



## CLIMATE ACTION NETWORK

### Submission: Koronivia Joint Work on Agriculture workshop 2 (f) Socioeconomic and Food Security

#### Dimensions of Climate Change in the Agricultural Sector

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*Climate Action Network (CAN) is the world's largest network of civil society organizations working together to promote government action to address the climate crisis, with more than 1300 members in over 120 countries.*

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The current global food system is both a victim and a driver of climate change. Agriculture is a sector that is highly vulnerable to the impacts associated with the rise in global temperatures and changes in water cycles. At the same time, the sector is also a major contributor to global greenhouse gas (GHG) emissions, land degradation and biodiversity loss. Agriculture in the context of climate change has many intersecting socio-economic dimensions including food security and other issues. Some types of agriculture are more harmful, and more vulnerable than others; and there are key strategies available that can address multiple climate, food security and other socio-economic dimensions of agriculture.

#### **Agriculture in the context of climate change faces many intersecting socioeconomic challenges**

In many parts of the world the rising global temperature associated with climate change are already severely disrupting the rainfall patterns, water availability, pollination processes and soil health so vital to crop production. These impacts are going to become more severe as temperatures rise are projected. Farmers around the world are facing **yield and income losses** as a result of disrupted planting and harvesting times, floods, cyclones, landslides, high winds, salinization of soils, rising sea levels, and pests and disease. Nutritional losses in some crops is also resulting from increased CO<sub>2</sub> levels associated with climate change<sup>1</sup>. The agricultural losses resulting from these diverse and widespread climate impacts are already **harming the livelihoods of farmers and, farm workers, as well as the food security of farming and non-farming communities alike**.

In its special report on Climate Change and Land (2019)<sup>2</sup>, the Intergovernmental Panel on Climate Change (IPCC) notes that climate change is **negatively impacting all four pillars of food security: availability, access, utilisation and stability**<sup>3</sup>, and there is high confidence that this trend will increase. The FAO report

<sup>1</sup> <https://www.washingtonpost.com/opinions/2019/08/08/climate-change-is-sapping-nutrients-our-food-it-could-become-global-crisis/>

<sup>2</sup> <https://www.ipcc.ch/srccl/>

<sup>3</sup> <https://www.ipcc.ch/srccl/chapter/chapter-5/>

on the State of Food Security and Nutrition around the World in 2020 finds that just over one quarter of the world's population – around **2 billion people - is suffering from food insecurity**<sup>4</sup>.

## **Additional Vulnerability**

Climate change does not affect everyone equally. Small-scale **farmers and those in extreme poverty are among those most vulnerable** to its impacts, as they often lack the knowledge and resources to invest in adaptation strategies, or to cope with climate shocks, loss of income or high food prices. Thus climate change is contributing to **an increase in rural-urban and transboundary migration**, as rural communities increasingly leave agriculture to seek more reliable livelihoods and food security. This climate-induced migration is driving an increase in **conflicts, rising ethno-nationalism and tragic violations of human rights** (for example rural-urban migration in the Middle East, transboundary migration in South Asia<sup>5</sup>, West African migration to Europe, and migration from Central to North America.)

**Women are particularly vulnerable to climate change.** 79% of women in developing countries derive their income from agriculture<sup>6</sup> and face additional challenges due to social and cultural norms resulting in disempowerment, lack of opportunity or access to credit, extension services and decision-making. For example, in many countries, policies relating to agriculture and land are gender-blind or gender-biased, reducing women's access to critical resources such as land, seeds, markets, finance, extension services, climate information, and decision-making processes. Without these benefits, women farmers are less able to increase resilience and sustainability, and invest in their production, while earning less for their efforts than male farmers. As a result, women farmers, and their children, families, and communities are more vulnerable to climate impacts<sup>7</sup>. Rural-urban migration trends triggered by climate change are largely dominated by men, which is leading to the feminisation of agriculture, even as women struggle with cultural and policy biases. In addition, when climate disasters hit rural and marginalised communities, **women and girls suffer disproportionately** as they are more likely to skip meals, travel long distances to fetch water, be forced to drop out of school, face early marriage, or resort to negative coping strategies in desperation to feed their children<sup>8</sup>.

