# F@RMLETTER

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ROBERT CARLSON,
WFO PRESIDENT

# A Global Landscape Approach to Climate Change and Agriculture?

Climate change is one of the greatest challenges facing the planet in the 21st Century. Rising global temperatures, prolonged droughts, increased precipitation and extreme weather events are among the things that we are already experiencing and that we must expect will increase in the future.

Farmers, and especially farmers in developing countries, are severely impacted by a changing climate. Changing growing seasons, rainfall patterns and a need for adapting crops and techniques are some of the consequences for farmers. An increased focus on adaptation is essential to make sure that they can sustainably increase food production and meet the needs of a growing world population.

It is also important to recognize that farming and the activities related to farming, such as food processing, contribute up to a third of global greenhouse gas emissions. We must also realize, however, that greenhouse gas emissions will continue to be a product of food production, since farming involves natural processes where the production of greenhouse gas emissions is unavoidable. In addition, the agricultural sector is the only sector that can mitigate greenhouse gas emissions by means of the process of soil carbon sequestration. With the right tools and support, farmers can produce food more efficiently and help mitigate global greenhouse gas emissions.

Farming is, moreover, not only about producing food. Farming also impacts the environment, biodiversity, water, forestry and the global climate. In order to deal with these wider implications, we need to implement a new approach to the agricultural sector. This could be, for example, the so-called Landscape Approach, in which agriculture is viewed as a provider of environmental and climate services, a user of fresh water resources and part of a forest conservation effort.

**AGRICULTURE DIRECTLY ACCOUNTS FOR ABOUT 14 PERCENT OF GREENHOUSE GAS EMISSIONS, AND INDIRECTLY FOR ANOTHER 17%**

We must increasingly find ways to work with all stakeholders who utilize our important natural resources and diverse landscapes, so as to come up with real solutions to sustainability issues. Farmland, woodland, rivers and lakes are all essential parts of a functioning sustainable landscape and a Landscape Approach will ensure that there is no trade off between different types of policies, but rather that they are all applied.

Farmers and foresters are on the frontline of climate change. Their lives and livelihoods are directly affected by its impact, and they are also vital in implementing many of the solutions we need to help delay and deflect it. Therefore, farmers must be involved in implementing climate change mitigation and adaptation strategies.

Globally, agriculture directly accounts for about 14 percent of greenhouse gas emissions (methane from animal digestion and nitrous oxide from agricultural soils, etc.), and indirectly for another 17% due to the fact that agriculture is a major driver of deforestation and land-use change. The sector holds a large mitigation potential, mainly through reduced deforestation, soil management and increased productivity.

World farmers and their cooperatives want to contribute to mitigate climate change. Farmers have adapted to climate variability for centuries and still manage to feed the world's population. Today, climate change poses a serious threat to farmers and the whole agricultural sector, so adaptation is key to increasing the sector's resilience.

The agricultural sector has, however, the capacity to offer sound solutions to cope with this challenge, provided that farmers are encouraged to do so.

Parties to the UNFCCC are, therefore, urged to further consider a work program on agriculture under SBSTA with a view to advancing scientific and technical understanding, as well as informing decision-making on agriculture's role in addressing future food security and climate challenges.

The Global Landscapes Forum is taking place in parallel to COP 19 in Warsaw, Poland on November 16 and 17 , 2013. It combines two of the previous years' main events, Forest Day and Agriculture, Livelihoods and Landscapes Day. The event will bring together more than 50 organizations and will present political, scientific and practical perspectives on forests, agriculture and landscapes. The event will also help shape the landscapes approach and thereby inform future UNFCCC agreements.

The articles contained in this issue of the F@rmletter explore different aspects of the landscapes approach. Bruce Campbell, Director CGIAR Research Program on Climate Change, Agriculture and Food Security looks at how a Landscape Approach can help balance food and environmental needs.

The Technical Center for Agricultural and Rural Cooperation will present a case study on how traditional and modern meteorological knowledge can be combined in 3D-modelling to improve landscapes management.

A forestry perspective on landscapes is given by John Colmey, Director of Communications at the Center for International Forestry Research.

Finally, the case studies chosen for this issue of the F@rmletter also look at climate change: One from Scotland deals with the issue of climate change mitigation agricultural techniques. One from Malawi focuses on conservation agriculture for both sustainable agriculture and reversing environmental degradation. Marina Cherbonnier of YPARD tells us about how young people have engaged in the Global Landscapes Forum in Warsaw. Lani Eugenia, General Secretary of Puantani, writes about the need to give women access to climate information in order to adapt to a changing climate. Last (but not least), Meerim Shakirova of YPARD talks about climate change and young people in rural areas.

