1. Agriculture and climate: complex interactions

Rising and volatile food prices,[1] the major dependence of some countries on imports, political, financial and economic crises, competition for natural resources, environmental degradation, and climate change are all affecting the current and future food and nutritional security of urban and rural populations (particularly for the poorest of the poor).

Climate change poses "one of the greatest human rights challenges of our time", including the right to food.[2] If greenhouse gas (GHG) emissions continue at the same rate, by 2080 there will be 600 million more people going hungry because of climate change. According to IFPRI, 25 million more children will suffer from malnutrition in 2050 due to climate change.[3]

The four pillars of food and nutrition security – availability, access, utilization (storage, food processing and use of food by the human body) and stability – are already seriously affected by climate change. World farming production will be badly affected by the expected fall in certain crop yields such as grains (wheat, rice, maize, and soybeans). At the current rate, global warming will also have devastating consequences on the availability and quality of water resources (which are already under pressure), thereby threatening food availability and increasing competition between agricultural usage and other uses of water (particularly drinking water and energy production).

Now more than ever, agriculture is facing a major challenge: ensuring food and nutritional security for a growing world population while protecting natural resources and tackling climate change. The response to this challenge requires opposition to land–grabbing and the fight for territorial food sovereignty. The stakes are high for agricultural adaptation (particularly in Southern countries). Furthermore, agriculture is also responsible for almost 12% of direct greenhouse gas emissions worldwide (as well as 12% of indirect emissions linked to deforestation), which together represent 24% of the total (IPCC, 2014). The main sources of GHGs in the farming sector are nitrous oxide (N_2O) (mainly from nitrate fertilizers) and methane (CH_4) from manure applied to soil and from swamp rice. According to the latest IPCC report, the "most effective" mitigation options in the agricultural sector are to:

- Change how farmland and pastureland are managed, while replacing organic material in the soil.
- Implement demand-based measures (such as changes in diet) and reduce waste in the food supply chain.

In addition, mitigation in urban areas will also be a major challenge for territories in the next few decades, as urban populations are expected to represent 64% to 69% of the world population by 2050 (compared with 52% in 2011).[4]

Consequently, it is critical for citizens, civil society, agricultural organizations, and various public and private local, national, or subcontinental authorities to design and implement **sustainable food systems[5] that can deliver on sustainable development criteria; are inclusive, resilient, and effective; take other sectors into account (particularly water and energy);[6]** and are founded on individual and collective responsibility. This responsibility must be taken on and managed by local, national, and regional authorities in the four sectors of food security, water, energy, and ecosystems (according to their specific competences), and by agricultural organizations and the relevant populations.[7]

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[1] http://www.oxfamamerica.org/static/oa4/Extreme-Weather-Extreme-Prices.pdf.

[2] Open letter from United Nations Special Rapporteurs to States Parties to the UNFCCC, 17 October 2014.

[3] Nelson GC, Rosegrant MW, Koo J, Robertson R, Sulser T, Zhu T, et al. Impact on Agriculture and Costs of Adaptation. International Food Policy Research Institute (IFPRI), Washington DC, 2009.

[4] 5th IPCC report, 2014.

[5] http://www.srfood.org/en/democracy-and-diversity-can-mend-broken-food-systems-final-diagnosis-from-un-right-to-food-expert.

[6] IPES Food, The new science of sustainable food systems. Overcoming Barriers to Food Systems Reform, May 2015.

[7] Following a consultation process that began in December 2013 as part of the FAO multidisciplinary initiative – Food for the Cities – a group of international organizations (including FAO, UN-Habitat, IFAD, ICLEI, IUFN, The Prince of Wales's International Sustainability Unit, EcoAgriculture Partners, HIC and RUAF) called for worldwide action for a new framework for developing sustainable food systems (Territorial Food Systems), which was then launched at the 7th World Urban Forum in Medellin in April 2014 - www.cityregionfoodsystems.org.

Thanks to their close ties with local farmers and citizens, as well as their ability to mobilize territorial stakeholders and harness the various forms of know-how and local knowledge, local/regional authorities and farming organizations can provide suitable responses to local problems both in the short term (times of crisis) and the long term. The role of these organizations complements that of other stakeholders with whom they must work in synergy. Local and regional authorities and farming organizations also have an important role to play vis-à-vis States, research centers, development actors, and international organizations.

Climate change adaptation and mitigation involve many sectors: food, transport, health, education, water, habitat, migration, land policy, fishing, livestock farming, agriculture and forestry. The aim is to have resilient towns and territories that contribute to the green economy, provide a healthy environment, respond to local and global climate change issues, participate in reducing risks, and optimize their ability to feed people in a sustainable and healthy way. With this in mind, governments, local authorities, civil society, migrants, the private sector, research centers, and technical and financial partners must combine their efforts to develop actions as part of joint strategies based on clear rights, duties, and responsibilities.

