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COP18·CMP8

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China, food security, climate change, and the future

Agriculture in the UNFCCC – supporting sustainable development or just dubious emission reductions?

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outreach.

29 November 2012

pic: CIAT International Center for Tropical Agriculture

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pic: Isabell Schulz

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Agriculture in the UNFCCC – supporting sustainable development or just dubious emission reductions?

Marcus Kaplan
German Development Institute

Climate change will have increasingly negative impacts on agriculture through fluctuations and permanent reductions in crop yields. Through their direct dependence on agricultural activities, smallholders in developing countries are hit particularly hard by this development.

At the same time, agriculture contributes 15% of global greenhouse gas emissions. Thus, there is growing recognition that agriculture should generate as few emissions as possible and that agricultural systems must be prepared for the impacts of climate change, while production and productivity must be increased.

Currently, it is under discussion to establish a work programme under the UNFCCC that would mainly deal with mitigation, but also with other climate-related aspects of agriculture. A decision on whether to establish it could be taken by the COP here in Doha, based on recommendations by the Subsidiary Body for Scientific and Technological Advice (SBSTA).

Many developing countries are concerned that this process could be biased towards mitigation and its integration into carbon markets, while other aspects of importance to them could be neglected, such as food security and adaptation, as well as avoiding trade restrictions. Furthermore, they point out existing scientific uncertainties concerning the measurement of emission reductions, which turn the monitoring of mitigation activities into a complex and costly challenge.

Measures for reducing emissions, or for carbon sequestration, in the agricultural sector must consider the multiple functions of agriculture (e.g. food security, development, adaptive capacity, and ecosystem services). There are many integrated approaches that fulfil these requirements and that have been important strategies for rural development for a long time. These decades of experiences should be drawn upon.

When implementing new practices and technologies, they must be realisable for smallholders, who are responsible for a major share of the agricultural production, particularly in Africa. Therefore, efficient extension services and access to technologies and input – as well as to financial resources – form an important basis. Such support is particularly essential in the implementation phase of new practices, when investments are needed and/or yield reductions are to be expected.

If agricultural mitigation is to be integrated into carbon markets, fertile land in particular will increase in value. Also in that case, negative consequences for smallholders have to be avoided. This aspect is already being heavily debated in the ongoing discussion on 'land grabbing'. The development of guidelines is also recommended for the area of climate


pic: CIAT International Center for Tropical Agriculture

change, or one could refer to the "Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security" by the Food and Agriculture Organization (FAO) and the "Principles for Responsible Agricultural Investment That Respects Rights, Livelihoods and Resources" by the World Bank.

The development of suitable mitigation and adaptation measures in the agricultural sector should be connected to existing mechanisms within the UNFCCC, in order to avoid unnecessary work and redundancies in results. Because of the close linkages with the forest sector, experience from the Reducing Emissions from Deforestation and Forest Degradation (REDD) negotiation process should be used in particular.

There is general agreement that methods for measuring emission reductions and carbon sequestration through agricultural activities have to be improved in order to increase their accuracy and to reduce costs. This is an indispensable precondition for a potential future integration of agricultural mitigation into carbon markets. Particular attention has to be given to processes, whose overall impacts on emissions, other ecosystem components and livelihoods of smallholders are not yet clear. This refers, for example, to conservation agriculture and the utilisation of biochar.

Due to the numerous concerns about the integration of agriculture into the climate regime, and due to different stages of development, negotiations can be expected to become controversial. Therefore, it might be advisable in the beginning to establish two lines of focus within the work programme – one of which would be on adaptation, the other on mitigation. In the medium term, these lines would then merge again. Yet, even when choosing this pathway, integrated approaches with positive effects on a multifunctional agriculture should be preferred. Safeguards for monitoring social and ecological impacts – as is already being discussed in the REDD process – may be helpful tools in this regard ■

ABOUT THE AUTHOR

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China, food security, climate change, and the future

