fast enough to meet adaptation needs, development finance has not always taken adaptation

outcomes into consideration. This has led to existing development pathways not advancing the goal of climate-resilient development (Schipper *et al.*, 2022).

In 2019/20, climate finance to small-scale agrifood systems was \$5.53 billion, representing 0.8% of total climate finance across all sectors (Chiriak, Vishnumolakala and Rosane, 2023). The unmet general financing needs of smallholder farmers have been estimated at \$170 billion annually, and for agri-SMEs the estimate is \$106 billion (ISF Advisors, 2022). Climate finance to agrifood systems in general is at least seven times lower than estimated needs, based on proxy but conservative estimates (Chiriak, Vishnumolakala and Rosane, 2023). The amounts to small-scale agrifood systems in 2019/20 represented a 44% decrease in climate finance to the sector compared to 2017/18 (Chiriak, Vishnumolakala and Rosane, 2023). Despite the decline in finance the sources, instruments, objectives and geographic distribution of finance remained similar.

3 How can implementing Article 2.1(c) support small-scale agrifood systems?

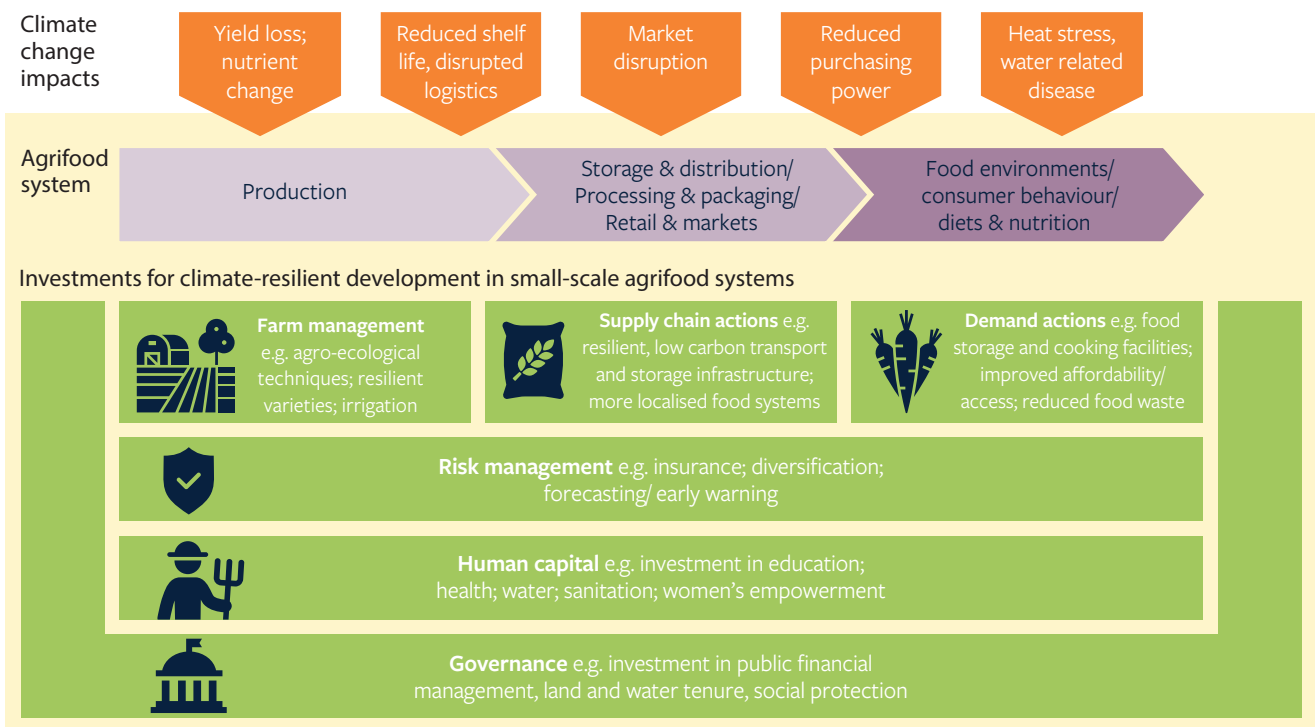
3.1 Linking Article 2.1(c) implementation to more and better investments for small-scale agrifood systems

Actions to improve ‘consistency’ of finance flows will only enhance climate-resilient development if they result in greater quantity and quality of investments by and for small-scale food system actors, and/or deter investments that work against their interests. We therefore need to draw a link to the investments that are to be financed and the finance flows that are at stake.

The framing that we use to make these links is as follows:

- The framing builds from the ground up, first outlining **six categories of investment** for climate-resilient development (Figure 3, shown in green). These are broad groupings of items of expenditure by and for small-scale food system actors. Evidence linking investments to adaptation and wider climate-resilient development outcomes is limited, including in agrifood systems (Bezner Kerr *et al.*, 2022).

Figure 3 Investment categories for climate-resilient development in small-scale agrifood systems



