

Report on the participation in the Agriculture and Rural Development Day in Copenhagen,
Denmark (9-13 December 2009)

Upon the nomination of Dr. Ibrahim Hamdan, Executive Secretary of the **Association of Agricultural Research Institutions in the Near East and North Africa (AARINENA)**, Dr. Mark Holderness, Executive Secretary of the Global Forum on Agricultural Research (GFAR) extended an invitation for us to participate in the Agriculture and Rural Development Day which is organized as a parallel event to the 15th United Nations Climate Change Conference (UNFCCC COP-15) taking place in Copenhagen. The event, which is organized by GFAR, IFAD, IFAP, FAO, the World Bank and the CGIAR was hosted by the Faculty of Life Sciences, University of Copenhagen. The event took place on 12 December and was attended by more than 350 participants comprising policy makers, negotiators, INGO's, donors, producers, NGO's and scientists.

We arrived in Copenhagen on 9 December and left on the 13th of December. On the 10th and the 11th of December, we had the opportunity to visit the Bella centre and learn more about Cop 15. We were able to attend one side event on biological diversity and met a number of both governmental and non-governmental delegates from our part of the world and elsewhere. We had good interactions with a large number of individuals and institutions which we hope to follow up.

The agricultural day event was very well organized and included a number of excellent presentations in the plenary sessions including those of Per Holten-Andersen, Dean of Faculty of LIFE Sciences, University of Copenhagen, **Katherine Sierra**, Chair of CGIAR and Vice President for Sustainable Development, World Bank, **Gordon Conway**, Professor of International Development, Imperial College London, **Kanayo F. Nwanze**, President of International Fund for Agricultural Development and IFAP President Ajay Vashee. The U.S. Secretary of Agriculture Tom Vilsack gave a key note address that raised several questions from the participants.

The participants were divided into 4 roundtable namely:

1. The triple challenge to agriculture of increasing food productivity, climate resilience and GHG mitigation
2. Policies and institutions for resilient development in the face of climate change
3. Strategies and responses for adaptation of farmers and food systems
4. Unlocking the potential of emission markets for small farmers

Despite the time pressure, these roundtables offered the opportunity for the participants to provide comments and make useful remarks and suggestions. We highlighted the need to focus on rain fed farming which appears to get forgotten although this type of agriculture is the most vulnerable to climatic change but at the same time, has a great potential for improvement. We raised the issue of the need to develop research capabilities and good governance as essential ingredients for sound natural resource management in fragile areas. The MENA region will be hardly hit by climatic change where the forecasts talk about 30 % reduction in food production in MENA. This will lead to increased poverty and food insecurity which will have long term ramifications on stability of the region. Inducing changes in the rain fed farming systems is essential for climate change adaptation and mitigation. We have also stressed on the fact that the gap between researchers and farmers are getting wider in many countries of the developing world with the complexity of technical advances and also on the weak mechanism of disseminating knowledge and research findings to the main beneficiaries and applicators. The weak or non-existence of farmers' organizations in some countries is part of the problem.

The Marketplace Sessions were short but diverse and opened the windows for interaction among the stakeholders.

Key issues discussed at ARDD:

- Impact of climate change on development, poverty and food security
- Mitigation: Unlocking the potential of emissions markets for smallholder farmers
- Adaptation: Triple challenge of increasing food productivity, climate resilience and reducing emissions
- Innovations in the agricultural sector of relevance to the climate change agenda
- Technology localisation: renewable energy adaptation, reusing the organic wastes and wastewater reuse.

The ability of agriculture to adapt, withstand and mitigate the impacts of climate change is one of the most pressing issues of our time. Climate change presents a very real threat to the livelihoods and food security for millions of people in developing countries and especially in marginalized areas. Farmers have known the weather as both friend and foe since farming began. They are used to expecting the unexpected. But there are limits to what they can cope with – particularly at a time when they are also under increasing commercial pressure.