**FARMERS CAN PRODUCE FOOD MORE EFFICIENTLY AND HELP MITIGATE GLOBAL GREENHOUSE GAS EMISSIONS.**

# BALANCING FOOD AND ENVIRONMENTAL NEEDS THROUGH THE LANDSCAPE APPROACH

***Bruce Campbell,***
*Director CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS)*

The Landscape Approach seeks to resolve the central dilemma confronting humanity today: How do we cope with environmental degradation, in particular increasing greenhouse gas (GHG) emissions and climate change, while simultaneously expanding agricultural production to satisfy human needs?

As human activities alter weather patterns, the consequences at local and global level for livelihood systems are increasingly worrisome: There is no denying that agriculture and animal husbandry are part of the problem. Yet we cannot respond to climate change by simply scaling down agricultural production, as hunger and poverty would follow.

On the contrary, eliminating the hunger that persists today and rewarding people's aspirations as they climb out of poverty requires farmers from around the world to produce ever more agricultural goods. Farmers must redouble their efforts, as demand grows in tandem with the global population, which is projected to rise from 7 million today to 9 or 10 billion by 2050.
No magic bullet can resolve this dilemma. However, the Landscape Approach provides a framework for multiple strategies to boost agricultural production while adapting agriculture to climate change and reining in agricultural emissions. The Landscape Approach looks beyond agriculture, integrating it with forestry and other land uses to forge a comprehensive agenda for sustainable development to eradicate poverty, strengthen food and nutrition security, as well as promote green growth that makes cities more energy efficient and rural land use more productive and sustainable.

Two keys to successful landscape management from the agricultural perspective are intensification and diversification.

Agriculture shares responsibility for climate change not only by emitting GHGs, but also by driving deforestation and diminishing the carbon sequestration that healthy forests provide. Only by producing more crop per hectare can farmers afford to spare surviving forests, wetlands and other natural landscapes. Furthermore, improved productivity can induce farmers to stop tilling or overgrazing marginal lands that would be more valuable to livelihoods and resilience if reforested or otherwise restored to their natural state.
Higher emissions from intensified agriculture in selected favorable growing environments may be a good bargain if it is the unavoidable cost of leaving extensive landscapes under natural

vegetation to serve as carbon sinks and wildlife preserves. Sustainable agricultural intensification requires research investments to breed improved crop varieties, refine crop management techniques and create enabling social and administrative environments for appropriate innovation.

Diversification is the best hedge for any investment, not least against the extreme weather that already buffets some of the world's most vulnerable farm communities. Yet crop diversification may not be practical, or possible, on individual fields. The Landscape Approach can, therefore, offer opportunities to help rural communities diversify on a *landscape scale*.

Agroforestry, integrated livestock management, conservation tillage, crop residue and nutrient recycling, as well as the minimization of the use of nitrogen fertilizers, are among the climate-smart agricultural practices with a potential for scaling up. In the resulting climate-smart landscape, fields, forests, grasslands and other land uses are coordinated on a landscape scale to help achieve social, economic and ecological ends.

Governance is crucial to landscape management. It requires the participation of a range of stakeholders, from organizations of farmers, herders, fishers and foresters to civil servants responsible at the watershed level and beyond. To be efficient and effective, the Landscape Approach needs scientific inputs to inform governance. To this end, the Global Landscapes Forum on 16-17 November 2013 in Warsaw, Poland, will shape the agenda on climate and development, since it pertains to forests and agriculture. It aspires to develop the potential of the Landscape Approach to inform future agreements under the United Nations Framework Convention on Climate Change (UNFCCC), thereby helping to achieve the proposed Sustainable Development Goals.

Meanwhile, the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) is developing and testing what it calls the SAMPLES approach – which is short for Standard Assessment of Mitigation Potential and Livelihoods in Smallholder Systems. The SAMPLES project, one of many under CCAFS, aims to establish a low-cost protocol to measure greenhouse gas emissions and identify mitigation options for smallholders that can be pursued at the farm and landscape scale without prejudicing food production or rural incomes.

As the Landscape Approach is both new and ambitious, its practitioners still discuss definitions, methods and goals. Even the principle of *land sparing* by concentrating intensified agriculture on selected favorable environments is subject to debate. Advocates of *land sharing argue*, instead, for wildlife-friendly farms that coexist with ecosystems by resting lightly on the land and drawing few natural resources. Which approach to favor, or how to combine land sparing and land sharing, are only two of the fundamental questions that demand timely answers to determine where the Landscape Approach is headed.

**AGRICULTURE SHARES RESPONSIBILITY FOR CLIMATE CHANGE NOT ONLY BY EMITTING GHGS, BUT ALSO BY DRIVING DEFORESTATION.**


Credit and copyright: *Souleymane Ouattara/CTA*

# THE CLIMATIC STORY OF AFRICA AS TOLD BY THE INDIGENOUS PEOPLES

***The Technical Centre for Agricultural and Rural Cooperation***

For centuries, the Griots have been the custodians of the history of Sub-Saharan African populations. Are they on the verge of losing their monopoly as knowledge-holders? The Bororo herders are now telling and mostly writing their climatic history, or even, more simply, their history, which has been made possible thanks to Participatory 3-Dimensional Modelling (P3DM). This way of approaching land use management reconciles traditional and modern meteorological knowledge systems with advanced technology (GPS, satellite, software…) to encourage dialogue among peasants, researchers and decision-makers with the aim of documenting and sharing knowledge, as well as, more importantly, influencing policies on rural development.