Eve Feng
Brighter Green

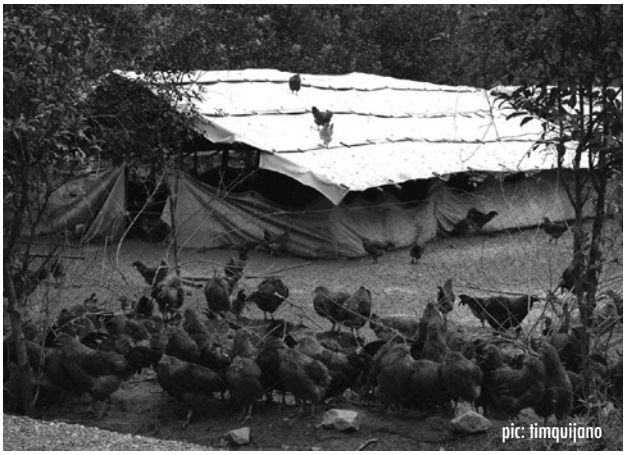
This week, when governments and concerned citizens from around the world meet in Doha to discuss climate change, China will take its place at the table as an emerging superpower and the planet's leading emitter of greenhouse gases (GHGs). The challenge that faces China, as other nations, is how to maintain food security, alleviate the effects of natural disasters worsened through altered weather patterns, and do its part to lessen soil and water pollution and stop land degradation. One solution exists in the country's burgeoning livestock sector.

China is the world's largest producer of chickens and pigs and has about 92 million cattle. The government aims to increase such production by 85 million tons by 2015 – an increase of 17% over 2010 levels. However, as the UN FAO has stated, intensifying animal agriculture means "the livestock sector enters into more and direct competition for scarce land, water, and other natural resources."

China now provides over a quarter of its grain to feed livestock, double the amount of three decades ago. This is inefficient because it requires between two and five times the amount of grain to provide the same number of calories through livestock compared to when grain is eaten by people directly. Livestock also guzzle water. Nearly 30% of the global agricultural sector's "water footprint", according to UNESCO, is "related to the production of animal products." Given that China experienced a significant drought in 2011, and that the country only possesses a third of the world's per capita average of available arable land, using land in this way puts the country's food security at risk.

Increased meat production also makes it harder to reduce GHG emissions, since the livestock sector is responsible for at least 18% of the planet's emissions, and GHGs are generated at every stage of livestock production.

After two decades of economic growth that has raised hundreds of millions of ordinary Chinese people out of poverty, the people and the government are beginning to wake up to the challenges posed by intensive meat production and consumption to human health, the environment, animal welfare, and the climate. Commendably, China has become a world leader in halting deforestation within its borders. But there is also a need, where possible, for countries to go beyond just acting to halt their own deforestation, particularly since deforestation is credited with producing up to 20% of global GHGs. There is an urgent need for the


pic: timquijano

government of China to phase out its imports of livestock products and feed from countries where livestock and feed production are responsible for significant amounts of deforestation – and where continued production does not allow for forests to regenerate (as in Brazil).

In October 2011, China's National Development and Reform Commission (NDRC) introduced the "Cool China" National Low-Carbon Action Plan, which offered seven actions individuals could take to lower their carbon footprint. One of the suggestions is to eat a meatless meal one day of the week (others include hand-washing clothes and using the stairs). "Cool China" has now been adopted by five provinces and eight cities, including Beijing, Shanghai, and Hangzhou. It's estimated that if everyone in China followed these seven steps, each person would reduce CO_2 emissions by one ton per year.

These are positive developments. However, it will take more (and more systemic) re-evaluation of nation states' commitment to intensifying animal agriculture and increasing meat production before genuine food security can be achieved. As former World Bank lead environmental adviser Dr. Robert Goodland said at the Summit of Science for a Low-Carbon Society in Beijing in 2011, renewable energy must still be increased on a large scale to keep emissions and atmospheric carbon down over the long-term.

But in the near-term, China can become an even greater leader on climate change than it is today by implementing carbon or GHG taxes and applying them to livestock products; by reducing its imports of livestock products and livestock feed; and by vigorously revitalising its traditional diet, possibly adding some new meat and dairy substitutes as a modern twist. According to experts, if the world adopted a version of China's traditional diet, which uses very few animal ingredients, there would probably be no problem feeding the 9 to 10 billion people expected to be alive by 2050.

