

Additional information submitted to the UK Parliamentary International Development Committee inquiry into SDG2 from the CGIAR – Consultative Group on International Agricultural Research

The CGIAR was honoured to be invited to give evidence to the IDC inquiry into SDG2. We welcome submitting additional information for the questions asked, that could not be shared given the time limits of the discussions.

Is there enough evidence?

- Changing climate dynamics are already bringing major challenges for food security systems. Existing evidence is in many areas failing to capture adequately nor accurately, the new “normal” and not so normal conditions that are now occurring. Whilst climate change models go some way to give evidence of trends on near-future and later conditions, we need insight on the occurring and likely impacts on food, land and water systems that impact SDG2 delivery.
- The Intergovernmental Panel on Climate Change (IPCC) Working Group 1 report of 2021 highlighted the primary way climate change is felt through the disruptions to the water cycle – more floods, droughts, changes in the onset and finish of rains that determine the growing cycle – and the subsequent impacts on biotic systems - ecosystems and food systems, and the need for new evidence in these particular areas is acute for tackling SDG2. The new emerging conditions will have implications for food production, distribution and processing going forward.
- The new evidence base needs to also consider demographic, economic, and geopolitical developments because of the often-unforeseen challenges that arise from these disruptors. Approaches to modeling and data analytics need to be agile and responsive as circumstances develop. The CGIAR is able to support this going forward building on Foresight modeling linked to more specialist water and crop modeling.

Challenges agrarian communities in low-income countries face regarding climate change and the possible role of agroecology

- Smallholder farmers (600 million smallholder farmers – less than 2ha)) produce a **third of the global food supply**
- They are **on the frontlines** and the **most vulnerable to climate change** - change rainfall, changing temperature at key stages of the crop cycle can bring changes in the yields or total loss of crops. And yet **this sector is one of the most underfunded** from climate finance.
- Developments in crops (both currently cultivated and under-utilized) and agronomic practices are needed to respond to changing conditions in weather/soil/water/biodiversity to avoid failures in yields that will undermine gains in tackling hunger of the last decades.
- We need research and innovation that has a clear line of sight to investment/scaling to deliver the access to these developments.
- Disaster risk mitigation from extremes such as droughts and floods are particularly important because of the scale of damage resulting and the impact on the ability of smallholder farmers to bounce back quickly. In part this requires development in **seeds/crops, livestock, aquatic food systems that are more resilient to drought, flood and**

heat but it is also about climate finance, insurance and other financial risk mitigation measures

An example of recent UK Government support for climate adaptation in critical food systems is the FCDO funded [BlueTech Super-Highway with CGIAR's World Fish centre](#). (45M GBP)

- small-scale fishers are particularly exposed to climate change. Hundreds of millions of people around the world rely on artisanal fisheries to live. Artisanal fishing is critically important for food security, jobs, income, nutrition, sustainable livelihoods, and poverty alleviation as well. Artisanal fisheries are the predominant form of fisheries in "tropical developing countries".
- Climate change impacts fisheries through:
 - a. warming waters, changing ocean currents and decreases in ocean oxygen are shifting the location and productivity of fish stocks (leading to reductions in catch, fishers catching species they've never seen before, and conflict across borders)
 - b. ocean acidification (combined with marine heat waves) is impacting especially coral reef fisheries and shellfish production
 - c. rising sea level is leading to salinization and saltwater intrusion in coastal areas and is also increasing storm surge levels
 - d. changing rainfall patterns are causing both flooding and drought events, leading to damage in aquaculture ponds and shortening fishing and fish farming seasons
- The Asia-Africa BlueTech Superhighway, supported through the UK's Climate and Ocean Adaptation and Sustainable Transition (COAST) program under the umbrella Blue Planet Fund (BPF), will focus on enabling communities to adapt to and mitigate against climate change as well as responsibly and sustainably manage marine and coastal nature and resources resulting in improved food and nutritional security as well as employment and income opportunities.