It is also worth noting that in the global south, the percent of youth populations is rapidly growing. Projections show for instance that youth in Africa will constitute 75% of the population below the age of 35 years by 2050, making Africa the youngest continent in the world<sup>9</sup>. However, factors such as knowledge gaps, lack of capital and poor access to arable land and other essential inputs continue to discourage participation of African youth in agriculture and natural resource management. The impacts of climate change mean that young people are recognising that farming is becoming more difficult, and many are choosing not to pursue a future in agriculture. As a result, **youth are migrating from rural to urban areas** in pursuit of alternative livelihood options at an accelerating rate. An increasing number of rural

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<sup>4</sup> [http://www.fao.org/3/ca9692en/online/ca9692en.html#chapter-executive\\_summary](http://www.fao.org/3/ca9692en/online/ca9692en.html#chapter-executive_summary)

<sup>5</sup> <https://actionaid.org/publications/2016/climate-change-knows-no-borders>

<sup>6</sup> UNICEF, 2007, Progress for Children: A World Fit for Children,

<sup>7</sup> [https://www.pacificclimatechange.net/sites/default/files/documents/Pacific\\_gender\\_toolkit\\_full\\_version.pdf](https://www.pacificclimatechange.net/sites/default/files/documents/Pacific_gender_toolkit_full_version.pdf)

<sup>8</sup> <https://www.thenewhumanitarian.org/opinion/2020/1/14/gender-Southern-Africa-climate-crisis>

<sup>9</sup> <https://www.prb.org/africas-future-youth-and-the-data-defining-their-lives/>

communities have few young men or men of working age left. This is leading to a socio-economic crisis of urban youth unemployment in some global South countries. Improved socio-economic status is therefore essential in building resilient livelihoods among the poor and most vulnerable, and enhancing nutrition, health and education levels, keeping in mind that feasible options for adapting to climate change differ among women, men and youth.

Additionally, the Covid-19 pandemic is now compounding the climate challenge for farmers, and particularly smallholder farmers in the global South. Sickness and lockdowns have prevented farmers from accessing farms, harvesting crops and selling their produce. Food has been wasted in the fields. Even where harvested, lockdowns have closed local and informal markets, on which smallholder farmers and low-income communities rely. Throughout every economy people are suffering from reduced earnings, and struggling to pay bills and to put food on the table. Hungry children in lockdown are missing out on the daily meal provided by schools, and some families struggle to make up for that loss. Around the world, and particularly among low-income communities, farmer's poverty rates are rising<sup>10</sup> and hunger and malnutrition have grown as a result of Covid-19. With many farmers around the world simultaneously lacking the resources to plant for the next season, a global food crisis may be imminent. The World Food Programme has warned that **the Covid-19 pandemic, combined with the effects of climate disasters, could cause "famines of biblical proportions"**<sup>11</sup>.

### The Problem with Large-Scale Industrialized Agriculture

A steady push over several decades towards the **industrialisation of agriculture** has left the global food system **particularly vulnerable** to the effects of climate change. The industrialised food system typically encourages the growing of monocultures of single crop varieties across a wide area of land, making it more at risk of climate shocks. Synthetic nitrogen fertilisers degrade the natural organic matter and microorganisms in soils over time, affecting soil health and its ability to retain the water needed for crops to grow.

It is estimated that **agriculture contributes 21-37% of global GHGs**<sup>12</sup> when the full life-cycle GHG cost of the food system is taken into account, including from the energy use in production of synthetic fertilisers, the release of nitrous oxide<sup>13</sup>, the degradation of stored carbon into atmospheric CO<sub>2</sub> when fertilisers are applied to soil, deforestation, ploughing, machinery, transport of food and feed, enteric fermentation of livestock, processing and refrigeration. These heating effects are exacerbated by industrialised crop and livestock systems.