After all, replacing livestock products with substitutes might be the only way for governments, industry, and the general public to collaboratively take powerful action to reduce climate change quickly and effectively ■

Genetic resources for food and agriculture: A prerequisite for coping with climate change

Linda Collette
Secretary of the FAO Commission on Genetic Resources for Food and Agriculture

At least 70% of the world's poor live in rural areas and depend on natural resources for their food, nutrition and livelihood. Agriculture – in its comprehensive definition including forestry, aquaculture and fisheries – plays a key role in the fight against poverty and food insecurity.


pic: Adam Inglis

However, the effects of climate change are expected to reduce agricultural productivity, stability and incomes in many parts of the world, some of which already face high levels of food insecurity. The stressors and risks posed by climate change to the different sectors of genetic resources for food and agriculture (i.e. plants, animals, aquatic resources, forests, micro-organisms and invertebrates) are manifold. In general, climate change is expected to change species distribution, population sizes, community composition, timing of biological events, as well as the behaviour of many species.

Although climate change poses new challenges to the management of genetic resources for food and agriculture, at the same time it underlines their importance in coping with climate change. It is widely recognised that forest and aquatic genetic resources have immense current importance and even greater future potential for mitigation of climate change. However, the role of genetic resources for food and agriculture in adaptation has received little attention. It is due to their genetic variability that plants, animals, micro-organisms and invertebrates are able to adapt and survive when their environments change. Maintaining and using a wide range of genetic diversity therefore means maintaining options for adaptation. Consequently, measures to promote sustainable use and prevent genetic erosion (such as ex-situ and in-situ/on-farm conservation) are of outstanding importance.

As countries seek to obtain well-adapted crops, livestock, trees and aquatic organisms, climate change will increase the exchange of genetic resources and interdependence of countries, especially when developing policies and financial instruments. Genetic resources are the raw materials that provide valuable characteristics for adaptation, for instance, tolerance of high temperatures and droughts, resistance to diseases and parasites, utilisation of scarce and poor-quality feed and tolerance of lower water quality.

The FAO (Food and Agriculture Organization of the United Nations) Commission on Genetic Resources for Food and Agriculture provides an intergovernmental forum to discuss and develop knowledge and policies relevant to biodiversity for food and agriculture. It recognises the significant role that genetic resources for food and agriculture play in mitigation of and particularly adaptation to the consequences of climate change in support of the efforts to achieve food security, now, and in the future. It meets in April 2013 and will further address this matter.

Though the international community has a long history of discussing issues of genetic resources for food and agriculture, as well as climate change, there is a need to better address the linkages between the two by, for example, developing policies, strategies and tools, as well as partnerships that promote and use the potential of genetic resources for food and agriculture for coping with climate change. Merging knowledge and building capacities by bringing together stakeholders and policy makers from both areas will enhance the conservation, sustainable use and potential contribution of genetic resources for food and agriculture to respond to ever-changing production conditions. Therefore, mainstreaming and integrating genetic resources for food and agriculture into planning of climate change adaptation and mitigation policies and measures at national and international levels, is a key step towards ensuring food security ■


pic: CIAT International Center for Tropical Agriculture

Livestock and climate change: Intensification is not the answer

World Society for the Protection of Animals

The world is facing major challenges, from feeding the growing population to tackling severe climate change. Livestock can play a huge role solving these challenges, as one billion of the world's poorest people depend upon livestock for their livelihoods and food. Yet with just a few exceptions, most studies addressing future food security and other key issues, fail to grasp the huge significance of livestock production and consumption in achieving these goals.

When livestock systems are referred to, the emphasis is often on the 'sustainable intensification' of industrial systems, which has major implications for the welfare of billions of animals, as well as the environment and climate change.

At COP18, it is critical to ensure that climate adaptation and mitigation goals in relation to agriculture are maintained and their ramifications on food security are recognised. The climate change debate must begin to consider the huge role and impact of livestock farming; any solutions emerging for agriculture mitigation and adaptation must be equitable, enhance food security and promote farm animal welfare.

The scope of the challenge
On-going damage to the environment is seriously affecting the economic sectors that form the basis of our food supply (fisheries, agriculture, freshwater, forestry) and are a critical source of livelihoods for the poor. Already, 60% of the world's major ecosystems – from soils, water, forests and fisheries – on which we depend have been degraded, polluted or used unsustainably. Climate change is the planet's biggest threat, affecting land, water availability and crop yields at a time when populations are rising fast, periodically causing food crises.