Agriculture and natural resource users will have to deal with climate change regardless of the outcomes from Copenhagen. Food production will have to increase by 70 percent to feed an additional 2.3 billion people by 2050, (FAO, 2009). Climate change threatens agricultural production through higher temperatures and changes in rainfall patterns, land degradation and desertification, low biomass and grazing capacity of natural

pastures and increased occurrences of droughts and floods, especially in areas that are already prone to climate-related disasters. Vulnerable developing nations respond more comprehensively to the dual challenges of climate change food security and scarcity of natural resources.

The Arab world located within the dry and arid zones will be one of most vulnerable regions to the potential impacts of climate change from the threat to coastal zones to the increased intensity of drought and desertification, the harsh scarcity of water resources, along with the increase in the salinity of groundwater, and the spread of pests epidemics and diseases in an unprecedented manner LAS/AME, 2007

One of the farmers, agents of change and policy-maker's main weapon is **information and knowledge management**. We don't have enough detailed information on impact at regional level or enough thorough assessment of options for education, mitigation and adaptation and of how they can work in practice. We should be able to design the perfect policy to help our farmers learn, avoid, mitigate and live the climate change. Therefore, it's a very pressing need to push on with our research to spread the results around more efficiently. We also need to translate the results into practical solutions for farmers and rural planners. In the meantime, we must work with the information that we have (DG Agriculture, 2007). The use of extension, training and farm advisory services are key (FAO, 2009)

The conservation and sustainable use of **biodiversity and respect for the development rights and traditional knowledge of indigenous people and local communities** must be central elements for successful prevention, mitigation or adaptation measures. "Agro-biodiversity includes all the components of biological diversity as well biophysical resources relevant to food and agriculture, and refers to interactions between agricultural management practices and farmers' resource endowments which are necessary to sustain key functions of the agro-system, its structure, and processes in support for food production. It occupies a unique place within the biological diversity and is essential to satisfy basic human needs for food and livelihood security" (ICARDA, FAO, AOAD, ARDI)

Rises in temperature in the regions as in the Arab World are to have extensive consequences upon national agricultural food security and sustainability. Climate change will affect gradually the range of options available for agriculture in any given region and farmer's strategies to adopt may in some places grow out of experience. This will put a further pressure upon **agricultural research and development** in the future together with the pressure on agricultural production to increase the production for the coming population increase and food security along with the need of sustainable production.

There is need for improved **national and regional dialogue and knowledge exchange** among the climate change, agriculture, rural development, food security and natural resource management communities. Business as usual – i.e. the climate change community and the rural development community operate in separate spheres – has to

end. Adapting food, agricultural, forestry and fishing systems in the face of climate change will require continuous dialogue among disparate communities as no one stakeholder group can guide successful adaptation to climate change alone. The “food system” concept can help structure this dialogue. There is an urgent need for **decision support systems** that policy makers and others can use to access the best available data and knowledge on agriculture, climate and natural resource issues (GDPRD, 2007, ARDI 2003)

Governance and its mechanisms, processes, institutions and actors are key features in climate change prevention, precaution, mitigation, adaptation and innovation. In the Arab region, the principles of isonomy and the right to development -in view to examine the roots of the problems, the current challenges and opportunities for the capacity of generating peace, socio-political transformation, and endogenous, competitive and sustainable economic development- should embark. A governance of impediments reduces considerably the possibilities of decentralization, free competition, equal rights, opportunities and justice. The nature of the regimes turns into a high level of insecurity, social injustice, and political economies of inequalities leading to marginalization and severe rural and underprivileged livelihood. This situation requires more than ever local and regional stakeholders who need to be involved in agriculture and food governance (policies analysis, institutional development and capacity building). Participation and partnership are required to promote new social and civil contract (access to information and dialogue, ownership and co-decision, participation and partnership, transparency and accountability), and **social cohesion in regions policy**. The role of regional regimes and cross-border cooperation, conflicts resolution, promotion of democracy and shared prosperity is indubitable (ARDI, 2009)

Inter-linkage initiatives at local and regional level. Climate change mitigation and adaptation, food security, rural development and sustainable natural resource use need to be integrated into coherent and mutually reinforcing development agendas at local and regional arenas. linking local experiences with national policy making (Sector Wide Approach)