Agroecology and Nature Positive Agrifood System developments.

- Evidence shows that nature-positive solutions can also **benefit the livelihoods of smallholder farmers**, who are disproportionately hit by climate and food crises.
- Production should promote a shift towards **nature-positive agricultural practices such as agroecology, agroforestry, regenerative agriculture, and diversification**.
- These solutions can complement monoculture to enhance diversity in producing calories and **nutrients for human consumption** while also supporting **healthier soils and waterways**.
- But to fully embrace agrobiodiversity, we need to consider **eating a broader range of the thousands of edible resources available** compared to **the few dozen that we eat today**
- And gain a better understanding about how increasing **crop varietal diversity** can decrease risk from pests and diseases **itself often exacerbated by climate change**.
- Agroecology is emerging, or perhaps more accurately to say re-emerging as one area for further development/testing and the generation of an evidence base. It encompasses the science, practice, and social aspects of working towards transformation to sustainable and equitable food systems, from production through to consumption.
- Agroecology emphasizes use of biodiversity, natural processes, and recycling to reduce impact of environmentally disruptive inputs and increase resilience of farming systems, the co-creation of knowledge with local stakeholders to ensure culturally relevant innovation, and responsible and inclusive governance of natural resources.
- Agroecology recognizes the importance of agency for all actors involved in food systems and of connecting producers and consumers to ensure that methods of production and processing match consumer expectations.

The CGIAR is testing both on the farm solutions through Agroecology Living Lab Landscapes, but also developing insight on the enabling environments for scaling in each context. The work is taking in eight different countries/value chains as given in Figure 1.