Beyond the need for a balance between rural and urban spheres in territorial policies, urbanization must be approached proactively as part of strategic intersectorial planning to promote close links between urban and rural areas. Territorial food systems aim to respond to these complex issues.

It is vital to build coalitions of actors committed to implementing adaptation and mitigation measures within territories. These coalitions must work to establish territorial food systems that can gradually and throughout their development provide food and nutritional security for people (particularly the most vulnerable) living in a territory (in the broadest sense of the word) by having a positive impact on the entire food system, from farming to food-waste management. These measures might involve various fields: rural development, promotion of resilient low-carbon farming and forestry practices, sustainable aquaculture, land-use planning (balance between farms/forest and urban areas), investment in renewable energy, water and waste management, marketing channels for local products, town-country channels, and farm self-sufficiency.

Such mobilization within the coalition will enable the actors to be more effective in:

- Participating in the **essential comprehensive management of water resources** alongside other key actors (drinking water/sanitation, energy and ecosystems).
- Promoting the development of **sustainable agricultural and agri-food models such as agro-ecology and sustainable aquaculture that use less fossil fuel and fewer inputs** (unlike industrial and intensive farming that use a great deal of energy for machines, fertilizer and pesticides), while improving soil fertility and carbon storage.
- Promoting **family farming**, which has already proven beneficial in poverty reduction and food security, as well as environmental protection, energy efficiency, and the creation and protection of socially responsible jobs.
- Promoting the development of **territorial channels** to reduce energy used on transporting agricultural products and help create and add value to socially responsible jobs.
- Promoting **the use of quality, seasonal local products**, while also promoting designations of origin and making it easier for people to access this food for a more balanced diet.
- Raising awareness of institutions and the public about **waste management** (promoting the use of recycled packaging, composting, recycling, etc.).
- Promoting **sustainable and balanced urbanization of territories**: transforming towns or supporting their development by making them part of a sustainable food system.

One of the priorities is to include food and nutritional security and risk prevention along with integrated natural resource management in political agendas, strategies and actions plans of territorial collectives and their partners. Making progress in terms of the right to food is vital on all levels. This right also relates to fundamental democratic principles.

Territorial actors are therefore committed to implementing comprehensive, multi-sectoral and multi-stakeholder strategies that combine climate change adaptation and mitigation (*non-exhaustive list)* :

To **reduce GHG emissions and strengthen adaptation capacities** (particularly for populations vulnerable to climate change such as smallholders and more generally rural populations in Southern countries), **various levers for action can be applied** by local and regional authorities, agricultural actors, and relevant organizations.

1.1 Levers for action in farming:

⇒ Promoting the **establishment and retraining of farmers in agroecological production models** (better management of soil management and conservation, fertilizers, agroforestry, crop diversification, and so forth) by encouraging experimentation, innovation, and training.

⇒ Simultaneously considering multiple sustainability issues (water, air and soil quality, biodiversity protection), particularly in terms of:

- **Nitrous oxide (N_2O):**

⇒ Reduction of mineral nitrate fertilization (doses and frequency) and a reappraisal of the contribution of organic fertilizer (manure, slurry, and so on)

⇒ Increasing areas used for legumes in cropland and prairies

⇒ Reducing nitrate fertilizer for pigs and dairy cows in particular

- **Methane (CH_4):**

⇒ Short-term storage of livestock manure and development of methanization

⇒ Intermittent irrigation, particularly in rice fields

- **Carbon dioxide (CO_2):**

⇒ Grassland protection to avoid change of use (removal of CO_2)

⇒ Regeneration of degraded grasslands

⇒ Carbon storage in farmland and biomass (composting, no till, intermediate crops, hedgerows, and agro-forestry);

⇒ Improving the energy performance of farms and use of renewable energy: crop machines, eco-design of farm buildings, solar panels, methanization, biomass, and so forth)

1.2 Levers for mitigation in upstream and downstream channels:

⇒ Reducing **food waste**: raise consumer awareness, encourage business owners to provide a suitable supply, improve infrastructure and storage systems for agricultural products and food (particularly in Southern countries).

⇒ Encouraging **local supply** of quality goods: promote the use of healthy local (organic) products in cafeterias (schools, hospitals, and businesses) and innovative marketing and distribution arrangements (short circuits). To do so, partnerships should be developed between producers, restaurants, and retailers and tools should be created such as commitment charters, public awareness campaigns, and promotion at points of sale.

⇒ Promoting **territorial agri-food channels** with lower GHG emissions.

⇒ Valuing **territorial approaches to agriculture/livestock farming/aquaculture/forestry/oceans/soils/land** to mobilize various levers in a coordinated way and improve use of natural resources.

1.3 Levers for adaptation and resilience:

⇒ Maintain or restore **balance among various water users**, by taking into account towns that need drinking water and water to produce energy (particularly in dry weather when irrigation is more important).

