Views on identification of adaptation measures and assessment of agricultural practices and technologies to enhance productivity in a sustainable manner

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Background and Introduction

CIDSE[1], the international alliance of Catholic development agencies, advocates for more effective and socially just international agreements to tackle climate change, by recalling the obligation of governments to protect, respect and fulfil human rights and to realize the right to food, promoting justice and equity, as well as dignity for all, and especially for the poorest and most marginalized who are typically overlooked in policy-making and implementation.

Today we find ourselves facing converging food and climate challenges of an unprecedented scale. That is why, **based on CIDSE member organisations' experience working with farmers and rural communities around the world, we welcome the opportunity to submit our views for consideration to the SBSTA 44 workshops on agriculture matters. In particular, CIDSE's response is addressing the issues that will be touched upon at the first workshop: *Identification of adaptation measures, taking into account the diversity of the agricultural systems, indigenous knowledge systems and the differences in scale as well as possible co-benefits and sharing experiences in research and development and on the ground activities, including socioeconomic, environmental and gender aspects.***

The agricultural sector is particularly affected by climate change and measures to help vulnerable communities to adapt are needed in order to face climate-related challenges such as desertification and water scarcity. A range of adverse effects of climate change, most notably on small scale farming, have raised income inequality, reduced household wealth, undermined food security and have affected women disproportionately[2]. Nevertheless, smallholder farmers can be very efficient in terms of production per hectare and have a huge potential for ensuring food security and realizing the right to food while improving the resilience of food systems.

CIDSE understands adaptation in a broader picture: that is the ability to cope with and adapt to risks. Resilience should not only being conceived in relation to climate change only, but also to food price volatility, soil depletion and contamination, economic crises, energy shocks and the depletion of natural resources. Hence it is extremely vital that a more comprehensive approach is considered

[1] www.cidse.org

[2] Trocaire, Feeeling the Heat, How Climate Change is driving extreme weather in the developing world, 2014

so that the different socio-economic and environmental dimensions are not put in jeopardy. CIDSE believes that achieving resilience in a coherent and effective way demands a paradigm shift and a redesign of our food systems, placing diversity (in social, economic and ecological terms) and self-reliance at the centre of any policies and practices.

Our recommendations:

1. **To take into fully consideration and apply the principle of "common but differentiated responsibilities and respective capabilities" when dealing with matters related to climate and agriculture.** It is important that specific adaptation needs are targeted to small-scale food producers and on the opposite, that the primary responsibility of industrial agriculture in the sector's GHG emissions is fully acknowledged.
2. **To recognise that small-scale agriculture is a viable solution** towards community adaptation to climate change (including when coping with extreme weather events). Specifically, **agroecology should be considered the only approach, science and set of practices which is truly productive in face of climate change;**
3. **To build adaptation measures on farmers' knowledge and experience:** CIDSE supports the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) report's proposal[3] for investments in ecological practices and science that encourages participatory knowledge creation and the integration of indigenous knowledge. **Steps should be taken to ensure that agriculture delivers social and environmental benefits as well as economic returns**.
4. **To have an integrated approach when covering the different dimensions of the food system.** The resilience of food systems should be enhanced by the following adaptation measures:
    - Promoting energy access which is decentralised and based on renewable energy systems as well as urban agriculture;
    - Strengthening localised and regional food systems, thereby rendering farmers and communities less vulnerable to disruptions taking place in other parts of the world;
    - Strengthening local markets to reduce food loss and waste;
    - Enhancing an equitable food and climate policy environment, and realising the right to food through various and diverse means, such as social security schemes and concentration limitation, targeting "the most vulnerable segments of the population, who are most severely affected by the crisis or who may least benefit from the remedies"[4];
    - Strengthening small-scale farming systems which are labour intensive, a constant source of innovation and have the potential to increase production and productivity in the face of climate change;
    - Establishing short food supply chains linking rural and urban areas more readily;
    - Limiting the dependency on external inputs and on imports/exports.