Some rather peculiar visitors were received in 2012 at a professional Training Centre located in Baïbokoum, which is in the southern part of Chad at the border with Cameroon and Central African Republic. The visitors came from Niger, Kenya, Tanzania and other regions within Chad in order to participate in a workshop on a sensitive topic: *Conflict prevention between herders and farmers and the development of a 3D model of the area*. The workshop was co-organised by *L'Association des Femmes Peules Autochtones du Tchad (AFPAT)* and *the Indigenous Peoples of Africa Coordinating Committee* (IPACC), with support provided by the *Technical Centre for Agricultural and Rural Cooperation EU-ACP* (CTA).

The men, who mostly had greying beards and wore turbans, and the women, who were wrapped in veils or printed cloths, wandered into the Center's large yard. By their side was a cartographer, Barthélemy Mambi Mboika, who was equipped with his GPS, as well as a specialist in participatory approaches, Dr. Nigel Crawhall. In groups of eight or twelve, they pulled out tufts of grass, branches, collected stones …. all in good spirit. But what treasures were they looking for and for what purpose?

**Applied research laboratory**

Answers to these questions were partly found in one of the classrooms that had been transformed into a laboratory. Each group created, with whatever had been collected in nature outside, a miniature version of the Training Centre and its immediate environment, such as hills, trails, fields...What seemed to be child's play introduced the uninitiated - most of who spoke neither French nor English – to creative legend-making to. Each dot represented a village; a line represented a road or a river 8depending on the colour, etc).

This representation was the prelude to a series of other exercises that would enable participants to produce a 3D model to professional standards, with woollen threads, glue, paint, GPS and computers. The herders, therefore wrote, bit by bit, the story of their region, its streams, roads, fields, hills, cattle grazing routes, etc.

**Linguistic sophistication**

Producing this type of 3D model requires technical and socio-linguistic skills. In order to make these populations become key players in the production of this model, their languages must be used. This can sometimes be immensely surprising. Did you know for instance that in Bororo there are several terms to describe different types of streams, as well as the perennial or temporary nature thereof? Words or expressions can vary to describe water, trees, and pastures according to their use and when best to use them.

Therefore, at certain times of the year, herders tend to use *'laingél'* or streams as a water supply for their cattle instead of going all the way to the *'mayel'* or river, which is difficult to access due to the fields which block cattle corridors.

Nigel Crawhall's skill is to assist the participants in reviving some of these terms and to find the corresponding words in French and English.

It can sometimes be a complicated exercise as the Bororos display extremely sophisticated linguistic skills when it comes to biodiversity: There are sometimes slight differences - which go unnoticed by the uninitiated - between *mayel, mayeel, tchelol* and *ilaangol*, that respectively define a large river, a river, the arm of the river, a creak or a swamp.

Debates on the meaning of words call attention to the disappearance of some terms or expressions because what they actually describe does not exist anymore.

In this context, participatory mapping as a system and tool for land use represents an excellent indicator of the risks that certain languages face, as plants become extinct, words are forgotten and dialects dry out and die.

**Democratic forum**

In the classroom, which was transformed into a geographical institute, discussions flowed. Women and young people, who are generally sidelined in public debates in their villages, participated actively. The implementation of the model created awareness for everyone with regards the degradation of flora, the extinction of wildlife and the recognition or denial of rights depending on the type of users, on the lack of resources or on the management or assignment thereof to a particular type of activity... Hindou Oumarou, the Co-ordinator of AFPAT, was positive about this appropriation of public space by women: *They know their environment. They are the ones who fetch water and wood. They take care of the cattle and smallholder*

## IN THE CROWDED YARD OF THE BAÏBOKOUM TRAINING CENTRE, HERDERS WERE PUT IN THE SPOTLIGHT

*farming. They share with their men their knowledge about how to adapt (in terms of climatic changes – editor's note) and negotiate new roles in the development of their households and their environment…"* By offering these women the opportunity to develop their skills, as well as to debate with men on strategic topics such as the use of natural resources, human rights, citizenship and to have their opinions valued and considered, the model which is being built will become a powerful tool for promoting gender.

**Dialogues with the authorities**

Within ten days, and with the help of a part of the Baïbokoum population, as well as with the help of a carpenter and the students, the model was ready. Its multiple colours, which reflected the lush nature of this part of Chad, gave rise to a masterpiece. The debates that took place during the model's construction gave rise to a body of knowledge and a dialogue between citizens. In fact, the building of the model not only enabled knowledge to be shared among generations but also encouraged the disenfranchisement of development stakeholders by offering them an exchange platform on sensitive topics that are rarely brought up.