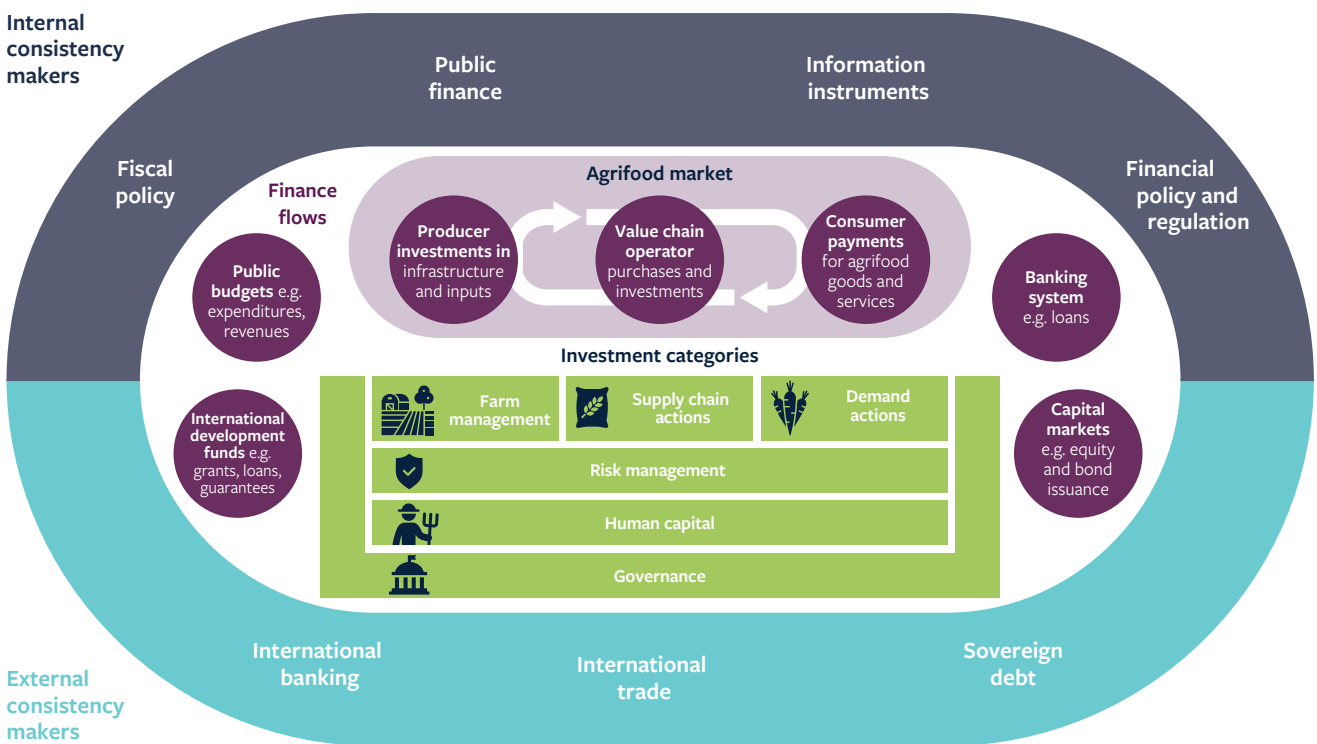
- Nonetheless, we build on recent typologies of responses for adaptation and wider climate-resilient development in this context (see Appendix 1) to focus on the following investment categories:
 - **Governance** for financial and natural resources, including investment in enhanced public financial management; strengthened social protection systems; and reform of land and water rights in the interests of small-scale food system actors.
 - **Human capital**, including investments for agricultural research and extension services as well as wider climate education, and health services and public health infrastructure – requiring a gender transformative approach to address the significant gender inequalities affecting women and girls in small-scale food systems.
 - **Risk management**, which includes investment in climate information services and financial mechanisms to mitigate the impacts of climate risks, such as weather index insurance and complementary measures to enhance access for small-scale actors.
 - **Farm management**, for example the inputs, infrastructure and knowledge for crop and livestock diversification, or enhanced soil and water management.
 - **Supply chain actions** including infrastructure, information and capacity to enhance climate resilience along the supply chain (i.e., for storage, distribution, processing, packaging and marketing of food and related products) – potentially requiring significant public investment (e.g. roads, energy grids) and transboundary coordination where supply chains cross borders.
 - **Demand actions**, for example investments to improve the availability of, physical access to and affordability of sustainably produced, healthy food, and to promote diets that can support health and thus resilience at an individual and population level.
 - The investment categories are aligned **across the agrifood system** which is divided into three broad elements, shown in purple in the figure (HLPE, 2017; ADB, 2021). Three investment categories are most relevant to specific stages of the value chain: farm management investments at the production stage; other supply-chain actions in the mid-chain (storage to markets); and demand actions, which influence consumption, diet and nutrition. Three further, foundational investment categories are relevant across the continuum: risk management, human capital and governance.
 - Collectively, these investments address **the range of climate risks** arising along the food system value chain, shown in orange (Bezner Kerr *et al.*, 2022; Owino *et al.*, 2022). While our focus is on climate risks in line with the emphasis on Article 2.1(c), these should be seen within a wider frame of risks to, and resilience of, agrifood systems (FAO, 2021).
- Action to enhance consistency makers will not affect investments directly, but by mobilising and directing the finance that flows towards these investments. The investment categories are therefore situated as destinations for a range of finance flows upon which the consistency makers can act (shown in green in Figure 4):
- **Finance flows:** Building on Díaz-Bonilla (2023b), a distinction is made between finance flows that originate from actors ‘within’ small-scale agrifood markets, namely purchases and investments by producers, other value chain operators and consumers (top) and between flows outside this market, namely international development funds, public budgets, the banking

system and capital markets.⁷ While the greater challenge is arguably to scale up flows into small-scale agrifood systems (i.e. increasing the magnitude of flows), there is also a need to redirect finance flows away from activities that are harmful to small-scale agrifood system stakeholders. Examples include deployment of public budgets or supply chain finance from value chain operators which incentivises smallholder farmers to over-use inputs,

overexploit resources, or select crops that are unsustainable or will not be resilient to a changing climate.

- **Consistency makers:** Shown as the encompassing layer, including both the primarily national layer of internal consistency makers most relevant to domestic flows, and external consistency makers that primarily operate at the international level to shape cross-border financial flows.

Figure 4 Linking consistency makers to investments for climate-resilient development in small-scale agrifood systems



Figures 3 and 4 are offered as organising devices for the analysis, rather than a conclusive typology. The terms and categories and their relationships are not presented as definitive or comprehensive. The food system transformation agenda has, like climate action, seen a growing emphasis on

high-level factors that direct, shape and mobilise finance flows – for example the Food Finance Architecture advanced for UNFSS (World Bank, FOLU and IFPRI, 2021; Díaz-Bonilla, 2023c; 2023a; Hamirani, 2023). Many complementary, and potentially supplementary, ideas have been

7 See Díaz-Bonilla (2023b) for further explanation and a preliminary estimate of the magnitude of each flow to food systems in general (not specific to small-scale agrifood systems).

explored in support of other agrifood system transformation objectives besides climate change mitigation or adaptation – such as eliminating hunger and achieving SDG2. We build on this work but recognise that there will be scope to further improve complementarity and strategic alliances as the food and climate communities engage to mobilise and shift finance flows.

3.2 Consistency makers for small-scale agrifood systems

This section considers internal and external consistency makers relevant to mobilising, and shifting and improving the use and management of, finance flows to support climate-resilient development in small-scale agrifood systems. Often, consistency makers can mobilise, shift and improve finance towards combinations of investment categories as well as individual categories.

Before this discussion, there are three important caveats. First, in contrast to measures to make finance flows consistent with low emissions, there is not always a clear ‘bad’ which finance flows need to be shifted away from. For example, many current agricultural support measures (e.g. subsidies and tax breaks) target a range of social, economic and environmental benefits. Supporting smallholder livelihoods and food security is already a central policy goal of such measures in numerous countries, including Brazil and India (Bellmann, 2019). Thus, efforts to improve consistency of finance flows with climate-resilient development involve significant trade-offs (Díaz-Bonilla, 2023b).

Second, as with all internal consistency makers, reforms are more likely to benefit small-scale actors that are already financially included. In the case of agricultural support, the poorest and most vulnerable may not be able to access government support or tax advantages – for example

undocumented migrants or children providing farm labour or working in food supply chains.

Third, it should be noted that reforming or adjusting consistency makers may not be cost-neutral and could itself require investment – often in governance, for example to include climate-resilient development objectives in planning processes, adjust delivery systems and improve monitoring and reporting (Damania *et al.*, 2023; OECD, 2023a).

Internal consistency makers

Fiscal policy

Fiscal policy can redirect finance away from activities and investments that have negative impacts on the climate-resilient development of agrifood systems and promote unhealthy diets, and into those that can have positive impacts. Well-targeted public budgets and taxation can also be used to crowd in additional finance for agrifood system transformation from private actors, including smallholder farmers and MSMEs.

A key set of fiscal policy measures to promote transformation involve the reform of agricultural support programmes, including subsidies and tax breaks. Currently, subsidies based on input use and output constitute the majority of support provided to the agriculture sector in many countries. These measures can worsen climate vulnerabilities and increase GHG emissions, can have negative impacts on the environment by increasing water pollution and deforestation, can reduce efficiency, and in many cases are regressive, with poorer households receiving a smaller share of the support (Damania *et al.*, 2023).

Despite the noted complexities of reforming agricultural support, there are some generally applicable priorities. In many countries, redirecting part of current support away from encouraging

unsustainable production and consumption, and into the provision of public goods, could enhance human capital, support farm management, strengthen the supply chain and build demand for more sustainable and nutritious food. Such public goods include research and development, infrastructure and biosecurity services (OECD, 2023a). Nature-based solutions – which can constitute public goods at a landscape scale – can also be promoted through public subsidies, for example where these are offered as payment for ecosystem services (Bellmann, 2019). Climate, health and sustainability considerations can be deliberately prioritised in the redesign of such public goods, to further align public finance with climate-resilient development objectives (FAO, 2023a).