How livestock production affects the environment
Measuring the emissions from food supply is difficult given the complexity and global nature of feed and food supply chains. As the GHG emissions per kilogram of output are lower when output per animal is higher, lifecycle analysis (LCA) results argue that intensive animal farming – which includes breeding for high yields, permanent housing and concentrate feeding of animals – is the best way to reduce livestock emissions.

However, this assessment is simplistic and fails to account for other factors, such as co-products. It also often ignores the most disturbing waste in industrial scale animal production systems, for example the killing at birth of offspring considered unsuitable for production, as seen in egg laying chickens or some dairy systems. When impacts are measured per hectare of land used, less intensive and organic methods often have a smaller environmental footprint. This is significant when assessing local impacts, such as biodiversity loss and water or soil pollution.

Production change: intensification is not the answer
Most climate-related and other environmental impacts of livestock production are closely related to the normal functions of animals (food intake, digestion and manure production). Most studies suggest that it is possible to affordably reduce emissions from livestock by around 20% - a small reduction, compared to the large reductions of total GHG emissions (80%) that are needed in developed countries, compared to 1990 levels.

Breed, feed and poor management can have major impacts on emissions. Selection for high yield is often directly associated with poor welfare and can significantly contribute to increasing carbon emissions. Intensification of farming to increase, for instance, cow milk yield or pig litter size (frequency of births and piglet size), often reduces the productive lifetimes of the animals through poor fertility, lameness and physical exhaustion. Therefore, GHGs can be increased on high yield livestock farms due to compromised animal health and poor survival rates.

Industrial farming has still more consequences for GHG emissions: further intensification of global animal production would inevitably increase the amount of land converted to grow feed crops and so increase carbon emissions through land-use change. Any mitigation of emissions from livestock must be based on high animal welfare standards to enhance the potential for reducing emissions.

A sustainable food production system is possible – one which delivers environmental protection, reduces GHG emissions and ensures good animal welfare, public health and meat quality.

Sustainable food systems
There are many examples of humane and sustainable livestock farming. The World Society for the Protection of Animals (WSPA) has identified farming solutions across the world where farmers are achieving the multiple goals of environmental protection and climate mitigation, with good animal welfare, food security and secure livelihoods.

One such example can be found in Kenya where dairy is the largest agricultural sector with almost 2 million small-scale farmers securing their livelihoods by working in this sector. It is a particularly powerful example as small scale farmers are the backbone of Kenyan dairy farming, delivering 80% of all milk in the country. Domestic production meets current demand, despite milk consumption in Kenya being among the highest in the developing world.

The Lessos Livestock Breeding Network Dairies (LELBREN) LELBREN is a co-operative set up in Kenya with a current membership of 4,000 small scale farmers. The co-operative exists to improve the livelihoods of the community through advising on farm management, increasing milk distribution levels and facilitating access to markets, knowledge and inputs by dairy farmers.

Aside from the multiple positive impacts on livelihoods and food security, the farmers who are part of the co-operative also manage their impact on the environment. Most of the farmers produce a mix of both crops and livestock, recycling the manure back into agriculture or using it to produce biogas, manure and for pasture management. Supporting and educating farmers in these environmental processes helps to reduce GHG emissions and pollution from manure, and avoids soil degradation.

Most of the farmers that are members of LELBREN are farming crops and/or livestock with a vast majority of the dairy production being pasture-based. Pasture-based farming is beneficial to animal health and welfare. Therefore, cooperatives like LELBREB positively impact farming by supporting small-scale farmers to increase productivity of dairy farmers in pasture-based systems and in many cases achieving the same productivity levels as intensive, housed systems. Some members of LELBREN, who had invested in zero-grazing systems, reverted to pasture-based systems due to the high inputs required for intensive farming such as feed supplementation and housing costs. Inaccessibility to reliable production services (such as artificial insemination) and incidences of disease such as mastitis, lameness and infertility have also contributed to farmers reverting back to higher welfare, pasture-based systems ■

MORE INFO

WSPA paper, Creating greener pastures: Securing livelihoods with small-scale milk production in Kenya: http://bit.ly/UYQjhz

pic: Matt Biddulph

Climate Change & Ensuring Sustainable, Humane, Equitable Food Systems Views from the North & South

THURSDAY, NOVEMBER 29, 2012 20:15–21:45, Side Event Room 6

Agriculture can contribute to global warming by releasing GHGs (including methane & nitrous oxide), as well as help slow it by reducing/avoiding emissions. Speakers from North & South address ways to produce food using agricultural practices that are sustainable, humane, equitable & climate-resilient.