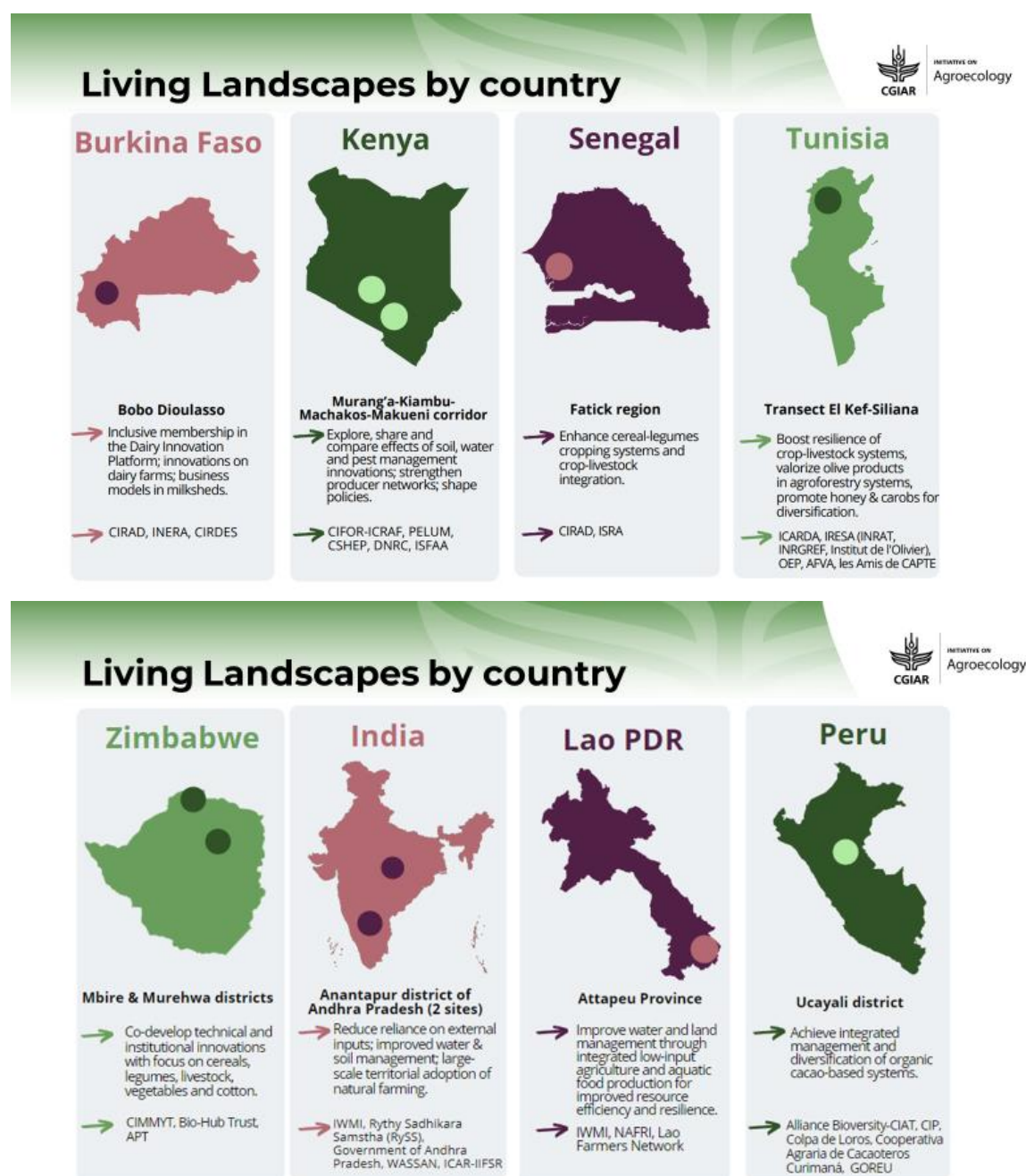


Figure 1 The eight living lab landscapes being developing under the CGIAR's Agroecology Initiatives

Gender and SDG2

The role of women in agriculture is critical but supported too little with consequences for all within a community. At the CGIAR the [Gender Impact Platform](#) conducts and amplifies research on the critical area of gender and food, land, and water systems. These are just a few of the gender evidence explainers that might be relevant for this inquiry:

- [Exploring how climate change interacts with gender and inequity to affect nutrition](#)
- [How nutrition-sensitive agriculture programs can realize both nutrition and gender equality goals](#)
- [Increasing women's involvement in the workforce can improve dietary diversity](#)
- [More women's agency on farms relates to better household nutrition—but differs by the type of production system](#)

We welcome the IDC drawing on the relevant evidence they need from this platform.

Research programmes for nutritional outcomes and climate resilience

- The CGIAR conducts research to identify major diets and nutrition challenges facing vulnerable populations around the world. In the current research portfolio, we are identifying diet-related challenges faced by vulnerable youth populations in diverse settings in Africa (Ethiopia, Tanzania, Benin), South Asia (Bangladesh, India, Nepal, Sri Lanka) and Southeast Asia (Vietnam and Philippines).
- Examples of CGIAR research impact the **adoption of nutrition rich beans** across many territories including Rwanda where between 2004 and 2011 there was a **20% increase in the production of improved varieties**; Rwandan farmers saw **an increase of over 50% in their yields**.
- Drought—and heat—tolerant, **orange-fleshed sweet potatoes** are an effective tool for tackling vitamin A deficiency in children and women. **6.2 million households in 16 countries across Africa have access to this crop**, thanks to the work of CGIAR and our partners.
- **On-going biofortification work in the CGIAR breeding programs includes:**
 - a. Increasing provitamin A content in crop varieties (cereals, legumes, clonal crops including roots and tuber crops) to much higher levels to off-set losses due to degradation and processing.
 - b. Boosting yield potential of biofortified crop varieties/hybrids to supply attractive products to farmers and seed companies.
 - c. Mainstreaming provitamin A and zinc into stress resilient maize as follows:
 Incorporate high provitamin A and Zinc into yellow drought and heat stress tolerant maize lines (parents of hybrids)
 Incorporate high provitamin A and Zinc into yellow Striga resistant maize lines.
 Incorporate high Zinc into white multiple stress tolerant maize lines.
- With a focus on **consumers**, food environments and markets, CGIAR research on diets and nutrition is shedding light on the **critical final mile** to achieve the ambitious diet and nutrition goals set by CGIAR.
- CGIAR research is identifying solutions and innovations around shaping preferences of consumers in vulnerable settings, in re-shaping food environments to be healthier, and addressing the massive challenge of affordable – and sustainable – healthy diets.
- For some foods, such as fruits and vegetables where the challenges of availability, accessibility, affordability, and preferences collide, we take an end-to-end approach to understand how to strengthen production, distribution, marketing and uptake/consumption through diverse collaborative efforts.
- Last, but not least, given the importance of enabling environments to move the diets and nutrition agenda forward, our research includes robust policy analyses as well as engagement with leading national research and policy partners in focus countries.