Another reform with broadly applicable benefits is to redirect production support away from payments for specific purposes, such as input or production payments, towards broader social assistance measures. This can safeguard social equity, and may be more politically feasible. General cash transfers have been shown to have positive impacts on food security, poverty and human capital (HLPE, 2012). When directed to farmers, they can still serve to stimulate investments in more resilient agriculture (Box 4) and potentially livelihood diversification.

A further relevant option is to use subsidies to encourage uptake of risk management tools (Box 5). For example, premium subsidies can be key to enhance uptake of agricultural insurance amongst poorer producers and MSMEs, but need to be carefully targeted, include an exit strategy and be embedded in broader risk management strategies and programmes (IFAD, 2021a).

Besides their tax and subsidy regimes, governments can also wield influence through their procurement choices and processes. Small-scale producers and MSME processors can struggle to meet the quality, safety, volume and other requirements of many government food procurement regimes. However, redesign is possible, including using school meal programmes to engage and benefit small-scale actors on both supply and demand sides of the agrifood system (Fanzo and Miachon, 2023).

It should be noted that adjusting fiscal policy measures such as subsidies will itself require investments in governance, for example to include climate-resilient development objectives in the planning process, enhance public financial management and adjust delivery systems (HLPE, 2012; Damania *et al.*, 2023; OECD, 2023a).

Box 4 Shifting subsidies towards general cash transfers: supporting technology adoption by farmers in Uttar Pradesh, India

India's system of payments to farmers has historically sought to incentivise production, with a shift in emphasis to promote the economic well-being of farmers with the National Policy for Farmers in 2007. The introduction of the Pradhan Mantri Kisan Samman Nidhi (PM-KISAN) scheme in 2018 marked a move to payments not requiring production (OECD, 2023a). PM-KISAN provides farmers with minimum income support of around \$75 a year. Although the cash transfer is general and does not have to be spent on agricultural investments, it is intended to help farmers purchase inputs. Evidence from Uttar Pradesh suggests it has succeeded in this objective, stimulating adoption of modern cultivars, in combination with farm science centres (Varshney *et al.*, 2020).

Box 5 Accelerating penetration of crop insurance through premium subsidies in Peru

In Peru, a significant majority of government support to agriculture has focused on producers, rather than general services. Nonetheless, the government has been experimenting with producer support which is not directly coupled to production (OECD, 2019). The Ministry for the Development of Agriculture and Irrigation has progressively extended the SAC (Seguro Agrícola Catastrófico), a crop insurance product with 100% premium subsidy. SAC covered 950,000 farms largely engaged in subsistence farming in the 2020–2021 season. Since its establishment in 2009, SAC has increased competition among administering insurance companies and requires them to provide financial education to smallholder farmers on risk management (Zegarra Aguilar, 2021).

Public finance

Many MSMEs that are part of agrifood system value chains, particularly those working on input provision and farming, have limited access to finance because they fall within the so-called ‘missing middle’ between commercial banks and microfinance institutions (IFAD, 2015). Public development banks (PDBs) and related institutions like credit guarantee agencies have a key role in serving this ‘missing middle’. They already account for the majority of formal financing for agriculture (Houngbo, 2021). However, they could play a greater role in shifting finance for agrifood system transformation including as part of Article 2.1(c) implementation.

PDBs can play a role in the direct provision of finance to goods and services that support climate-resilient development throughout the agrifood system’s value chain, including for small-scale actors. Examples include climate-resilient rural roads or irrigation infrastructure (Kenney, Visser and Zysman, 2021; van Gaal *et al.*, 2023).

However, in considering Article 2.1(c) consistency makers, equally if not more important to the finance that PDBs can provide are the signals they can send to the financial market. PDBs can go beyond direct provision of finance through lending to redistribute risks and shape the economy towards specific goals (Mazzucato, 2023).

PDBs active in the agrifood system have often focused on increasing productivity and production and have lacked approaches to include different aspects of climate-resilient development in their financing, including considerations of social equity, financial inclusion and environmental sustainability (Viganò, 2021; Raina and Nair, 2023). To fulfil expanded roles in pursuit of such goals, PDBs will themselves need investment to strengthen governance and capacity (Domke, 2022). Challenges that led to the erosion and sometimes elimination of PDBs from agrifood financing in the 1980s and 1990s reflected widespread problems in ensuring effective incentives and controls (Díaz-Bonilla, 2015).

Box 6 Strengthening resilient small-scale production: BNDES in Brazil's Northeast region

The Brazilian development bank BNDES launched a programme in 2023 to offer financing for integrated agroforestry projects in Sertão, a semi-arid region in the country's Northeast. The financing will be channelled to four states, which in turn provide funds and technical assistance to member-based rural organisations. Funds can be used for actions that intensify small-scale production in ways that enhance climate resilience and sequester carbon, including via ecosystem-based solutions and improved water management. Significant external financial support has been needed, however, with over half of the investment package of \$273 million coming from loans and grants from IFAD and the Green Climate Fund. The Brazilian government provides a guarantee (IFAD, 2023a).

Through their policies, strategies and lending, PDBs can play an important role in demonstrating a thorough, practically applicable approach to climate risk management, which commercial banks can emulate. They can also implement approaches that help to reach small-scale segments of the market, for example by using value chain bundling approaches to provide insurance along with other services (Viganò, 2021).

PDBs can also deploy their finance and establish partnerships to crowd in new investors, share risks and rewards and encourage responsible risk-

taking to support small-scale agrifood actors, for example for the adoption of new techniques and varieties adapted to a changing climate. They can invest in local financial institutions to reach SMEs. And they can act as intermediaries by aggregating smaller adaptation and resilience-building projects (Finance in Common, 2021; van Gaal *et al.*, 2023). Indeed, aggregation can be essential to leverage finance from other investors. Products such as green and sustainable bonds can serve this purpose as long as due consideration is given to debt sustainability (Box 7).

Box 7 Mexico's FIRA: attracting private investment through green and resilience bonds and aggregating small loans in agriculture value chains

The Mexican development finance institution Fideicomisos Instituidos en Relación con la Agricultura (FIRA) has issued several green bonds to finance or refinance its loan portfolio. This portfolio includes many small loans issued to producers and other value chain participants for agriculture system assets including precision irrigation and renewable energy (Qadir and Pillay, 2021). In 2023, FIRA issued Latin America's first green resilience bond of over \$150 million, to promote investment in projects to improve the productivity and resilience of food producers and other value chain participants. The new bond is compatible with Mexico's Sustainable Taxonomy, which may serve to increase credibility for investors (Galeana, 2023).

Financial policies and regulations

While PDBs can collaborate with and influence private financial institutions and corporations, governments have other, more direct regulatory tools. Central banks play an important role, shaping financial policies and regulations that channel more finance to increase the resilience of small-scale agrifood systems. They can adjust Capital Adequacy Ratios or Statutory Minimum Reserves to better reflect the risks associated with lending to small-scale actors in the agrifood value chain. They can also consider introducing new facilities or credit lines to commercial financial institutions for on-lending to small-scale agrifood system stakeholders at lower interest rates (Ahiaku and Milder, 2022).

The establishment of schemes such as Priority Sector Lending in India (Box 8) can help channel more finance to SMEs by relaxing lending norms and setting targets for lending (FAO, 2022). Such ‘developmental central bank’ policies

would constitute a revival of an important component of agrifood financing in the 1960s and 1970s. However, robust monitoring is needed (at potentially higher cost) to verify that loan proceeds are used for initiatives that support climate-resilient development. Renewal of such developmental mandates and approaches would also need to be undertaken carefully alongside other central banking mandates, above all control of inflation through monetary policy (Díaz Bonilla, 2023a).