In order to protect the environment, the **precautionary approach** shall be widely applied by nations according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation (Principle #15 of the [Rio Declaration](#), June 1992)

Mitigation

Mitigation to Poverty and food insecurity –

The main community vulnerability and instability indicators are unemployment, poverty and insecurity levels. These interlinked factors should be solved collectively. Through supporting the small and poor farmers, sustaining and improving their cultivations, increasing the marketing value of their products, and protecting the added value of their inherited and/or geographic Identified rural products and cultivations. Consequently, the poor farmers can improve their income and livelihood

and the availability of more food will make poor consumers to get access to food with lower prices and better quality.

Mitigation to Desertification and Drought is one of the main challenges facing the world especially the poor countries (mainly Africa and Asia), creating large eroded, infertile and bare lands without green cover or suitable soil for plant growing. Thus re-greening the forests, open spaces, and nature reserves with endemic and suitable trees, reseeding the pastures with the adapted wild species and wild relatives of herbs and shrubs and reducing land degradation and soil erosion through rehabilitating the damaged lands and planting the wind break trees. These all practices joint with good policies and practices to control and organize grazing, intensive agriculture, urban expansion, protection procedure against fire, frost, snow, flood and diseases and pests will assist in combating desertification, land degradation and drought.

Forest degradation is a major source of global greenhouse gas emissions. **Forest restoration** contributes to carbon sequestration and storage. A strategy that reduces degradation and restores the vast areas of degraded forest around the world offers significant potential for climate change mitigation, as well as avoiding deforestation. Other benefits can grow along with the trees: enhancing adaptation capacity, contributing to food security, improving the livelihoods of the millions of people who depend on forests and maintaining and restoring essential ecosystem functions (3rd Forest Day, 2009)

Agriculture is a key source of global greenhouse gas (GHG) emissions, accounting for 14%. Agricultural emissions are projected to increase in the coming decades with expected growth in food demand and the dietary changes that will accompany rising incomes in developing countries. But the sector also has a high potential to reduce greenhouse gases by removing CO₂ from the atmosphere and sequestering it in soils and plants and by reducing its own emissions (GDPRD, 2007, FAO, 2009)

Many **suitable technologies and farming practices** to sequester carbon in smallholder agriculture already exist. These practices are also known to have a positive impact on hunger and poverty reduction. These include practices used in conservation and organic agriculture, based on low tillage, utilizing residues for composting or mulching, use of perennial crops to cover soil, re-seeding or improving grazing management on grasslands and agroforestry, which combines crops and trees. Improved farming practices required for climate change mitigation are often the same as those needed to increase productivity, food security and adaptation, including the restoration of degraded agricultural lands, integrated nutrient and soil management and agroforestry. Nearly 90 percent of agriculture's potential to reduce or remove emissions from the atmosphere comes from such practices (FAO, 2009). There is need for new programs able to integrate all the relevant dimensions in a sustainable way, giving every country the needed

capabilities to develop their agricultural sector, increase their food security and mitigate climate change at the same time.

In order to address key drivers of carbon emissions, there is need to focus on the agriculture-forests interface to reduce emissions from deforestation and degradation as well as agriculture in a mutually supportive way. The programme will create a global database on current and projected GHG emissions in land and agriculture for the most important agricultural commodities, countries and regions. There are currently no data on GHG emissions from individual agricultural commodities by country or by region available. An important element is the **involvement of farmers in mitigation actions and the capacity build at local and regional levels** to realize the mitigation potential. Farmers will only participate in climate change mitigation if it is economically feasible and attractive for them (FAO, 2009)

To maximize the mitigation potential, agriculture, forestry, and land use programs and projects require streamlined, cost-effective protocols for monitoring, reporting, and verification that facilitate large-scale participation. This includes setting credible baselines (reference scenarios) showing that carbon sequestration/emissions have not simply shifted from one place to another (leakage) and making certain that the emissions reductions will be permanent. The technology to link remotely sensed soil and vegetation analysis to ground-based sampling exists, but pilot studies are necessary to demonstrate the capability, reliability, and affordability (ARDD, 2009)

Adaptation

Mitigation alone is not enough. The work of adaptation, ways and means of reducing the impacts of, and vulnerability to, climate change, must take place at the level of the farm, in a very practical way allowing farmers to be responsive to various adverse conditions. Initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects. Various types of adaptation exist, e.g. anticipatory and reactive, private and public, and autonomous and planned. Examples are raising river or coastal dikes, the substitution of more temperature shock resistant plants for sensitive ones, etc.