This is precisely what happened on the day when the model was presented to local and regional authorities: In the crowded yard of the Baïbokoum Training Centre, herders were put in the spotlight.

After receiving certificates rewarding them for days and nights of hard work, the latter presented their work. With the model in front of them, they told the history of their living environment, impressing the authorities with their depth of their knowledge. They explained the decrease in soil fertility, the drying up of streams, the decrease and even the disappearance of transhumance corridors, some of which date back to the colonial period.

The Governor of the Eastern Logone province and the President of the *Comité Provisoire des Gestion des Revenues Pétroliers* (CPGRP) did not miss a single word of the spokespersons' brilliant explanations.

Q&A sessions, whose titles were *What is the current state of the forests?, What is the impact of the expansion of cassava fields on the environment?, Where are the transhumance corridors?* Then followed. Officials questioned the herders who answered assertively.

Isn't there a saying in Africa that states that *the sound of the flute is more melodious when it comes from the mouth of the musician?* It is hard to find a group which is more knowledgeable and which defends better nature than the Bororo herders: Their lives depend closely on that of the wildlife, flora and water courses, which are carefully watched by them.

**THEY KNOW THEIR ENVIRONMENT. THEY ARE THE ONES WHO FETCH WATER AND WOOD. THEY TAKE CARE OF THE CATTLE AND SMALLHOLDER FARMING. THEY SHARE WITH THEIR MEN THEIR KNOWLEDGE ABOUT HOW TO ADAPT AND NEGOTIATE NEW ROLES IN THE DEVELOPMENT OF THEIR HOUSEHOLDS AND THEIR ENVIRONMENT.**

**A tool for decision-makers**

Zoning, land-use planning, taking into account everyone's interests, pacific co-existence…The 3D model deals with the concerns of public authorities of many African countries. It allows decision-makers, farmers and herders to deal with all these topics. This role of appealing to the authorities is vital according to Barthélemy Mboika. *Decision-makers act as referees, while taking into account the rights of each and everyone. They are also the ones who are meant to engage in sustainable planning and develop a zoning plan so that the rights of others are not marginalised and there is no overlapping usage of land. The governor confirms: Our mission is to ensure social peace and pacific co-existence. Investments need to be done for both communities, with a view to ensuring the sustainable use of natural resources."*

**A great advocacy tool**

In the context of development work, the use of maps is not new. Generally, these are what technicians refer to as Orthophoto maps, which teach ordinary people to analyse the lay of the land.

These types of maps are usually limited to one village. They mark land boundaries (in particular those of fields), point to water streams and sometimes mark out flora degradation.

Participatory 3D Modelling is innovative in many ways. Not only is this the result of the work of farmers who create it and make it usable by updating it at regular intervals, but it also helps to categorize an area and allows the results of an entire region - that has similar agro-ecological characteristics - to be extrapolated with a view to raising awareness and taking action at a regional and national level. It also facilitates the mobilisation of national and international support organisations - which have (when compared with village groups) more leverage in terms of policy dialogue – with a view to bringing about desired institutional and legal changes.

The closing ceremony also provided the opportunity to start an advocacy campaign with officers from the regional administrations (technicians, police force, local administration…), which could prove to be an effective strategy, especially if there are plans for follow-up actions that give a second life to the map. The Baïbokoum Head of Livestock service noted: *There are existing frameworks for*

*dialogue, such as the association of farmers and herders, as well as the mediation association. Both can use this 3D map as a planning tool.*
The 3D model helps communities face six big challenges: i) to have a better understanding of their environment; ii) to document traditional knowledge; iii) to resolve conflicts between communities; iv) to live peacefully in order to manage more efficiently natural resources which are progressively decreasing; v) to decide on the development of their region; vi) to start a dialogue with public authorities so as to influence decisions that directly impact their lives.
In order to achieve this, the 3D model must reach out beyond Baïbokoum. This is exactly what the video does. The film that was made about this original experience was broadcast in November 2012 at the COP 17 in Doha, Qatar, garnering interest from NGOs of other continents and making charitable organisations aware of the struggle that African indigenous people face in dealing with climate change adaptation. The film, which is freely accessible online [https://vimeo.com/channels/pgis/53836701], ensures that this case has global visibility.