Financial regulators can also encourage private investors by providing data, benchmarks and guidelines to make it easier to identify investment opportunities that support adaptation and prevent maladaptation – for example through green taxonomies (Box 9). Similarly, they can support the development of standardised monitoring, reporting and verification systems for impact reporting and promote transparency and accountability (Casey *et al.*, 2021; Cosgrove *et al.*, 2023).

Box 8 India’s central bank-mandated lending: contributing to financial inclusion and enhanced climate resilience of small-scale farmers

The Reserve Bank of India, the country’s central bank, implements a Priority Sector Lending policy stipulating that nearly a fifth of net adjusted bank credit should be delivered to agriculture. Moreover, almost half of agriculture net adjusted credit should go to small and marginal farmers. In turn, the need to deliver subsidised credit has driven increased bank account coverage – spurred by Priority Sector Lending and other policies such as direct cash transfer of subsidies. Increased financial inclusion in rural areas has increased households’ access to the liquidity needed to buffer against climate shocks (Chhatre *et al.*, 2023).

Box 9 Small-scale farming in Colombia's green taxonomy

Colombia adopted a green taxonomy at national level in April 2022. Green taxonomies typically classify activities that contribute to environmental targets, providing a consistent and credible framework for investors. Colombia's green taxonomy has a tiered classification of land-use improvement activities, at three levels of cost and complexity. This brings into its scope activities with climate and other environmental benefits carried out by the country's large number of small farmers (World Bank, 2022).

Information instruments

Implementing Article 2.1(c) of the Paris Agreement, and transforming agrifood systems in ways that do not leave small-scale actors behind, requires clear policy direction. This may be more general and less binding than regulation. For example, the establishment of clear national objectives – in strategies and policies for climate, finance, agriculture or other sectors – can send an 'information signal' to all actors involved in agrifood systems about the types of investments that are needed. Small-scale actors' contribution to climate-resilient development and their needs can be explicitly recognised in such documents, though policy coordination beyond existing sectoral silos is often a challenge (FOLU, 2019; Díaz-Bonilla *et al.*, 2023; Neufeld *et al.*, 2023). Such policies can also enshrine a commitment to equity and justice as important principles for implementation (UN, 2020).

Green taxonomies can also act as important information instruments to guide market participants. Increasingly a mandatory part of financial regulation, as discussed above, taxonomies can also be introduced for voluntary compliance. Taxonomies can serve to redirect public expenditure, including by guiding the repurposing

of agriculture subsidies and support. They can also guide disclosure of climate risk and labelling of financial products by private financial institutions and corporations (Chiriak, Vishnumolakala and Rosane, 2023; UNEP, 2023).

On the demand side of the food system, relevant information instruments include voluntary standards for marketing, such as labelling and certification schemes (FAO, 2023c). These can shape consumer choice and behaviour to increase the market for food that is produced under standards of sustainability, include climate and equity considerations, and encourage better diets to support healthier, more resilient populations. For example, raising consumer awareness is identified as a key enabler of uptake of more climate-resilient, nutritious and locally sourced alternatives to imported wheat in several countries in Africa (Noort *et al.*, 2022); see also Box 10.

It is important to stress that voluntary standards and certifications have shown mixed results (FAO, 2023c). This points to the need for a mix of policy measures leading to sustained and rapid changes throughout supply chains (TEEB, 2018; Arulingam *et al.*, 2022). Nonetheless, voluntary schemes can play a part.

Box 10 Farmer-directed product labelling in Nepal

In Nepal, the National Farmers' Group Federation has worked with smallholder farmers to develop a participatory guarantee system (PGS), a shared label that provides consumers with quality assurance. The PGS scheme includes organic certification, allowing producers to earn higher prices for their products, though it also encourages broader resilient and sustainable production practices, including enhanced water management and soil restoration. Norms and values underpinning the scheme are determined through a multi-stakeholder participatory mechanism at the local level, called Kishan Chautari (Farmers Dialogue Forum), comprising producer groups, service providers and government agencies (Andaya et al., 2022).

External consistency makers

There is increasing recognition that the current international financial architecture has not been able to mobilise finance to address climate change and support sustainable development at the scale and in the formats that are needed (Martens, 2023; PRI, 2023; UN, 2023b).

While rich countries' failure to meet commitments around climate and development finance are certainly part of the problem, the climate crisis, and current food price crisis, are driving a much broader set of issues up the agenda. These include higher borrowing costs for climate-vulnerable developing countries, varying access to liquidity in times of crisis, under-investment in global public goods including climate action and the exacerbation of existing volatility in financial markets (UN, 2023b). This limits the ability of developing countries to successfully implement internal consistency makers and therefore will negatively impact their ability to implement Article 2.1(c) of the Paris Agreement.

The successful implementation of internal consistency makers that can channel finance for the transformation of the small-scale agrifood system can be facilitated or constrained by external consistency makers linked to the international financial architecture and related regimes such as for trade (Robertson et al., 2023). In this section, we focus on three external consistency makers for which direct links to agrifood systems can be made, namely the regimes for sovereign debt, agrifood trade and international public banking. We do not aim to be comprehensive but rather provide clear examples of where external consistency makers will also need to be reformed.⁸

Sovereign debt regimes

Rising and unsustainable levels of debt limit the ability of countries to invest in climate and development across sectors. International debt is a necessary means for financing many investments for climate-resilient development, including in small-scale agrifood. However, the size and speed of growth of public debt stocks,

⁸ Other examples of external consistency makers include the international systems for cooperation on and governance of taxation, monetary policy, credit ratings, competition law, securities trading, insurance markets and corporate investment (Robertson et al., 2023). Not all of these external consistency makers will necessarily have a direct impact on small-scale agrifood systems, though all can affect countries' ability to successfully implement internal consistency makers across different sectors and systems.

as well as regimes for repayment, are seen as increasingly problematic for many developing countries (UNCTAD, 2023). Debt regimes can negatively affect fiscal space and increase exposure to shocks, constraining government budgets and making it harder to utilise internal consistency makers.

Unsustainable food systems contribute to the debt crisis currently confronting many countries. Boom-bust cycles in agrifood commodity markets have historically increased many developing countries' debt-to-GDP ratios, while also undermining small-scale producers. For example, the food price spike of 2007–2008 was followed by a downturn that reduced many countries' export earnings and increased their debt-to-GDP ratios, while flooding the market with cheap imported grain that undercut small farmers. Meanwhile, on the demand side of the food system, unsustainable debt levels are also likely to result in rising rates of poverty and hunger, as developing countries that are highly dependent on agrifood and agricultural input imports see their ability to pay for these reduced (IPES-Food, 2023).

Tackling this issue will require a global response, based on a more comprehensive multilateral debt restructuring process (Robertson *et al.*, 2023). It will be key for this effort to recognise the links between countries' indebtedness and unsustainable agrifood systems, which are themselves a cause of indebtedness in developing countries (IPES-Food, 2023).

Considering that the climate crisis will only exacerbate the existing debt situation, proposals like debt suspension clauses (DSCs), which suspend repayments for a period in case of natural disasters, are gaining momentum (Landers and Aboneaaj, 2023); (Box 11). Other proposals to tackle debt while simultaneously contributing to climate and environmental objectives, like debt-for-nature and debt-for-climate swaps, have the potential to contribute to developing countries' debt sustainability (Federal Ministry for Economic Cooperation and Development, 2023; Whiting, 2023). However, their relative merit is still unclear and these solutions are unlikely to be a substitute for a comprehensive debt restructuring (Chamon *et al.*, 2022; Mustapha, Talbot and Gascoigne, 2023).