⇒ Raise awareness among and support populations and farmers to **improve management of drinking water and irrigation**, in addition to investment in irrigation systems better suited to the land.

⇒ Improve the fight against pests: research emerging diseases, diversify rotation, and develop biological methods.

⇒ Conserve genetic resources in situ, to ensure availability of local resources for climate changes that can be quite unpredictable.

⇒ Support local actors in **proper management of climate risk.**

⇒ Create and provide access to **understandable and timely climatic information and alert systems** to enable individuals, communities, and organizations to prepare for and take suitable action (emergency plans) in enough time to reduce losses.

⇒ Analyze farm buildings.

⇒ Insure farmers against climate risks.

⇒ Mutual funds (disease and other risks).

1.4 Developing governance tools:

⇒ Participatory formulation and implementation of **local adaptation and mitigation plans that take a balanced approach throughout the territory and which** account for and respond to the major limitations of family farming (access to land, water, credit, and technical assistance) and promote an **agroecological approach** across territories (crop diversification and protection of biodiversity, among others).

⇒ Development of networks among territorial authorities and non-State actors to **create multi-sectoral territorial discussion and decision-making forums and information-sharing tools** that go beyond farming institutions to involve territorial authorities and civil-society organizations (farmers' organizations in particular).

⇒ **Linking farming and territorial policies** and aligning them at the national and local level (ensure that National Adaptation Plans translate into concrete actions that are implemented and funded), as well as regional level (EU, ECOWAS, SPC[8], etc.) to encourage the creation of policies to promote territorial food systems (Procurement Codes that prioritize local suppliers).

⇒ **Advocating for trade agreements that don't present barriers to territorial food systems.**

⇒ Shift part of the value created by agri-food industries towards the channels and territories that they depend on through funding for agroecological activities.

⇒ **Reduction/control of urban sprawl** (two-fold benefits thanks to reduced transport) to allow cities to manage water and land resources in a more integrated way and protect quality and multifunctionality in agriculture: using urban planning tools to protect agricultural land, and safe recovery of water- and nutrient-rich urban effluent that can be used in peri-urban agriculture.

⇒ **Creation of frameworks that support combined, multi-stakeholder initiatives at various levels:** financial tools, regulatory changes, technical and legal assistance, and accountability mechanisms.

2 Good practices that were presented during the workshop

Presentation of experiences or practices from territorial authorities and networks or farmers' organizations that promote sustainable multi-stakeholder territorial food systems:

- A region's experience: the state of **Rio de Janeiro**, Brazil, by Christino Aureo da Siva, Secretary of Agriculture and Livestock for the State of Rio de Janeiro, Brazil.

[8] South Pacific Community

- CNOP Mali's experience (national farmers' organization) working with local governments, by Ibrahima Coulibaly, ROPPA Vice President and President of CNOP Mali.

3 Commitments of local and regional authorities, farmers' organizations, and other non-State actors

Given the need to mobilize all possible stakeholders, the representatives of local and regional authorities, farmers' organizations, and non-State actors commit to creating **intersectoral and multi-stakeholder spaces for discussion and joint decision-making to promote food sovereignty in response to the challenge of climate change.**

In light of the wide range of agricultural and food situations across territories, local and regional authorities, farmers' organizations, and non-State actors are committed to formulating or adapting existing **action plans for the transition to sustainable territorial food systems that are based on agroecology and co-management of natural resources, soils, and land,** taking into account the specific resources and situation of their territory.

- The plans should seek to reduce GHG emissions in the food and agriculture sector by analyzing CO_2, CH_4 and N_2O emissions in these sectors and ways to significantly reduce them through land allocation, farming methods, processing/marketing/distribution/restaurant arrangements, and the food practices and diets of consumers. The plans should aim to reduce waste and promote ecological and sustainable farming and food systems that make limited use of non-renewable resources.
- The plans should also strive to mitigate the negative impact of climate change on the most vulnerable farmers, by identifying the most effective levers for each set of local characteristics, including crop and food diversification, risk-sharing, and insurance.

In both cases, these plans will define objectives for improvement, monitoring indicators, and capacity-building and funding requirements.

Lastly, local and regional authorities, farmers' organizations, and other non-State actors call on national, regional and global governance actors to **create consistent policies** at those levels to facilitate the implementation of local commitments.

4 Proposals and final commitments of local and regional authorities, farmers' organizations, and other non-State actors, and recommendations to the negotiators:

We, the Regions, local authorities, farmers' organizations, and other civil-society stakeholders,

- **Call for dialog and inter-sectorial decision processes, including small holders to promote food sovereignty while addressing climate change**
- **Commit to implement action plans towards sustainable territorial food systems based on agroecology, natural resources, soils and land tenure shared management**