The industrialised model of agriculture also contributes to significant social inequalities with a growing **concentration of land and wealth in fewer and fewer hands**. Agrochemicals, monocultures, machinery and a focus on international markets enable large-scale farmers to get bigger, at a cost to small-scale

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<sup>10</sup> <https://actionaid.org/publications/2020/covid-19-food-crisis-monitoring-research>

<sup>11</sup> <https://www.bbc.com/news/world-52373888>

<sup>12</sup> <https://www.ipcc.ch/srccl> (Summary for Policy Makers)

<sup>13</sup> [https://www.carbonbrief.org/nitrogen-fertiliser-use-could-threaten-global-climate-goals?utm\\_content=bufferd8a06&utm\\_medium=social&utm\\_source=twitter.com&utm\\_campaign=buffer](https://www.carbonbrief.org/nitrogen-fertiliser-use-could-threaten-global-climate-goals?utm_content=bufferd8a06&utm_medium=social&utm_source=twitter.com&utm_campaign=buffer)

<sup>14</sup> <https://ourworldindata.org/food-ghg-emissions>

farmers, who are forced out of business and off their lands. Though this model of agriculture has been widely adopted with the supposed goal of improving food security, the evidence is clear that the so-called **“Green Revolution” has failed in its task of reducing hunger<sup>14</sup>**.

The industrialised production of livestock and increasing consumption levels of meat that go far beyond nutritional requirements in many parts of the world are also recognised as a significant contributor to climate change, when the full life-cycle emissions of the sector are taken into account. The enteric fermentation of ruminants is a particular contributor to methane, and the **industrialisation of livestock has dramatically scaled up the total production and thus the total emissions from the livestock sector** as a whole. Furthermore, far more land is currently used globally to graze and grow livestock for the industrialised meat industry than is currently grown to produce crops for human feed<sup>15</sup>. This large-scale **production of livestock feed has contributed to significant deforestation**, as in the Amazon, Cerrado and Gran Chaco regions of Latin America<sup>16</sup>. The earth’s natural carbon sinks and the livelihoods of smallholder farmers across Latin America have been damaged and displaced by this model of livestock production. Growing feed for factory-farmed livestock instead of food for people is a poor and inefficient use of the planet’s limited agricultural land.

### **Agricultural solutions to climate change must address multiple socio-economic issues**

The IPCC Special Report on Land and Climate (2019) confirmed the widespread and growing consensus that in order to limit global warming to 1.5°C, the world must overhaul its agricultural systems and **shift to sustainable practices such as agroecology<sup>17</sup>, and more sustainable meat production**. Agroecological practices work with nature and avoid the production and use of agrochemicals that harm the climate, the environment and human health. Agroecological techniques include using compost, manure and mulching instead of chemical fertilisers, and herbs for treating pests, diversifying seed and crop varieties, and substituting monocropping with mixed cropping, which can include the incorporation of trees and livestock. Agroecology dramatically reduces the carbon footprint of food production and rebuilds soils to store carbon that would otherwise end up as CO<sub>2</sub>. It strengthens agriculture’s resilience to climate impacts through the planting of a broad variety of genetically diverse crops and retains more water in carbon-rich soils, reducing vulnerability to droughts, floods and erratic rainfall patterns<sup>18 19</sup>.

In addition to decreasing vulnerabilities to climate change, agroecology provides many more additional food security and socio-economic benefits. By reducing dependence on purchased agrochemicals and seeds, agroecological approaches **help farmers become less dependent on inputs, which means they can retain more of their income**, while generating better earnings. Agroecological farmers rely on and strengthen their own knowledge to address issues of seed diversity, soil fertility, plant health and

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<sup>14</sup> <https://www.iatp.org/africas-choice>

<sup>15</sup> <https://ourworldindata.org/agricultural-land-by-global-diets>

<sup>16</sup> <https://www.sei.org/about-sei/press-room/tropical-deforestation-linked-to-exports-of-key-commodities/>

<sup>17</sup> <http://www.fao.org/agroecology/knowledge/10-elements/en/>

<sup>18</sup> Leippert, F., Darmaun, M., Bernoux, M. and Mpheshea, M. 2020. The potential of agroecology to build climate-resilient livelihoods and food systems. Rome. FAO and Biovision. <https://doi.org/10.4060/cb0438en>

<sup>19</sup> Sinclair, F., Wezel, A., Mbow, C., Chomba, S., Robiglio, V., and Harrison, R. 2019. “The Contribution of Agroecological Approaches to Realizing Climate-Resilient Agriculture.” Rotterdam and Washington, DC. Available online at [www.gca.org](http://www.gca.org).

management of pests and disease and thus this approach **strengthens endogenous farmers' knowledge systems, their empowerment and their self-determination**<sup>20</sup>.