Box 11 Grenada's pause clause: reprofiling debt service obligations in the event of climate-driven disasters

Grenada negotiated disaster pause clauses as part of its 2015 debt restructuring, whereby debt service could be reprofiled following a hurricane and some other types of disasters, for up to a year. The trigger is parametric, i.e. a set amount is paid based on the magnitude of an event (whereas traditional indemnity insurance pays based on the magnitude of losses). The triggers are independently verified by the Caribbean Catastrophe Risk Insurance Facility, with which Grenada already participates in a regional sovereign risk pool – essentially a weather index-based insurance policy. While these mechanisms form part of a wider, layered disaster risk financing architecture in Grenada, certain elements, including catastrophe insurance for agriculture, need further development. Disaster debt pause clauses more generally face complications including around triggers, legal and reputational risks and pricing (IMF, 2022; Mustapha, Talbot and Gascoigne, 2023).

Agrifood trade regimes

The links between climate change and agrifood trade are multifaceted. Fair and open agrifood trade can be an important adaptation strategy, while climate change impacts and policy responses to them can alter countries' comparative advantage in agrifood exports (Bozzola, Lamonaca and Santeramo, 2023). The recent COP28 Declaration on Sustainable Agriculture, Resilient Food Systems, and Climate Action highlighted the importance of a 'non-discriminatory, open, fair, inclusive, equitable and transparent multilateral trading system' for achieving its intended climate, food security and development objectives. Current trade rules and the influence of powerful trade and retail organisations downstream in global value chains can disadvantage small-scale producers, incentivise unsustainable production and consumption patterns, and fail to take into consideration food security concerns (CFS, 2013; Thompson *et al.*, 2023; WTO, 2023).

Many distortions to agrifood trade affecting food prices are linked to export subsidies and other support measures in higher-income countries that are coupled to production (Díaz-Bonilla and Callaway, 2018; ZEF & FAO, 2020). Reform of agriculture support programmes in these countries to decouple payments from production could bring benefits for lower-income countries, and their poor food consumers and small-scale producers (Díaz-Bonilla and Callaway, 2018). Such reforms can also have positive effects in higher-income country markets, including for climate, food security, poverty alleviation, equality and sustainable growth (Anderson, 2018; Vos, Martin and Resnick, 2022).

However, in practice, reform to better account for the intricate relationship between trade, food prices and security, climate and other social and environmental considerations has been

challenging. The current direction of travel has tended to offer more sticks than carrots for small-scale food system actors. For example, the Regulation on Deforestation-free products introduced by the EU has been seen as detrimental to small-scale farmers in affected value chains. There are already signs that coffee companies are scaling back purchases from Ethiopian smallholders because of costs and difficulties in assuring compliance (Angel and Kurniawati, 2023). However, proponents of the Regulation argue that, in the long term, smallholders may benefit from increased transparency and the ability to cut out brokers (Lieb, 2024).

On the demand side, the policy of public stockholding for food security purposes provides a second illustration of the complexities of reform. Under such policies, countries seek to purchase, stockpile and distribute food to people in need, including at times of climate-induced food insecurity. The practice is restricted under World Trade Organization (WTO) rules, since it can be trade-distorting where prices paid to farmers are fixed by governments. The suitability of public stockholding to address food security goals without adequate complementary mechanisms, such as social safety nets, has been questioned (Díaz-Bonilla, 2017). Nonetheless, some countries argue that a WTO-negotiated solution is needed, given growing food security challenges exacerbated by climate change (Hopewell and Margulis, 2023).

International public banking

Studies have repeatedly shown the need for increased provision of long-term, concessional funds to support developing countries to adapt to a changing climate and to pursue sustainable development (OECD, 2023b; UNEP, 2023). Multilateral development banks (MDBs) and other international financial institutions (IFIs), notably

the International Monetary Fund (IMF), are well-placed to play an expanded role in providing such finance, but numerous reforms are required, including improving MDBs' lending terms, increasing their lending in local currency, using MDB finance in blended finance approaches to mobilise additional private finance, and adjusting capital adequacy frameworks to unlock more financial resources (Kotzias *et al.*, 2023; Martens, 2023; PRI, 2023; Robertson *et al.*, 2023; UN, 2023b). A clear mandate and vision for MDBs to finance global public goods, such as climate change adaptation and mitigation, is also a necessary underpinning change (Kotzias *et al.*, 2023).

Such reforms, even if achieved across the board, will not necessarily mobilise or shift finance into climate-resilient development in small-scale agrifood systems, or increase the ability of partner countries to prioritise the issue. MDB finance for adaptation in crop and food production in countries with a high prevalence of small-scale producers has in fact decreased in recent years (Chiriac *et al.*, 2023).

Proposals have also been made to direct an increased share of MDB/IFI resources, expanded through more general reforms, towards agrifood objectives including food security. An example is to use a proportion of Special Drawing Rights issued by the IMF to capitalise a fund guaranteeing zero hunger bonds issued by developing countries, to finance their efforts to achieve SDG2 and end hunger (Díaz-Bonilla, 2023b).

As important as the finance provided by MDBs and IFIs, and arguably more important in terms of 'consistency making', are the lending policies, accompanying advice and range of instruments

offered to countries. Many MDBs are undertaking efforts towards 'Paris Alignment',⁹ and there is scope for this process to pay special attention to small-scale agrifood systems. The World Bank, for example, has issued sectoral guidance on applying its Paris Alignment Assessment Methods in agriculture and food. This covers many operations that would be relevant to small-scale agrifood systems, though climate-resilient development for small-scale actors specifically is not explicitly prioritised (World Bank, 2023a).

MDBs and the IMF are also seeking to drive adaptation and mitigation by requiring reform measures to access finance. This will need to be implemented carefully to avoid a new wave of 'green conditionality' that imposes additional costs or incentivises maladaptive policies. For example the IMF, in its operational guidance note for the new Resilience and Sustainability Facility (RSF), includes the example of increased use of drip irrigation as an expected outcome of RSF-required reforms (IMF, 2023). This can be one ingredient for managing agricultural water demand in a changing climate, but can also increase total water consumption due to rebound effects (Perry and Grafton, 2022). To avoid such maladaptive results, accompanying policy dialogue and technical support would also need to emphasise the key ingredient, namely a system for measuring and enforcing water entitlements and consumption across users, including by multiple small farmers.

In terms of types of support offered, MDBs can collaborate more with in-country commercial and public development banks in financing small-scale agrifood systems. Areas of collaboration include the provision of technical assistance, supporting

9 Multiple MDBs announced a vision to align all financial flows with the objectives of the Paris Agreement in 2017 and reiterated this vision in the 2018 MDB joint declaration on Paris Alignment.

domestic banks in establishing partnerships for blended finance, investing in data to better address climate-related and other risks and facilitating access to international climate finance (van Gaal *et al.*, 2023). MDBs could also support domestic insurance markets to extend coverage to small-scale actors across agrifood value

chains. Interventions could include support for aggregation to address the high costs of serving many smaller-scale customers, and investments in the enabling environment, including climate services and regional risk-sharing models that provide a layer of protection between countries (Box 12).