**THE DEBATES THAT TOOK PLACE DURING THE MODEL'S CONSTRUCTION GAVE RISE TO A BODY OF KNOWLEDGE AND A DIALOGUE BETWEEN CITIZENS.**

**Issues under debate**
The 3D model is obviously a great advocacy tool at local, national and international levels. However, it may raise expectations that may not be met. Barthélemy Mboika agreed that *The limitation is that the map in itself is not a solution to the issues at hand. The map is simply a tool to facilitate dialogue and that highlights the various issues at play.* *Hindou Oumarou also added: The mapping needs political support. A commitment from policy-makers. We need implementing provisions for this map*. Without such support, the hope that stems from this map can become just a series of questions that remain unanswered. How can we ensure that the model, as soon as it is finalised, does not remain locked away in a drawer? What must be done, for example, to allow the passage of cattle along their transhumance routes (and through agricultural land) without threatening the fragile social peace? How could national laws coexist with local conventions without stepping into illegality? As a Sahelian living in the flat land of Burkina, I also ask myself this: "When will there be a participatory mapping adapted to the savannah?" Who will give me this answer? However, these questions should not detract us from the main point: The developing world possesses a great tool that can contribute to the good management of natural resources, promoting peace and mitigating the impact of climatic changes.

http://www.iapad.org/p3dm_guiding_principles_2010_en.htm

# A FORESTRY PERSPECTIVE ON LANDSCAPES AND WHY THERE IS NONE - COMMUNICATING LANDSCAPES ACROSS SECTORS

***John Colmey,***
*Director of Communications at the Center for International Forestry Research (CIFOR)*

In about six weeks, the Global Landscapes Forum will take place on the sidelines of the UNFCCC 19th Conference of Parties in Warsaw. Combining *Forest Day with Agriculture, Landscapes and Livelihoods Day,* it will be the biggest attempt yet to examine farms, forests and climate change as one unified issue. The Forum will go beyond just adding the perspectives of each sector, rather taking a holistic view by identifying interactions, the need for better cooperation, and opportunities for synergies and partnerships by bringing together 50 international organizations that will host a wide array of sessions and discussions.

The *Global Landscapes Forum* might be a new event in this form and context, but the Landscape Approach is already being practiced on the ground and has proven successful in solving extremely problems where competing land uses exist. As Terry Sunderland, Principal Scientist with CIFOR's *Forests and Livelihoods Program, points out: People don't live in sectors or departments, they live holistically. It is important we collectively visualize how a landscape will look, for whom it needs to work and how it needs to function.* Already, private-sector companies are implementing sustainable watershed management to improve the quantity and quality of water; regional initiatives are using landscapes approaches as a way to resolve conflicts over land and resources; and smallholder farmers can rely on mixed land-use systems for increasing their resilience to climate change and other external shocks , such as, for example, food price variability.

The challenge we are facing now is to communicate the successes and opportunities for a Landscape Approach to policy processes, like the UN climate change negotiations or the process toward a new development framework that will replace by 2015 the Millennium Development Goals. When communicating the value of the Landscapes Approach, we must cross sectorial boundaries. There is no way of selling a Landscape Approach to foresters when we try to frame it within a *forest perspective*, simply because there is none. Rather, we must highlight the complex linkages between sectors and scales: Deforestation is not just about forests - it is about the expansion of agriculture driven by a growing world population and changing consumption patterns. Likewise, food security is not solely about agricultural output but rather about access to nutritious food for all.

The lesson that we are learning in policy and practice is that landscapes are more than mere units for specific outcomes, such as reducing deforestation: They provide combined solutions for balancing development aspirations in a globalized world of scarce resources. The capacity of healthy and productive landscapes to provide the basis for reaching longer-term climate mitigation and adaptation while enhancing livelihoods has to be communicated beyond the artificial borders of sectorial thinking. This is a challenge - and an opportunity.

# POLICY INCENTIVES FOR CLIMATE CHANGE MITIGATION AGRICULTURAL TECHNIQUES (PICCMAT). SCOTLAND

**Organisations Involved:**
*Policy Incentives for Climate Change Mitigation Agricultural Techniques (PICCMAT)*

The UK government promotes climate protection policy. However, the agricultural sector only accounts for 7% of total greenhouse gas emissions in the UK.
In Scotland, Parliament has introduced a climate change bill that requires an 80% reduction in GHG emissions by 2050. However, agricultural issues are managed by the Scottish Rural Development Programme (SRDP) and climate change is not directly addressed, while biodiversity concerns are of greater importance for ecological policy.
Most of Scotland is made up rough grazing land. In the Highlands, this is mostly managed as part of large estates and generally classed as a less favored area, due to its mountainous topography, poor soil, remoteness and relatively harsh, cold and wet climate.
Almost half of the agricultural holdings in Scotland are involved in animal husbandry. Livestock population is composed of 2 million cattle, 7.5 million sheep and 6.5 thousand managed deer.
As part of the project concerned with policy incentives for climate change mitigation agricultural techniques, a case study has been carried out in one of Scotland's livestock large estates, which represents 85% of Scotland's agricultural land (this sector is already relatively climate friendly, thanks to numerous environmental regulations preventing over-fertilization and inappropriate practices).
The organic peaty soils of the hill land, which were once subject to drainage, peat cutting and fairly intensive grazing, are now managed with controlled, reduced grazing, no drainage or peat cutting and only occasional muirburn (which controlled burning allowed on heather covered sites only).
The return to natural wet conditions, aided by the increasingly wet climate and extensive soli management, help to maintain carbon levels in these soils.
Grazing intensity is also managed by using a rotational system that helps maintain good quality forage and minimizes the extra feed required, as well as preventing carbon losses from degraded grassland which becomes more prone to erosion.
The practice of applying mineral fertilizers to improved soil is less climate friendly (as is the keeping of cattle, which emits large amounts of CH4 and also increase N2O emissions from fertilized grassland via tram-