[3] [3] IAASTD, Agriculture at a Crossroads, Synthesis Report, 2009, www.globalagriculture.org/fileadmin/files/weltagrarbericht/IAASTDBerichte/SynthesisReport.pdf

[4] De Schutter, Olivier, Special Rapporteur on the Right to Food, Building resilience: a human rights framework for world food and nutrition security, 2008

Principles and Rationale for the recommendations

1. CIDSE emphasises the need to acknowledge the limits and dangers of industrial farming systems: in this regard Parties must acknowledge that the way our food systems are designed is currently exacerbating the climate problem, and as such radical changes are urgently needed in order to cope with the effects of climate change. Mitigation policies for the agriculture sector must address both production and post-production activities that are part and parcel of the food system[5]. One should not forget that 'Common but Differentiated Responsibilities and Respective Capabilities' principle (CBDRRC)[6] is one of the founding principles of the UNFCCC, and of international environmental legislation. Its implementation throughout the different areas impacted by climate change is key in relation to the role of agriculture in mitigation and adaptation, and is crucial for a fair sharing of the burden and efforts to solve the climate crisis. As a consequence, climate change mitigation policies targeting small-scale farmers make shifting the blame and responsibility for addressing climate change from rich countries onto the poor – the very people least responsible for causing the problem and most vulnerable to future uncertainties. This is why CIDSE asks for the historical responsibility of industrial agriculture – i.e. of developed countries – to be recognised[7], and for small-scale farming to play a key role in the development and implementation of adaptation policies.

   Indeed, smallholder farmers provide over 80% of the food consumed in a large part of the developing world[8]. In order for them to adapt they must be enabled to practice farming systems that are resilient to long term climate change and that strengthen the ecosystems of which they are a part of. In practicing polycultures and on-field diversification, "small farms are much more productive than large farms if total output is considered rather than yield from a single crop."[9] Moreover, "there are many cases where even yields of single crops are higher in agroecological systems that have undergone the full conversion process."[10] The combination of agroecology and small farming systems is therefore needed if increases in production are to go hand in hand with increases in productivity. CIDSE thus calls for the identification of agricultural models which are truly productive, sustainable and resilient.

2. CIDSE believes that agroecology is the only approach, science and set of practices which is truly productive in face of climate change. As highlighted by Olivier De Schutter during his

[5] CIDSE, Climate-Smart Agriculture: the Emperor's new Clothes? , 2014

[6] Article 3.1 of the United Nations Framework Convention on Climate Change states that *"Parties should protect the climate system for the benefit of future and present generations of human kind on the basis of equity and in accordance with their common but differentiated responsibility and respective capabilities. Accordingly, developed countries should take the lead in combating climate change and the adverse effects thereof".* United Nations, UN Framework Convention on Climate Change (UNFCCC), 1992, p5, www.unfccc.int

[7] in terms of emissions related to production, transformation and distribution as well as in terms of deforestation

[8] IFAD/UNEP, http://www.ifad.org/climate/resources/smallholders_report.pdf , 2013, pg.6

[9] A large farm may produce more corn per hectare than a small farm in which the corn is grown as part of a polyculture that also includes beans, squash, potatoes, and fodder. But, productivity in terms of harvestable products per unit area of polycultures developed by smallholders is higher than under a single crop with the same level of management. Yield advantages can range from 20 per cent to 60 per cent, because polycultures reduce losses due to weeds (...), insects, and diseases (...), and make more efficient use of the available resources of water, light, and nutrients. Altieri, M. A., *Op. Cit.*, 2009.

[10] Altieri, M. A., Applying Agroecology to enhance the Productivity of Peasant Farming Systems in Latin America, 2000, p. 198, agroeco.org/doc/LApeasantdev.pdf.

tenure as UN Special Rapporteur on the Right to Food, agroecology can produce positive impacts on several dimensions of food security, such as (i) availability (by increasing yields);[11] (ii) accessibility (by enhancing on-farm fertility production and reducing farmers' reliance on external inputs);[12] and (iii) adequacy (by increasing the diversity of agroecosystems, leading to diversified diets and nutritional gains), to name but a few. Agroecology can also increase the sustainability and resilience of food systems, notably because agroecology delinks "food production from reliance on fossil energy."[13]

As it has been proven, agroecology improve the resistance of plots to extreme weather events. After hurricane Mitch hit Central America in 1998, a participatory action research was done on the field. 'Sustainable farms' were far more resistant than 'conventional farms'. "On average, 'agroecological' plots on sustainable farms had more topsoil, higher field moisture, more vegetation, less erosion and lower economic losses after the hurricane than control plots on conventional farms. The differences in favour of these agroecological plots tended to increase with increasing levels of storm intensity, increasing slope and years under agroecological practices[14]". Indeed, agroecological methods can play a fundamental role in (re)building healthy soils – which is an essential asset for strong productivity but also to cope with extreme weather events. In some cases, it may sequester more carbon in microbial biomass and better support nitrogen-fixing bacteria populations."[15] Whilst soil carbon sequestration may result from such practices, it should not be considered as the primary goal of mitigation policies, but rather as "an outcome of good agricultural management"[16] (e.g. restoring soils and tackling fossil fuel dependency through agroecological methods). Nor should it be considered as a way to further develop carbon market mechanisms but instead, these principles address merely the production side of food systems.