Box 12 Stimulating the market for agrifood climate risk insurance in Africa

The African Development Bank is establishing the Africa Climate Risk Insurance Facility for Adaptation to develop the agrifood climate risk insurance market across Africa. Currently only about 3% of African smallholder producers are covered by insurance protection, while climate change caused over \$8.5 billion in economic damage across the continent in 2022 alone. The Facility aims to raise \$1 billion in concessional capital and grants, to be used to stimulate the development of insurance solutions through both primary insurers, and reinsurers operating at the continental and international level, as well as uptake by agrifood value chain operators (AfDB, 2023).

4 Challenges and opportunities for implementing Article 2.1(c) in small-scale agrifood systems

4.1 Key challenges

The implementation of Article 2.1(c) using internal and external consistency makers is likely to face numerous challenges. Many such challenges are structural and reflect the political economy of agrifood systems, including power imbalances between smaller- and larger-scale actors. Several are likely to be made worse by climate change (Vos, Martin and Resnick, 2022; Díaz-Bonilla *et al.*, 2023; Neufeld *et al.*, 2023).

There are three key challenges. First, limited meaningful representation and voice of small-scale stakeholders in the membership, decision-making, and governance of national and international institutions (Vos, Martin and Resnick, 2022). Second, unequal access to natural and financial capital; with access often mediated by political and economic power and shaped by investments of larger stakeholders in the agrifood system or from other sectors (Arulingam *et al.*, 2022; Neufeld *et al.*, 2023). Third, a set of structural challenges relating to the economics of agrifood systems and food system markets, which are characterised by an inherent volatility that affects food production and food availability (World Bank, FOLU, and IFPRI, 2021). Costs and risks for private investors in small-scale agrifood systems are elevated by both the small size and the diversity of small-scale actors (Díaz-Bonilla, 2023b).

All of these existing challenges for small-scale agrifood actors can be compounded by other inequalities related to gender, age

and marginalisation (Arulingam *et al.*, 2022; Neufeld *et al.*, 2023)

Interventions that aim to include small-scale actors in agrifood systems' value chains without addressing such underlying challenges have only achieved small gains. Many have reproduced prior inequalities, for example by concentrating most of the benefits on better-off actors (Guarin *et al.*, 2022). Interventions that fail to consider structural issues, or do not see small-scale actors as agents of change instead of passive recipients of support, have also shown limited positive results (Vargas Falla, Brink and Boyd, 2024). Models for agrifood climate resilience that rely on top-down approaches to innovation, and develop new technologies that are completely outside of the socioeconomic realities of small-scale actors, have seen limited adoption (Meah and Sharma, 2021).

Climate change and responses to it interact with these political economy challenges. Responses to climate change that do not account for the specific vulnerabilities and conditions of stakeholders can result in maladaptation, in turn increasing vulnerability, pollution and stress on land and water resources (FAO, 2022c; Birkmann *et al.*, 2023). Climate change is also likely to increase the volatility of food system markets and further increase the costs and risks for private investors (World Bank, FOLU and IFPRI, 2021).

The successful transformation of food systems in a changing climate will therefore require solutions that focus on the particular challenges of small-

scale actors and address the constraints they face to the realisation of equity and inclusiveness (UN, 2020). Transformation will also depend on solutions being rights-based, including the right to food, tenure rights and right to food sovereignty (UN, 2018). Other principles with broad buy-in, such as those under the banner of locally led adaptation, can also provide useful guiderails (IIED, n.d.).

It will also be important to recognise the diversity of small-scale agrifood system actors, and the locations and countries in which they reside. There are no one-size-fits-all solutions that can drive transformation for climate-resilient development; therefore, exploring different pathways by which actors can achieve their development and climate goals is essential (Schipper *et al.*, 2022: 18).

4.2 Windows of opportunity

Internal consistency makers

Governments

Governments have a key role to play in implementing Article 2.1(c) to drive the transformation of small-scale agrifood systems. As Parties to the Paris Agreement, they also have responsibility for setting national objectives and implementing actions in line with the goals of the Agreement. Through public policies, they can increase overall finance flowing to these systems and climate-resilient development investments within them. They can redirect public finance and incentivise private finance away from activities harmful to climate-resilient development.

Ministries with responsibility for agrifood and climate change can improve the coherence of policy and implementation, as can those with responsibility for adjacent areas such as social protection and health. Ministries of finance, central banks and the government's executive branch and

heads of government offices are also essential in this respect. Initiatives like the Coalition of Finance Ministers for Climate Action show how climate change can be aligned with and mainstreamed into macroeconomic policy, fiscal planning and budgeting and investment management, as well as engaging in the formulation of climate policies and NDCs (Coalition of Finance Ministers for Climate Action, no date).

Developing coherent and coordinated public policies, linked to a participatory process of goal setting, is key. This process will need to balance potential trade-offs at the level of the entire food system and consider the distribution of costs and benefits across the system (IPCC, 2019; Meah and Sharma, 2021; Neufeld *et al.*, 2023). The participation of marginalised small-scale food system actors in the co-development of policies can lead to actions that are more equitable and reduce the risks of maladaptation (Pörtner *et al.*, 2022). Attention to climate justice, including recognitional, procedural and distributional justice (Shaw *et al.*, 2022) can also lead to more successful implementation by increasing political buy-in, as the example of the PM-KISAN scheme in India shows (Box 4).

Corporations, private financial institutions and investors

Larger-scale private stakeholders, including corporations and financial institutions, are both influenced by and can participate in shaping consistency makers. Many are themselves seeking to align with the goals of the Paris Agreement. In doing so, they can support the implementation of Article 2.1(c) by integrating adaptation considerations in their operations, and promoting adaptation and resilience across their value chains and assets under management. Large-scale private sector entities can also provide finance, infrastructure and services to enhance

resilience and promote adaptation for smaller-scale agrifood actors (IPCC, 2022). However, risks of greenwashing and the potential incoherence introduced by a voluntary and fragmented approach to tackling the climate crisis have been flagged as concerns (UNFCCC, 2021), and voluntary standards and certifications have shown mixed results (TEEB, 2018; FAO, 2023c). The increasingly important role of the private sector in research and development has led to this research being tailored to the needs of larger stakeholders (Arulingam *et al.*, 2022).

The interplay between private and public entities, and the finance they bring, will be a key concern. The widespread desire to see scaled private finance in both climate and agrifood domains has catalysed renewed interest in blending – i.e. the use of public and philanthropic finance to attract private capital in developing countries (BFT, 2020; Randall, 2022). Scaling these opportunities will require bridging a public–private culture gap, and assertive public governance (Lankes, 2021). Peru’s subsidy for crop insurance, the SAC, shows that it can be necessary to continuously evolve publicly subsidised schemes to drive private competition and innovation (Box 5). Alternative corporate governance models may be required that challenge the primacy of shareholders in favour of stakeholder governance, such as the benefit corporation model (Kirst *et al.*, 2021). Moving away from voluntary initiatives and establishing clear responsibilities for large corporations, in the context of adaptation and resilience building, will also be important. Examples like the European Union’s Corporate Sustainability Due Diligence Directive, which seeks to establish obligations for large companies regarding adverse impacts on human rights and the environment due to their operations, including their value chains, are increasingly gaining traction and could be built on (European Council, 2023; Zerk, 2024).

Small-scale stakeholders in the agrifood system

The role of small-scale stakeholders in their own development and resilience-building will be fundamental, not as recipients of support but as agents of change (CFS, 2013; Díaz-Bonilla *et al.*, 2023). Building their agency and ensuring their meaningful participation in decision-making should be a core part of the implementation of Article 2.1(c). For example, strengthening collective action, for instance through producer or consumer organisations, across the food system can ensure effective participation of small-scale stakeholders in decision-making (Neufeld *et al.*, 2023). The participatory guarantee system for product labelling in Nepal shows that such organisations can play an instrumental role in shaping consistency makers for Article 2.1(c) (Box 10).