Speakers:
Richard Muyungi, *Chair, SBSTA* (invited; to be confirmed)
Sofia Parente, *World Society for Protection of Animals (WSPA-International)*
Geoffrey Orme-Evans, *Humane Society International (HSI)*
Xie Zheng, *Chinese environmentalist/musician*
Moderated by: Mia MacDonald, *Brighter Green*

HUMANE SOCIETY INTERNATIONAL

WSPA World Society for the Protection of Animals

Brighter Green Equity. Sustainability. Rights.™

Public-private partnerships: A key to stimulating action for mitigation in agriculture

Hilda Runsten
Federation of Swedish Farmers

Reducing the carbon footprint of agro-food chains, both through production and land use, represents a critical opportunity for agricultural and global food security in the coming decades. Farmers are increasingly facing new challenges, including increased drought, changes in pest pressure and unpredictable weather patterns as global temperatures continue to rise. These factors threaten agriculture's ability to improve global farm incomes, while meeting the increasing food demands of a growing population.


pic: CraneStation

Public-private cooperation can create new solutions, as information and competence is gathered from around the world. Some examples are:

- They can gather competence from spheres that do not ordinarily intersect;
- they can expand and bring up to scale 'small' experimental solutions;
- they can find funds to test scientific results in practice; and
- they can conduct research in practice, via products that are tried and evaluated without delay by the farmer.

A number of stakeholders across the agro-food chain, including farmers, businesses, NGOs, and governments, are partnering up in order to rise to the challenges; working together to increase productivity, while improving adaptation and mitigation strategies. Comprehensive agricultural strategies that recognise the need to meet the demands of a growing world while reducing carbon emissions, require careful evaluation across the supply chain in order to determine what innovations and practices may yield the greatest impacts in meeting these goals. By scaling up already existing technologies that may aid the quest for resource efficiency and crop productivity, the food supply chain can have a significant and measurable impact on improving climate-smart food.

What are the benefits?
Climate change is an extremely complex issue; we need to improve knowledge of how our biological production systems will be affected and how we can limit emissions from this sector. There is also a great need for technological development, for example in new biofuels and an increased use of fibre. In order to take on these great challenges, we need new models and new alliances. Public-private partnerships that engage multiple stakeholders across the agro-food value chain are thus needed to reduce emissions at scale.

Furthermore, we have to work actively by presenting good examples regarding smart climate solutions and good practices in agriculture and forestry. Public-private partnership are an important tool to achieve this. By providing a support structure that utilises agricultural advisors, farmers should be able to pilot new methods and technologies. The best practices should thus be realised directly at the actual farms, where farmers should be given the opportunity to provide feedback, increasing the rate in which appropriate solutions are found. Farmers are often very positive about participatory driven research.

There are already good examples of public-private partnerships; an example is when farmers are aided in developing certification standards, resulting in better prices for their products. Resource efficiency measures are another example of a successful public-private partnership that has brought forth greater harvests with less input.

Public-private partnerships are key to the development of scalable solutions, as well as the sharing of knowledge and expertise between countries and sectors involved in the agro-food chain. They develop new, heretofore unexplored solutions, utilising a wide range of expertise, resources and shared knowledge that can be synthesied in new, useful and exciting ways for investments, innovation and education.

The need to mitigate and adapt to climate change is a great challenge facing the world today. There is no 'one size fits all' solution. However, globally shared knowledge and experiences can be one solution. We need to create space and opportunities where experts may contribute to the discussion concerning agriculture in the UNFCCC. Farmers all over the world have a desire to become involved in climate change solutions; this is just one important example of how it can be done ■

ABOUT THE AUTHOR

Hilda Runsten is a climate expert at the Federation of Swedish Farmers, a member of the World Farmers Organisation

profile. Geoff Orme-Evans

Nationality: United States

Country of Residence:
United States

Current Position:
Environment and Climate Specialist for Humane Society International (HSI)

How did you get to the role you are in today and what advice would you give aspiring climate champions?
I have long been an advocate on behalf of environmental and animal welfare issues. I have a background as an attorney, and prior to this position I litigated on behalf of animals. At the same time, I held on to my passion for environmental protection. As I got more interested in climate change, I found this position (with HSI) that blended both major interests of mine. I'm proud to be part of an organisation which aims to improve the treatment of animals whilst helping to prevent environmental damage at the same time. My advice to others is to follow your passion. Volunteer opportunities, locally and globally, can help you find your niche and discover what further education you might want to pursue.