As agroecology encourages a diversity of crop types and varieties, it is also associated with improved nutrition and health. Agroecology is therefore a **key strategy to deliver the right to food and nutrition and the health benefits associated with these rights, and avoids the harm associated with the application of pesticides, herbicides and fertilisers.**

The Committee on World Food Security (CFS) High Level Panel of Experts on Food Security and Nutrition confirmed these findings and recommendations in its June 2019 report "Agroecological and other sustainable approaches for agriculture and food systems that enhance food security and nutrition."<sup>21</sup>

When compared to the industrialised food system of cash crops, global commodities and corporate supermarkets, **local food supply and agricultural value chains provide multiple socio-economic benefits.** Thriving local and territorial markets not only reduce GHG emissions through reduced food miles (as long as produce is not grown in heated greenhouses), but are also key to the ability of agroecological and smallholder farmers to sell their produce, and critical for low-income communities' access to food. This is particularly critical in building resilience not just to climate change and its impacts but also to current and future pandemics. Some of the key implications of the Covid-19 pandemic include the lack of access to essential inputs of production, markets for produce and access by consumers to a wider dietary diversity. Localized food systems cushion against these impacts by encouraging the phenomenon of the "local economic multiplier effect," which improves local wealth retention and creation. For example, a customer purchases 100 pesos' worth of locally-grown tomatoes at a territorial market. The tomato seller spends those 100 pesos on purchasing locally-produced beans. The bean seller spends that money at the local lunch stand. The lunch seller spends that money at the local baker. 100 pesos has now brought 400 pesos' worth of benefit to the local community. The story would be very different if the original customer had bought their tomatoes in a supermarket, where the profits are retained and spent by investors and food suppliers far outside the community, with a smaller proportion returning to the farmer. Agroecology can thus not only strengthen and stabilise food security for communities and consumers more broadly, but it can also help strengthen the livelihoods of poor and vulnerable rural communities.

Concurrent with increasing agroecological approaches, production and consumption of livestock must shift from large-scale, globalised, intensive systems, to **more sustainable meat production and consumption.** Several studies suggest that bringing average per capita meat consumption to about 300g a week would meet nutritional needs while reducing the climate contribution of the meat sector by about half<sup>22 23 24</sup>. Pastoral and mixed-use agroecological livestock systems can be done on a small scale. These

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<sup>20</sup> Raffaele D'Annolfo, Barbara Gemmill-Herren, Benjamin Graeub & Lucas, A. Garibaldi (2017): A review of social and economic performance of agroecology, International Journal of Agricultural Sustainability.

<sup>21</sup> <http://www.fao.org/3/ca5602en/ca5602en.pdf>

<sup>22</sup> Dooley, K. et al. (2018) Missing Pathways to 1.5°C: The role of the land sector in ambitious climate action. Climate, Land, Ambition and Rights Alliance (CLARA);

<sup>23</sup> Springmann, M. et al. (2016) Analysis and valuation of the health and climate change cobenefits of dietary change. Proceedings of the National Academy of Sciences of the United States of America. 113 (15), 4146–4151;

<sup>24</sup> Tirado, R. et al. (2018) Less is More: Reducing Meat and Dairy for a Healthier Life and Planet Scientific Background. Greenpeace

systems enable valuable nutrient recycling benefits for crop production, have a relatively low impact on climate change and the environment, are more resilient to climate shocks, and can have a role in protecting livelihoods and food security. These should be done in a way that works with nature instead of against it, and on a scale that does not drive deforestation, land grabs or other harms.