One review suggests that many interventions towards greater inclusion of smallholder producers in modern agrifood value chains have been undermined by flawed assumptions and implementation. Greater attention is needed to how informal markets and SMEs integrate small-scale producers, and to improve the supporting architecture of social protection and public goods (Guarin *et al.*, 2022). Ensuring greater access to and control over resources, particularly for women, including by promoting policies, frameworks and institutions that protect their rights, can help tackle inequalities (Díaz-Bonilla *et al.*, 2023)

External consistency makers

Making finance consistent with climate-resilient development in small-scale agrifood systems will require international, cross-sector collaboration (Robertson *et al.*, 2023).

As in the case of internal consistency makers, inclusive and coordinated governance of external

consistency makers will be key (Robertson *et al.*, 2023). Multilateral initiatives will be crucial, and many of the reforms required, including related to governance, have been highlighted in initiatives such as the Bridgetown Initiative, the Summit for a New Global Financing Pact and preparations towards the UN Summit of the Future.

While many of these initiatives place special emphasis on climate change, fewer have moved to the operational level of specific sectors or systems – including the agrifood system and smaller-scale elements of that system. Enhancing this operational relevance requires coordination across financial, climate and food systems. Efforts to improve external consistency makers cannot be isolated to one of these agendas, and ways must be found to ensure they complement rather than contradict one another.

In addition to multilateral solutions, countries with greater economic power and systemic relevance will need to assess whether their unilateral

actions – in trade or taxation, for example – place constraints on the implementation of internal consistency makers by others. Similarly countries adversely affected by current external consistency makers can themselves generate solutions – as shown for example by Kenya and Colombia’s championing of a new Global Expert Review on Debt, Nature, and Climate (COP28 UAE Presidency, 2023).

In tackling both internal and external consistency makers, each constituency may have its preferred language and framings. Several constituencies are already proposing, and in some cases taking, actions that correspond to the spirit of Article 2.1(c), while using different terms.¹⁰ Some international investors may see stronger relevance if Article 2.1(c) is framed in terms of ‘just transition’ or ‘climate risk management’. Similarly, some governments may be more motivated if it can be shown that Article 2.1(c)-type actions support food security or structural economic transformation.

¹⁰ As noted, this paper does not advance a definitive framework and acknowledges that terms like ‘consistency maker’ may suit a climate constituency, while food system and financial reform consistencies have their own terms and typologies for similar concepts.

5 What next?

Actions to drive progress, within and between the fora and processes charged with addressing address climate, food and finance, are needed in three areas.

First, the **climate negotiations and related country-level processes** must pay closer attention to equitable implementation of Article 2.1(c) in critical sectors and systems, such as small-scale agrifood. UNFCCC deliberations on Article 2.1(c) will need to address concerns raised by developing countries, and increase their focus on those countries' priorities, if they are to make progress. This includes rebalancing to emphasise adaptation and climate-resilient development, given a focus so far on mitigation. Identifying the role of Article 2.1(c) in promoting climate-resilient development in small-scale agrifood systems contributes to this rebalancing, given how crucial these systems are for developing countries' climate and development objectives. The dialogues and related work around Article 2.1(c) will therefore need to move away from more general consideration of finance flows and towards greater sectoral detail, and consider the links between finance flows and impacts in the real economy.

At the country level, implementation of Article 2.1(c) for climate-resilient development in small-scale agrifood systems does not, as shown by the examples in this paper, need to wait for detailed guidance negotiated at the UNFCCC. Where there is demand from country stakeholders, internal consistency makers (and information on where they are constrained by external consistency makers) can be included more systematically in UNFCCC-mandated planning processes. Key strategies include NDCs, NAPs and Long-Term Strategies for Low Carbon

and Climate Resilient Development (LTSS). While over a third of updated NDCs mention a role for smallholder farmers, other small-scale food system considerations rarely appear (Bakhtary, Tucker and Fleckenstein, 2022). NAPs could also be strengthened to quantify food system adaptation needs from the bottom up.

Second, **food system fora, including follow-ups to the UN Food System Summit**, can amplify the importance of Article 2.1(c), harnessing it as a legally binding international treaty agreement, to drive finance flows towards resilient, sustainable food system transformation. Similar to the emphasis on NDCs and NAPs above, national agrifood system initiatives such as implementation of food systems national pathways and SDG Voluntary National Reviews (for SDG2 and related goals) can be used to generate evidence and demand for action on consistency makers, in support of small-scale food systems.

Finally, climate and food system communities should continue to pursue **greater collaboration when seeking to motivate those with the greatest influence over the financial system**. This includes the more explicitly 'developmental', agenda-setting dialogues on reforming the international financial architecture, such as the 2024 Summit of the Future. It also includes many international fora in which substantive issues are deliberated and decided, including finance ministers' meetings of the G20, the OECD, the WTO and the Bank of International Settlements (Robertson *et al.*, 2023). At the national level, coordination between line ministries responsible for climate and agrifood is vital when seeking to engage with ministries of finance and central banks.

Successful coordination of the climate, food and finance agendas should be measured in the overall increase in finance flowing towards climate-resilient development, across the board and for small-scale agrifood systems. This increase can come either from greater mobilisation of public or

private flows, or from the shifting of finance from activities that are not aligned with the objectives of these agendas. Otherwise, there is a danger that the levels of finance flowing towards these systems will remain low, while trying to achieve an increasing number of different objectives.

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Appendix 1 Categorising investments for climate-resilient development in small-scale agrifood systems

The six categories of investment introduced in Section 3.1 draw on several recent typologies (Chiriac, Naran and Falconer, 2020; Rosenzweig et al., 2020; Owino et al., 2022; Fanzo and Miachon, 2023). The categorisation is intended to facilitate discussion of the different investments that are needed for climate-resilient development in small-scale agrifood systems, but is not definitive and there is substantial overlap and interplay between categories. Investments in each category rarely work in isolation. For example, managing climate risks for small-scale agrifood system actors could require not only ‘core’ risk management investments, such as developing adaptation and risk management plans and strengthening climate services and access to insurance, but also extension programmes to enhance human capital and stronger governance to improve access to financial services and social protection (FAO and Red Cross Red Crescent Climate Centre, 2019; FAO, 2021; Ferdinand *et al.*, 2021).

More specific investment types within each category include, but are not limited to, the following:

Governance

Well-functioning agrifood systems depend on financial and natural resources and, in turn, their effective governance.

In terms of financial governance, the task of ensuring finance flows towards climate-resilient development objectives – whether through fiscal policy, financial regulation, public financial institutions or information campaigns – is rarely cost-neutral. For example, fiscal policy reforms to influence the agrifood value chain rest on public financial management (PFM) capacity (World Bank, 2011; CABRI, 2019) PFM capacity and frameworks can be ‘greened’ to address the multiple and potentially competing objectives implied by climate-resilient development, but this will require investment in capacity and data systems across and beyond the budget cycle (Gonguet *et al.*, 2021).

Social protection programmes, including both essential services and social transfers, similarly require significant investment in their governance.¹¹ Such programmes represent a key risk management tool for small-scale agrifood system actors, particularly in the context of climate change. Governance costs include integrating social protection programmes alongside other services and institutionalising them at different levels of the public sector to ensure sustainability (HLPE, 2012). Investments may also be needed to ensure social protection systems themselves integrate climate change adaptation in their design, to ensure they continue to support the climate resilience of vulnerable populations (TEEB, 2018).