pling), particularly in the light of the higher levels applied to silage land (such practice is currently subjected to stringent restrictions).

**IN SCOTLAND, PARLIAMENT HAS INTRODUCED A CLIMATE CHANGE BILL THAT REQUIRES AN 80% REDUCTION IN GHG EMISSIONS BY 2050.**

**Primary Objective**

The objective of the project is to investigate and promote policy incentives for climate change mitigation agricultural techniques. In the case of Scotland the objective is to find out which of the suggested mitigation options have been implemented and which ones could be important for future development. The study aims to test in the field the *market* penetration potential of a series of agricultural mitigation techniques, which will answer the following questions: Are farmers in a position to undertake these techniques? What are the technical, social, economic, contextual barriers to their implementation by farmers? What are their impacts on farms and on the rural economy?

**Expected results**

- Optimized grazing intensity using rotational grazing and calculating stocking densities
- Optimized grazing timing and duration
- Renovated grassland using ploughing and reseeding or direct sowing
- Improved forage quality and minimized fertilizer input
- Managed grassland for carbon storage
- Restored natural water levels on areas of organic peat soils
- Reduced carbon losses

**Results to Date**

Some of the mitigation measures have already been implemented in the Scottish case study:

- 80% implementation of optimized grazing intensity
- 80% implementation of optimized grazing time and duration
- 100% implementation of managing grassland for carbon storage

**Challenges and Lessons Learned:**

- The renovation of grassland is a challenge, on account of the high costs for labour, machinery and seeds. Transitional costs will also be incurred until better grass can take effect.

- If some grassland is supposed to be managed for carbon storage, livestock numbers would have to decrease significantly. This would lead to a strong income decrease.

- Economic barriers are the most important as farming in these disadvantaged areas is already a marginal activity. Loss of productivity is a serious concern and transitional costs may also be prohibitive if no funding is available.

- The main lesson to take forward, therefore, is the need for Scottish rural development and agricultural policy to include climate change protection as an environmental goal.

**Success Factors**

- Already existing incentives in Scotland
- Rough grazing systems are extensive and therefore relatively climate friendly

**Scale-up Potential:**

For the PICCMAT project 7 more case studies were carried out.

# ADAPTING AND MITIGATING THE IMPACT OF CLIMATE CHANGE THROUGH CONSERVATION AGRICULTURE. MALAWI

***Organisations Involved:***
*NASFAM, ICRISAT*

From its inception in 1994, smallholder farmers affiliated to NASFAM have continuously witnessed changes in weather conditions.

Suddenly, farmers could no longer predict the onset of rains, could no longer determine the rainfall patterns and could no longer use their indigenous knowledge and historical data on the incidences of pests and diseases.

These dramatic and increasing changes called for a holistic response to address crop choices, production systems and market driven production and gave rise to the birth of the NASFAM Conservation Agriculture Program.

The Program promotes selected conservation agriculture techniques and sustainable crop production practices in smallholder farming practices.

The Program has been concurrently implemented with other programs that ensure the delivery of extension services and those that ensure a sustainable seed supply system.

**Primary Objective**

Sustainable agricultural production, sustainable food and cash crop production, as well as reversing environmental degradation.

**Expected results**
Increased adoption of sustainable agricultural practices; an increased number of legume producers; a well informed and knowledgeable smallholder farmer base; reduced negative impacts of climate change.

**Results to Date**
In the three year period in which minimum soil disturbance, permanent soil coverage and crop rotation practices amongst 108,000 smallholder farmers were implemented and promoted, the following results were achieved: 97% members were aware of CA; 37,589 (17,666 males and 19,923 females) adopted such practices; 15,036 ha were under CA; 22,780 farmer members used manure; manure was applied to 18,224 ha; 17,177,850 trees were planted.
An increasing number of farmers diversified into legume production, especially groundnuts, to such extent that NASFAM supplied over 700MT to the national Farm Input Subsidy Program.

**Challenges and Lessons Learned:**
- Incoherent CA messages to smallholder farmers affecting adoption;
- Prohibitive policy frameworks, especially regarding importation of agricultural machinery and inputs for easy adoption.

Lessons learned: Partnerships are crucial and a holistic and comprehensive approach to CA messaging must be adopted.