3. To put agroecological technologies into practice it takes technological innovations, agriculture policy changes and socio-economic changes, but mostly a deeper understanding of the complex long-term interactions among resources, people and their environment. To realise this understanding, agriculture must be conceived of as an ecological system as well as a socio-economic system. A resilient agriculture system that meets the right to food is a system where local economies and communities are strengthened through farmers' markets and other local exchange systems, and traditional seed production and distribution channels are enhanced[17]. The fact that small-scale farming systems are labour intensive and are a constant sourced of innovation helps to increase the production and productivity in the face of climate change. Indeed, supporting and strengthening farmer led innovation, farmer to farmer movements (exchange of practices) and farmer led research is therefore of utmost

[11] To date, agroecological projects have shown an average crop yield increase of 80 per cent in 57 developing countries, with an average increase of 116 per cent for all African projects (...). Recent projects conducted in 20 African countries demonstrated a doubling of crop yields over a period of 3-10 years. UN HRC, Report Submitted by the Special Rapporteur on Right to Food, Olivier De Schutter, 2010, www.srfood.org/images/stories/pdf/officialreports/20110308_a-hrc-16-49_agroecology_en.pdf.

[12] Ibid.

[13] Ibid.

[14] Eric Holt-Gimenez, Measuring Farmers' Agroecological Resistance after Hurricane Mitch in Nicaragua: A Case Study in Participatory, Sustainable Land Management Impact Monitoring, https://www.researchgate.net/publication/222657348_Measuring_Farmers'_Agroecological_Resistance_after_Hurricane_Mitch_in_Nicaragua_A_Case_Study_in_Participatory_Sustainable_Land_Management_Impact_Monitoring

[15] Lin, B. B., et al., Effects of industrial agriculture on climate change and the mitigation potential of small-scale agroecological farms, 2011, p. 2, www.columbia.edu/~km2683/pdfs/Lin%20et%20al.%202011.pdf.

[16] Garnett, *Op.Cit.*, 2010.

[17] CIDSE, Climate-Smart Agriculture, the Emperor's New Clothes? 2014

importance. Farmers should be recognized the rights to "save, use, exchange and sell seed and propagating material from their own harvest" as inscribed in the Paragraph 9.3 of the International Treaty on Plant Genetic Resources for Food and Agriculture[18]".

4. Following what specifically pointed out in the recommendations above, in many analyses of the climate and agriculture nexus the dependence of our food systems on cheap energy is very too often left aside. One should not forget that fossil fuels have become an integral component of our food systems. Some studies suggest that the industrial model of agriculture takes between seven to ten energy calories to produce one calorie of food[19]. Not surprisingly, the food prices curve is now following that of oil prices, participating in the overall increase of food price volatility experienced globally over recent years. This energy dependency is one of the major threats facing our food system today. Therefore, strenghtening and (re)building local and regional food systems, scaling-up agroecology, reducing dependence on fossil fuel inputs and on export: this is all about adapting the food system to a world where fossil fuels are the prime reason for GHG emissions and a resource-constrained world.

Conclusions

Appropriate adaptation and resilience measures in the agriculture sector must be supported, but most and foremost a rethinking of the conventional industrial agriculture system is needed if we are meant to attain sustainable agriculture practices that are resilient to climate change impacts, especially protecting the most vulnerable communities. Viable solutions such as agroecology and small-scale farming have been already in practice for long time and can prove to be effective in terms of adaptation, mitigation and productivity as well as contributing to the full realization of the right to food. CIDSE urges Parties to consider its recommendations when participating at the SBSTA 44 workshops on agriculture matters.

[18] http://www.planttreaty.org/

[19] Sustainabletable.org , Fossil fuel and energy use, 2009; Entraide et Fraternité, Soutenir et (re)construire des systèmes alimentaires localises : les contours d'une (re)localisation, 2013 ; UNEP, The end to cheap oil : a threat to food security and an incentive to reduce fossil fuels in agriculture, 2012

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