What impact do multi-stakeholder groups, such as Climate Action Network (CAN), have within the international processes on climate change?
As NGOs, we have to make the greatest impact possible with limited resources, and CAN-International, which is comprised of over 700 NGOs worldwide, is an incredible chance to pool collective knowledge and work towards civil society climate goals. Not only is CAN-International an incredible resource and help in capacity building, it serves as a respected NGO voice that climate change negotiators take seriously.

What is the relevance of animal welfare and farming to the climate negotiations?
How farm animals are raised and treated can have important repercussions for both welfare and environmental sustainability, food security and the economic well-being of farmers. The animal agriculture sector, which raised more than 70 billion land animals in 2010, is one of the largest contributors to greenhouse gas emissions worldwide, responsible for an estimated 18% of human-induced emissions and is projected to grow to 39% by 2050. While this is disrupting weather, temperature, and ecosystem health, there is also a threat of death to farm animals from heat stress and drought. Many of these 70 billion animals spend virtually their entire lives in tiny cages and crates, and industrial systems now produce approximately two-thirds of the world's poultry meat and eggs, and more than half of all pork.

We cannot view climate change solutions in a vacuum, particularly in the case of agriculture. That is why we need comprehensive solutions that provide multiple co-benefits. For example, by supporting small-scale producers with high-animal welfare, sustainable farm systems.

What are the priorities for action on livestock and agriculture at COP 18?
Establishing a food secure, sustainable and animal welfare-friendly future requires immediate changes in farm animal production and consumption patterns which address the drivers of agricultural emissions. In Doha, the COP should call for a series of Subsidiary Body for Scientific and Technological Advice (SBSTA) stakeholder workshops and invite further submissions on agriculture from Parties and observers. This work should be broad based and go towards long-term policy and finance that improves food security and long-term sustainability, enhances the ability of farmers and farming systems to adapt to climate change, mitigates emissions, and improves animal welfare.

In addition, deforestation and forest degradation, of which animal agriculture—for grazing and feedcrop production—is a significant driver, destroy carbon sinks in addition to releasing billions of metric tons of CO_2 into the atmosphere. REDD+ must address the drivers of deforestation to be successful, and SBSTA should work more quickly towards this goal than it has thus far.

What are your aims within your role for 2013 and beyond?
We must work comprehensively towards a more sustainable, food secure, and animal-welfare-friendly agricultural landscape. And we shouldn't forget the role that individuals can have on the climate and environment, especially concerning food choices. Governments and civil society should raise awareness of animal welfare issues and have meaningful discussions with constituents about adoption of programs and approaches that reflect the health, climate, and environmental benefits of reducing meat, egg, and milk consumption, particularly among those in developed nations and amongst higher-income urban consumers in mid-income nations.

Favourite quote:
"Think occasionally of the suffering of which you spare yourself the sight." – Albert Schweitzer ■

Food, agriculture and climate change in Africa

Nabil Hamid Hassan Bashir
University of Gezira, Sudan

Climate is a major limiting factor for agricultural production in all continents. Food crops are distributed worldwide according to geographic and ecological zones. Even within the same zone or country, the sowing dates of the same crop are determined as a result of intensive, time consuming, and expensive research.


pic: CIAT International Center for Tropical Agriculture

These dates take into consideration several factors and parameters. These include germination, growth rate, flowering dates, fruit setting, yield quantity and quality, weeds, insect pests and diseases. Any changes in the temperature, relative humidity, rainfall, solar radiation, wind speed, length of the season have an effect on the above factors, and ultimately the yield. It is well known by farmers that agriculture depends on timing, regardless of the agricultural zone.

This timing is strongly related to the climate. For example, temperature increases within the last few years, especially in Africa, have caused significant losses in yields of fibre, food and feed crops. This change has also caused serious deterioration in pastures, forests and forest-products.