**Success Factors**
The following were quantitative and qualitative key success factors:

1. Extensive farmer-focused extension services;
2. Intensive practical learning through demonstrations, field days and learning tours;
3. Demand driven by farmers;
4. A market-led approach.

**Scale-up Potential:**
The key CA principles should be promoted:
- Increase land covered under CA;
- Promote CA compatible crop production.

**THE PROGRAM HAS BEEN CONCURRENTLY IMPLEMENTED WITH OTHER PROGRAMS THAT ENSURE THE DELIVERY OF EXTENSION SERVICES AND THOSE THAT ENSURE A SUSTAINABLE SEED SUPPLY SYSTEM.**

# YOUNG PEOPLE TACKLING SERIOUS ISSUES SUCH AS CLIMATE CHANGE!

***Marina Cherbonnier,***
*YPARD Web and Communications officer and Co-organizer of the GLF Youth session*

Eleven young professionals have been invited to kick-start the Global Landscapes Forum, which is a forum intended to discuss the role of forests and agriculture in mitigating and adapting to climate change.

The event will take place on the 16-17 November 2013 in the framework of the UN climate negotiations meetings (COP19) to be held in Warsaw, Poland.

The objective is to develop the potential of the Landscape Approach to inform future UNFCCC agreements, notably on the need for better inclusion of young farmers in this area.

Young people are tackling the challenge by delivering a TedX-style talk during the dedicated youth session of the GLF - *Youth: The Future of Sustainable Landscapes*. This showcase aims to spotlight the active and crucial role that young people play in agriculture, forestry, fisheries, conservation and climate sectors. Be it about oyster farming, social forestry, agribusiness, climate policy or lands rights advocacy, we hope that young people will – through the stories of their peers - see that they all have an

# YOUNG PEOPLE (CAN AND MUST) HAVE AN ACTIVE ROLE IN TACKLING CLIMATE CHANGE ISSUES THROUGH A LANDSCAPE APPROACH

important role to play and the ability to take action at all levels in order to achieve sustainable landscapes.
We have received 150 applications from over 50 countries for taking part in this session! Each one illustrated how engaged young people are adopting a Landscape Approach to sustainable environmental and economic development in a climate-changing world. This shows how enthusiastic and capable young people are about making a change and contributing to *impactful* initiatives at a local and global level, often with minimum funding.
We have decided to publish all 150 applications online in order for people to enjoy the diversity and quality of youth initiatives and their insights. The audience can also vote for their favorites online!
These are just some examples of the profiles of the speakers who will take the floor:

**Bunmi Ajilore, Nigeria — The influence of images on young minds: How positive stories can help feed the world**
*The major obstacle standing in the way of young Nigerians going into agriculture is the negative image problem. Nobody wants to till the land and wait for a meager profit when their contemporaries sit behind computers in air-conditioned rooms and make cool cash*, says Bunmi in a recent blogpost. Using a number of personal stories and stories of other young people in agriculture, Bunmi fights the negative image of agricultural work, inspiring more young people to embrace farming.

**Karen Tuason, Philippines: From being landless to owning land: Collectively empowering young farmers**
Growing up in an island in the Philippines where residents are mostly farmers or fisherman, Karen knows that access to land does not automatically translate to increased income and guaranteed food for the family. She will talk about her experience in empowering young landowners to collectively address and improve food security, purchasing power, education and the health of their communities.

**Otim Joseph, Uganda – Uganda's untold success story: How a youth social forestry effort restored the post-war landscape**
Otim was only 2 years old when the Lord's Resistance Army insurgency began.
He watched as refugees and militia, desperate for wood, fuel and food, destroyed the landscape.
Unemployed young people, who were born and raised in displaced persons camps, have, however, single-handedly begun a huge effort to restore their degraded landscapes.

The session not only includes speeches but also discussions. Through e-discussions, we have reflected on the four recurring issues raised over and over again in events and activities with young people involved in natural resource management: (1)The lack of finance; (2) The unattractiveness of the agricultural sector among young people; (3) The mismatch between the education system's results and the needs of the job market; (4) The lack of youth capacity development. These issues will be fed into the session and into the whole 2 days of the Global Landscapes Forum.

And indeed, the applications received by young people do address the youth issues that have been identified above:

**Lack of finance** – All the entrepreneurial youth-led initiatives – such as oyster cultivation in The Gambia, beekeeping in Zimbabwe and fishing in Uganda - illustrate the possibilities for young people to start their own agricultural businesses.