Through the multiple socio-economic benefits of agroecological crop and livestock systems and local markets, farmers are more likely to reduce GHGs, strengthen resilience to climate impacts, retain their income, livelihoods and food security, and are less likely to be displaced from their lands. Unlike approaches that apply purely technical solutions to agriculture, **agroecology is thus a systemic approach built on principles that embed multiple socio-economic considerations** within it.

### **Complementary Approaches**

In order to strengthen the adaptive capacity of communities, locally-appropriate adaptation plans are needed, to reduce vulnerability to climate impacts and to strengthen resilience. The topography, climate, culture, challenges and opportunities of each community will be different from village to village. Women farmers have specific insights into the challenges they face in farming, however gender-assigned roles may mean that they are all-too-often left out of decision-making processes. As a result, community leaders and policy makers may fail to develop strategies that address the challenges faced by the people that are actually growing food and feeding communities. They may fail to recognise the benefits that women's leadership can deliver when it comes to implementing plans and shifting norms and practice in communities. **Inclusive and participatory processes that empower marginalised community members, particularly women**, to speak up, share experiences, and collectively design plans that work for all (and not just the more powerful members of the community) are critical to effective adaptation planning. Policy makers at all levels should take note.

The Covid-19 pandemic has compounded the multiple climate, livelihood and food insecurity threats that farmers face. **It is more important than ever that we climate-and-pandemic proof our food systems.** Covid-19 has highlighted the vulnerability of farmers to crop losses, livelihood losses, and food insecurity, while exposing the risk that farmers may not have the resources needed to plant for the coming season. Yet, these are risks they regularly face due to climate change. To help alleviate the losses resulting from lockdowns in response to the pandemic, some governments have stepped up to **support farmers and food security with social protection systems** such as cash transfers, food transfers or cash-for-work programmes tied to community asset-building. Many countries have provided furlough or unemployment pay for workers who have lost their livelihoods in the crisis, or free school meals for hungry children whose schools have closed and parents have lost income. These approaches all help to enable farmers and rural communities to overcome the challenges they are currently facing.

Around the world, social protection safety nets have helped many millions of people including farmers and low-income and hungry communities to cope with the havoc wreaked by the pandemic, which they had no hand in making. This experience offers important lessons as to the value of social protection safety nets that can respond to climate disasters to avert spiralling and irreversible poverty, migration and food

crises. Social protection systems are made more effective if put in place well in advance of disasters, and triggered by early warning systems that enable early action to help farmers to continue farming.

Fortunately, the solutions to both the climate crisis and the threat of future pandemics and other disasters are the same: agroecological production, local markets, inclusive and participatory processes, women's empowerment and social protection systems.

### **Policy recommendations:**

**Under the Koronivia Joint Work on Agriculture (KJWA), parties should include the following elements in KJWA guidelines for action in the land sector:**

1. Shift from industrial agriculture to agroecology through supportive policies, adequate financing and investments.
  - Practices and tools to deliver this include:
    - a. Shifting subsidies away from synthetic nitrogen fertilisers and factory farming infrastructure;
    - b. Shifting subsidies towards supporting scaling up of agroecological practices;
    - c. Supporting gender-responsive agricultural extension services and training in agroecology;
    - d. Creating and supporting new routes to market for new and diversified crops;
    - e. Promoting dietary shifts, e.g. starting with public procurement programmes.
2. In countries with high per capita industrial livestock production and/or consumption, put in place measures to shift towards systems of more sustainable meat systems.
3. Support participatory, inclusive and gender-transformative planning and implementation adaptation processes at community level to address gender-related productivity gaps.
4. Local and national policy making processes must open the door to include the views, analysis and priorities of farming communities, particularly women farmers and marginalised community members.
5. Protect ecosystems and the rights of indigenous peoples and local communities.
6. Set up social protection safety nets that can be triggered by early warning systems in times of climate and other disasters so that farmers can avoid spiralling into poverty and can continue farming.
7. Accelerate youth involvement in agriculture by identifying and increasing innovative investment opportunities along the value chain
8. Create an enabling environment (policies and institutions) to promote agricultural value chains whose benefits are largely retained locally.