Moreover, the well-established systems for controlling weeds, insect pests, and plant diseases have become ineffective for several reasons, including the shift in pest population incidence and intensity, and the appearance of new weeds, insect pests, and diseases. Some of these problems have not been previously encountered and therefore require intensive research programmes to avail urgently needed data for the coming seasons.

The most serious problem is the effect of such changes on winter crops such as wheat, legumes and tomatoes, that require low temperatures during day and night for at least 4-5 months to produce acceptable yields. Currently, the winter months have drastically changed in terms of mean daily temperatures and duration of the cold days (short season), in addition to the sudden hot-spells within this period. The latter significantly affects plant physiology and growth. For example, the vegetative yield of the crop increases at the expense of seeds and fruits.

This climate change will force scientists and research institutes to start working on setting new sowing dates, looking for new varieties that are suitable for the changing climate, studying the new plant-pest complex, exploring new pest control measures, and performing new tests for new pesticides among other solutions. During such a period of drastic changes, all affected countries will be obliged to import the deficit in food items using the sparsely available hard currency.

Climate change has also affected the rainy seasons. Several East and West African countries are still suffering from the sudden drought, which has continued over the last 3-4 years. This extensive drought has affected agricultural production, imports, exports, migration to cities and neighbouring countries, and the nutritional status of the population of these countries, especially women and children in poor families. Malnutrition and disease among children in these regions can be identified as a major consequence of climate change.

Therefore, most African countries are in desperate need for assistance from developed countries, FAO, WHO, and NGOs in the coming few years in terms of food aid, medication, research facilities and of course, finance ■

ABOUT THE AUTHOR

Nabil Hamid Hassan Bashir is a Professor at the Department of Pesticides and Toxicology, Faculty of Agricultural Sciences, University of Gezira, Sudan


pic: CIAT International Center for Tropical Agriculture

COP18 side event calendar

DATE	TIME	VENUE	TITLE	ORGANISERS
THURSDAY 29th NOVEMBER	11:30–13:00	Side Event Room 7	Poverty and Climate Change Mitigation	University of Cape Town (UCT) and The Energy and Resources Institute (TERI)
	13:15-14:45	Side Event Room 4	Integrated Spatial Data for Climate Adaptation Planning	United Nations Population Fund (UNFPA)
	13:15-14:45	Side Event Room 7	Engaging and empowering children and young people for resilience and green development	Earth Child Institute (ECI) and British Council
	16:45–18:15	Side Event Room 8	Pacific Islands and Climate Change - Our Century's Challenge, Our Pacific Res	Secretariat of the Pacific Regional Environment Programme (SPREP)
	18:30–20:00	Side Event Room 1	Innovating Climate Mitigation Technologies Post-2012: Integrating Engineering, Science and Policy	Imperial College London and Bellona Foundation
	18:30–20:00	Side Event Room 4	Achieving Scale in Agricultural Innovation for Climate Change	International Food Policy Research Institute (IFPRI)
	18:30–20:00	Side Event Room 6	The tourism sector response to climate change: mitigation and adaptation initiatives and strategies	World Tourism Organization (UNWTO)
	20:15-21:45	Side Event Room 6	Climate Change & Ensuring Sustainable, Humane, Equitable Food Systems: Views from the North & South	Brighter Green Inc., HSI and WSPA
	20:15-21:45	Side Event Room 7	Addressing Climate Change through South-South Sci-tech Cooperation	China Science and Technology Exchange Center (CSTEC)
	20:15-21:45	Side Event Room 8	African Youth Forum on Climate Change:Mobilizing African Youths on reasons for planting trees	United Nations of Youth Nigeria
FRIDAY 30th NOVEMBER	11:30–13:00	Side Event Room 7	Observed climate and new Met Office Hadley Centre Earth System model projections	Met Office Hadley Center
	13:15–14:45	Side Event Room 2	Ambition and markets – working hand in hand to deliver global benefits	World Business Council for Sustainable Development (WBCSD)
	13:15–14:45	Side Event Room 8	The renewable energy revolution - Lessons applied in the Middle East and Africa.	Heinrich Böll Foundation (HBF) and World Future Council (WFC)
	15:00–16:30	Side Event Room 7	Agroecological Parks and bioeconomy	COBASE and Gherush92
	15:00–16:30	Side Event Room 4	Funding the transition: A trade union approach to climate finance	International Trade Union Confederation (ITUC)
	16:45–18:15	Side Event Room 7	Creating synergies and reducing barriers between voluntary certification standards in A/R and IFM	Forest Stewardship Council (FSC) and CarbonFix e.V.
	18:30–20:00	Side Event Room 4	Global Framework for Climate Services (GFCS)	World Meteorological Organization (WMO)
	18:30–20:00	Side Event Room 7	Pakistan's increasing vulnerability and opportunities for Climate Compatible Development	Pakistan
	20:15–21:45	Side Event Room 4	National adaptation planning processes in Least Developed Countries	Gambia and IIED
	20:15–21:45	Side Event Room 10	Climate Forced Migrants : On the question of Rights and Responsibilities	COAST Trust
	20:15–21:45	Side Event Room 8	Mobilizing LULUCF in the Post-Kyoto Framework	Swedish University of Agricultural Science