The 2010 World Development Report on Development and Climate Change and the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAAKSTD) encourage the promotion of 'win-win-win' agricultural practices that enhance food security and livelihoods for the poor, improve resilience to climate change, and reduce net greenhouse gas emissions and impacts on the environment. These practices include conservation agriculture, low- and no-till practices, drip irrigation, silvopastoral systems, leguminous cover crops that increase infiltration and soil fertility and landscape planning that secures environmental services and forest safety nets. In some parts of the world reduced use of inorganic nutrients and lower input costs can be achieved by better nutrient management practices. In others, increased use of inorganic nutrients can contribute to greater productivity, more carbon sequestration, and higher farmer incomes.

Increased attention needs to be paid to adaptation strategies that will work for the poor. Adaptation research will need to examine the spectrum of possible responses – from new crop varieties for new climates to risk management through early warning systems and crop-weather insurance to policy incentives that promote adaptive capacity. These adaptation strategies should be built on those that farmers are already applying. The ability of poor farmers to take advantage of these responses is often hindered by their lack of access to output and input markets, their difficulty in being able to use credit markets, and the poor state of public research and extension systems in many developing countries.

Generating knowledge for policy and adaptation should be based on a more synergistic and holistic research framework that includes quantification of uncertainty; techniques for combining diverse modeling approaches; and judicious choice and calibration of models, including simulation at appropriate levels of complexity. A more comprehensive set of evaluation tools and databases for building future scenarios of change is needed to provide the needed decision-support capabilities that can inform targeting of technology and policy options for adaptation and mitigation. Some of the tools needed to facilitate agricultural adaptation and mitigation are already available but, they are not shared systematically. Open and shared data make it much easier to identify troublesome data gaps, improve analysis and discover synergies. Creative collection mechanisms for individuals to contribute unique data from their GPS units, cell phones and digital cameras can have powerful, cost-effective synergies when combined with data collected using traditional methods.

Climate change already affects forests and is expected to affect them even more in the future. The effects of climate change add to the many pressures threatening our forests. While some forest services may be enhanced, many more could be lost. Already in the course of this century, forests may have turned from a net carbon sink to a net carbon source, potentially releasing huge additional quantities of carbon into the atmosphere. The impacts of climate change on forests will have far-reaching social and economic consequences, particularly for poor people who depend on forests that often serve as a safety net during times of economic and ecological hardship. Given the diversity of the world's forests and the needs of their stakeholders, there seems to be no magic answer for forest adaptation. Some forests may be lost entirely. Nevertheless, forest managers can rely on effective and locally appropriate tools that can help conserve forests and sustain the mix of ecosystem services they provide, even within a changing climate. More than that, forest ecosystems affect us all. Sustaining them can play a key role in reducing social vulnerability far beyond the forest sector.

Adaptation of financing resources from civil society, private sector and governments to combat and mitigate the impact of climate change. Financial support should be directed to the right people and to the right actions. Financial support of fund should be directed not only for crisis and relief support but to be oriented as emergency

support for development. By this we can support the poor and vulnerable people not to compact climate change base on the crisis occurrence but through applying long term, sustainable and functional approach.

Observations and Recommendations

Rainfed farming has not received the attention it deserves.

There is a need to promote public awareness on climatic change in our region

The universities and research centers in our region should put climatic change on the priority list of their work. So far, very little work has been done on modeling the impact of climatic change at microscale level.

Finally, we are grateful for FAO for its support of our participation which was very educational to us.

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