UK Government's funding of CGIAR research

- FCDO's direct funding of the CGIAR:
2021 – GBP27M
2022 – GBP22m
2023 - GBP25M
2024 – GBP30M
- Plus, about GBP50M in bilateral UK grants to individual centers as of March 2024, covering grants signed in 2021-2024.
- Minister Mitchell pledged GBP100M at Climate COP28 going forward. Seven priority areas were highlighted, improved crops, science collaboration with UK, protect nature, climate action, biodiversity, nutrition, biofortification,
- UK-CGIAR announced at London Food summit additional support GBP6M (with 50% to UK research centres). The first set of projects are:

1. Crop genetic improvement for future climate resilience	Leveraging UK genetic innovations to accelerate CGIAR-NARS crop breeding (CropAdvance)	Leveraging genetic innovations for accelerated breeding of climate resilient and nutritious crops	John Innes Centre Norwich Institute of Sustainable Development	ICARDA CIMMYT
2. Confronting climate change and environmental degradation through sustainable crop management and climate-smart agronomic practices	Sustainable and resilient agriculture: Supporting decision-making with evidence in small farming contexts (SuRFar)	Innovation in sustainability, policy, adaptation and resilience in Kenya (iSPARK)	University of Leeds	Alliance of Bioversity International and CIAT (ABC) International Institute of Tropical Agriculture (IITA)
3. Enhancing nutrition	Increasing the intake of fruit and vegetables as components of healthier diets among marginalized populations	Fruits and Vegetables for Sustainable Healthy Diets (FRESH) - Expanded Network with UK Partners (FRESH-EN UP)	The London School of Hygiene and Tropical Medicine	International Food Policy Research Institute (IFPRI)
4. Livestock improvement, animal health, nutrition and welfare	Feeds/forages and emissions. Pilot testing feeds/forage species and their impact on emissions	Defining new phenotypes for forage and crop by-products improvement based on rumen function and greenhouse gas emissions	Scotland's Rural College (SRUC)	The International Livestock Research Institute (ILRI)

- Independent assessments have shown that returns for every \$1 invested in CGIAR agricultural research and development, to smallholder farmers, vulnerable communities, and ecosystems¹.
- From this study Fuglie and Echeverria calculated that world-wide, 440 million hectares of harvested area are today used to grow modern crop varieties and ~50%, or 220 million hectare, are based on CGIAR crop-technologies. The cumulated economic welfare gains of these CGIAR improvements, since the 60's, are estimated at \$1.334 billion, through higher yields and higher incomes and today still account for \$47 billion in economic benefits for developing countries annually. This is not counting for indirect economic benefits such as improved health, economic growth, etc.
- Since ODA has been the principal funding source for CGIAR research and for NARS (not considered in the 220 million), any reduction in ODA will impact the surface of harvested area, number of smallholders and number of low-income consumers benefiting from modern varieties.



¹ <https://www.sciencedirect.com/science/article/pii/S0305750X23003418>