Reflections from COP18, Wednesday 28 November

Rina Kuusipalo
Harvard University

While leaders – especially of developed countries – lack the needed sense of urgency, equity, and intergenerational justice, young people growing up in a world increasingly mired by the impacts of climate change have come together to ask COP18: what kind of a world do you leave for us to inherit?

In the first few days of negotiations, youth from different countries and organisations have stood up to tell stories of how climate change impacts us now, and how direly we need a binding, fair, and ambitious deal. The backdrop to the campaign has been the #ClimateLegacy map, a visual representation of recent local impacts of a rapidly warming world. The map demonstrates that no one is safe from climate change anymore. Each red dot on the map and pinned onto people's chests in the conference halls represents an individual story of the climate legacy we already live.

Foreshadowing the Youth and Future Generations Day, in this morning's Climate Legacy action, young people stressed the principles of international and intergenerational justice. Rajan Thapa from Nepal urged rich countries to take on greater responsibility, since countries like his, the least responsible for climate change, are the ones facing the most pressing impacts of melting glaciers and mounting conflicts.

Pin-Han Huang from Taiwan described the typhoon that hit her island nation home in 2009, illustrating how whole villages disappeared in mud. Jane Nurse from Grenada pointed out that climate impacts are often even deeper than the media coverage allows. Many island nations like hers have no capacity to recover from the recurring devastation of evermore frequent storms, which destroy the economic infrastructure for years to come, not to mention the human scars.

The afternoon's side event on "Closing the Equity Gap" reinforced the call for justice as part of the climate legacy. Developed countries in particular must deliver what they owe their developing counterparts, our generation, and future generations. In Doha, leaders will choose between two paths to 2015: a climate legacy tarred by short-term profits, fossil fuels, and human loss, or, a climate legacy that delivers ecologically sound, economically just human prosperity for generations to come ■

Chulani Kandage
British Council Climate Champion

In my 15 years as an environmental activist, Doha 2012 is my first COP experience. The day started by attending a plenary session on the Clean Development Mechanism (CDM). The chair presented the CDM report for the last year, to which many countries actively provided a wide range of comments ideas about the Mechanism. Most countries were not satisfied with the methodologies, framework and achievements of the CDM, and suggested redefining its goals and objectives. Others emphasised the need to search for innovative funding methods.

Subsequently, I attended a side event on "Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation" which was presented by the Intergovernmental Panel on Climate Change (IPCC) and chaired by Dr. Renate Christ. During the discussion, the panel put forward different examples from all over the world such as hurricanes in the USA, flash floods in Nairobi, Kenya, and drought in Africa. These presentations stimulated an animated discussion amongst the audience of over 200 people, which seemingly enhanced the participants' knowledge on interrelationship between climate change and extreme events.

I also experienced some interesting discussions today about equity and climate change. Another side event entitled "Closing the equity gap – Is equity enabler or barrier to increase ambition?" explored this relationship, with the discussion focusing on three key dimensions: limiting planetary warming, sharing efforts and disaggregating means (finance etc.). The discussion panel concluded that equity must be seen as an enabler for increasing the ambition of climate change efforts.

At this stage, however, these discussions remain exactly that, just discussions. The real question is whether the negotiators here at COP will take these messages on board and make the bold commitments so urgently needed to avoid a climate catastrophe. To quote Senator John Kerry, "Climate change is real. The science is compelling. And the longer we wait, the harder the problem will be to solve." ■

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