11 Social protection is a facet of fiscal policy to the extent that it often represents a significant expenditure item, depends on tax revenue and can support the broader social contract underpinning public finances.

In terms of natural resource governance, land tenure and land use regimes are important factors affecting the sustainability and equitability of food systems (TEEB, 2018). The IPCC has highlighted land tenure security as key to strengthening the land system transition for climate-resilient development (Schipper et al., 2022). Access to land and security of tenure, underpinned by strong governance and property rights systems, are essential for the ability of smallholders to achieve a decent standard of living (UN, 2010). They increase investment and productivity and improve resource management (UNDP, 2022), and in some cases improve access to certain types of credit (Petracco and Pender, 2009; Raoul, 2021). Similarly, water tenure has an impact on investments, poverty, food insecurity and environmental degradation (FAO, 2022a), and is of particular importance in a context of increased water demand and changing water availability (Heck, Blumstein and Johnson, 2022). While tenure reform can be undertaken at lower cost (Holden, 2020), its complexity and potential for inequitable outcomes require ongoing investments in governance, not least to administer a tenure system once it is reformed.

Human capital

Investments in human capital in the agrifood system have been shown to have strong returns, in terms of agricultural productivity and poverty reduction and other less easily measurable benefits, including resilience, innovation, quality of life, empowerment and gender awareness (Davis et al., 2021). In general, investments in human capital in small-scale agrifood systems will have greater impact where a gender transformative approach is adopted (Schipper et al., 2022). Such an approach can contribute to climate-resilient development by enabling women to transition from non-paid and unrecognised work within

agrifood systems to paid and higher-value jobs, and amplify their agency and decision-making in household and community settings.

A first set of core human capital investments comprises agricultural research and extension. These can be delivered using formal or informal methods, including through the agricultural education systems, extension programmes, certifications and on-the-job training. Investments in the broader education system also underpin human capital, from primary schooling upwards, providing a foundation of knowledge and skills that small-scale agrifood actors will require in order to adapt to a changing climate – whether directly in agrifood employment or in pursuing diversification opportunities where existing agrifood activities become unviable over broad areas. Scientific climate education can build climate literacy, but there is also evidence that building on indigenous knowledge can support climate resilience, for example in maintaining agrobiodiversity (Bezner Kerr et al., 2022). There is an overlap with governance investments – for example, to tackle the norms and structures that perpetuate child labour in agriculture, and keep children out of school. Child labour may appear increasingly expedient to families in small-scale farming following certain climate shocks (FAO, 2023b).

Digital tools can enable education and extension services to reach more people, at lower cost, though care should be taken to overcome inequalities in access to digital tools and connectivity (Davis et al., 2021). Irrespective of the delivery channel, content can be strengthened to include climate resilience considerations, including risk management approaches.

Additionally, human capital requires investments in health, including not only capacity and infrastructure for healthcare but also adjacent

areas such as nutrition and supporting services like water, sanitation and hygiene (WASH). All of these can be made more resilient to climate change, potentially at greater near-term cost but with longer-term savings (World Bank, 2023b).

Climate services and risk management

As a response to climate change, investments in climate services can address climate risks in agrifood, particularly on the supply side (FAO, 2022b). These services can address constraints to adaptation linked to limited climate-related information and data, and therefore improve decision-making (FAO, 2023a). Climate services have been limited for small-scale stakeholders across value chains globally (FAO, 2022b). The introduction of digital climate services could offer an opportunity to reach small-scale actors and build their resilience, when bundled with other services such as financing and insurance (Ferdinand *et al.*, 2021).

There remains a need to ensure financial as well as digital inclusion (for example, access to a bank account, which may or may not be digitally enabled), which can entail additional investment costs in their own right. Where small-scale actors can access financial services, weather-related insurance could also contribute to adaptation and climate-resilient development goals. There is evidence that index-based insurance, for example, improves livelihoods, reduces losses of productive assets and enhances recovery (Loboguerrero *et al.*, 2017). Most agricultural insurance programmes are partially subsidised in low- and middle-income countries and their coverage is often limited, especially for poorer households (Greatrex *et al.*, 2015; Carter, Janzen and Stoeffler, 2017; Hazell, Jaeger and Hausberger, 2021). The establishment of adequate legal and regulatory environments to direct insurers towards small-scale customers;

the provision of well-designed subsidies; and the promotion of innovation, amongst other public interventions, could increase the uptake and positive impacts of insurance. However, for greatest effect insurance will often need to be integrated into broader risk management programmes and coupled with access to credit, savings and technology (Greatrex *et al.*, 2015; Hellin *et al.*, 2017).

Farm management

Smallholder producers are the bedrock of many food systems and investments to support climate-resilient development at this level have received considerable research and policy attention, including under approaches such as climate-smart agriculture (Lipper *et al.*, 2017).

At the production level, these include investments in crop and livestock diversification, soil management, nutrient and pest control management and water access and management (HLPE, 2017; Chiriac, Naran and Falconer, 2020). They can also include the safeguarding of agricultural heritage and traditional food systems, and the protection of wild foods and local agrobiodiversity (HLPE, 2017).

Investments in this category include inputs, grey and green infrastructure and technology, but will also include meeting the costs of shifting farm and livestock management approaches, such as adjusting planting dates, irrigation scheduling, fertiliser and pest management, crop diversification and agroforestry (thus overlapping with human capital investments) (Rosenzweig *et al.*, 2020).

Supply chain actions

Further along the supply side of the food value chain, the infrastructure and capacity for food storage, distribution systems, processing, packaging, retail and markets are all potentially threatened by climate change (Owino et al., 2022). In many contexts it is not just existing infrastructure that needs to be made more resilient; there is also an infrastructure deficit that must be filled to support climate-resilient development – including lack of roads, warehousing and preservation, processing and marketing capacity, especially for nutrient-dense perishable foods like fresh fruits and vegetables. Such inadequacies increase in a hotter and more flood-prone world. Beyond infrastructure, there may be a need to enhance availability of and access to information such as market pricing, and strengthen institutions and organisations that can address the power asymmetries excluding small-scale food system actors – particularly women – from equal participation in food supply chains (HLPE, 2017; Fanzo and Miachon, 2023).

Investments on the supply side can also support climate resilience for poor food consumers, not least by mitigating the impact of climate shocks on food prices, but also by safeguarding nutrition. For storage and distribution, investments in the reduction of food losses and waste and the preservation of food safety are key. During processing and packaging, investments in policies,

practices and technologies that protect or add nutritional value are also necessary (HLPE, 2017; Fanzo and Miachon, 2023).

Demand-side actions

On the demand side, investments that improve availability, physical access and affordability of sustainably produced, healthy food are required, accompanied by promotion of healthier and more sustainable diets (HLPE, 2017). Many of these require adjustment to the ‘food environment’, i.e. the physical, economic and sociocultural surroundings in which food is acquired, prepared and eaten. Investments to ‘nudge’ consumers are relevant, though greater attention has been paid to such tools in higher-income contexts, and for health more than for environmental or climate benefits (Fanzo and Miachon, 2023). For poor consumers, the household and other local infrastructure and services to store and prepare nutritious food in a changing climate are also relevant, including cooking and refrigeration.

Investments on the demand side frequently link to those on the supply side. One area where these supply-demand links are being explored in the context of climate change is school meals, which are currently provided to around half a billion children a day, including in many lower-income countries. Opportunities exist to enhance nutritious diets for children while driving lower-emission and more resilient production and preparation of food through public procurement choices (Pastorino et al., 2023).