**Unattractiveness of the sector** – An initiative has been launched to increase youth engagement in Agriculture in Zimbabwe. An on online platform for young people interested in agriculture was born in Kenya: Videos have also been used for environmental awareness in Belgium

**Education reforms** – In Ghana, awareness is being raised in schools about the importance of agriculture. Training for youth and teachers on renewable energies is being delivered in Cameroon. Programs for the development of entrepreneurship skills for forestry students in Colombia are being implemented

**Lack of capacity development** – An initiative in Nigeria is building the capacity of young people to take part in climate change policy negotiations. A program on GIS is being developed in connection with nature conservation by young people in Kenya. Young people in the Democratic Republic of Congo are working with indigenous youth on climate adaptation. A waste management education in Indonesia

is, furthermore, being developed

There are also a number of stories inform Canada, Madagascar, Bolivia and other countries of the world highlighting how youth can take part in advocating for policies towards sustainable environment and young people's empowerment.

This session proves that young people (can and must) have - at different levels (from negotiations to the implementation of activities) an active role in tackling climate change issues through a Landscape Approach (notably through agriculture and environmental-related activities). They are getting heard by and receiving better support from different stakeholders, which is vital for achieving their full professional inclusion. We must carry on in order to ensure that mechanisms are put in place that allow them to fully take part in building THEIR future in a sustainable manner.

Youth: The Future of Sustainable Landscapes will be organized at 09:00 CET on November 16

Old Library, University of Warsaw, Poland #GLFCOP19 – GLF Official website: www.landscapes.org

# "WOMEN, AGRICULTURE AND THE CLIMATE CHANGE"

***Lani Eugenia,***
*General Secretary of Puantani*

Women farmers in the Pagon village of Subang District in the Western part of Java can hardly remember what they simply call A *Climate Shift*. Women farmers have to take decisions ahead of normal seasons, when they have to decide the right time to start planting rice, vegetables and other 3-4 monthly cycles crops.

Yet, one of the great things about women farmer experiences' in connection with climate change is that, while farming is treated as a cultural factor, they have to put aside their doubts and take a risk. In this case, of course they were speculating, while anxiously hoping that their gamble will pay off: Less or even unqualified crops is the worst thing that can be expected (Box.1).

**Box.1.** farming rice in the middle of Drought Seasons

*Mrs. Rodiah - who is raising her hand in this picture - is one of Puantani's women members in the Pagon Village of the Subang District in West Java that planted rice in the middle of the drought season.*
*Her rice farm looks nice and green, yet the green environment is, for the most part, not made up of rice plants but rather of grass (which she is clasping in her raised hand) that she has to clean out.*
*At the end of the day, she has got less yield and a lower quality of rice, but she does not mind since she has done it for her family's self-sufficiency.*

Women must have access to greater and more precise weather information and predictions, which will help them to adapt to climate change in a sustainable manner.

**Access of women farmers to climate change information**

Efforts have been made since 2011 (in particular by the Climate Central Bureau (BMKG) in cooperation with the Indonesian Ministry of Agriculture) to provide adequate climate change information for farmers through extension services (farmers' schools on climate change) at district level, as well the through the introduction of a planting calendar (Katam).

In certain areas, this Program has been considered successful in increasing production significantly. However, many questions remain as regards the effectiveness of this system, which is conducted in a conventional way.

The main challenge posed to Indonesian extension services is the inadequate number of persons providing such services. 48.000 extension workers have provided their services in 2013 to 26,13 million family farmers (Indonesian Central Statistics Bureau, 2013), who live in about 74.000 rural areas. One extension worker works, therefore, in 2-3 rural areas. Farmers often complain, in fact, that when crops are attacked by pests, extension workers are *down*[1], with the result that climate information is likely to be provided too late.

What about access of women farmers to climate change information? Indonesian women farmers count for about 55,2 % of all farmers ((Indonesian Central Statistics Bureau, 2006). Unfortunately, programs addressing Climate Change and Farmers remain unclear and there is rather a poor participation rate of women.

Certain programs (e.g. farmers' schools on climate change) remain biased against women in terms of their

**WOMEN STRONGLY RECOGNIZE THEIR POTENTIAL TO SELF-ADAPT TO CLIMATE CHANGE, FINDING PRACTICAL SOLUTIONS TO ADAPT TO A CHANGING ENVIRONMENT, NOT ONLY IN TERMS OF FOOD PRODUCTION AND FOOD STOCK MANAGEMENT, BUT ALSO IN TERMS OF THEIR POTENTIAL TO BENEFIT FROM ALTERNATIVE CROPS FOR FOOD PROCESSING.**

**Box.2.** Women Farmer Advocacy towards Water Sharing Facilities.
*Puantani Subang District-West Java.*

*Mrs. Caswati, who is the woman smiling alongside the Subang District Puantani Coordinator, advocates, on behalf of women farmers in the Pagon Village, for water facilities.*
*Pagon village is one of may villages without any access to irrigation facilities and with limited access to a natural spring. She has advocated on behalf of community members to the local government so that they may be provided with a water pump (they now have two pumps)..*
*It's very helpful, even in the worst drought seasons, it requires more than 4 litres of fuel per day which need to be bought.*

1 *As stated by the Vice-Minister of Agriculture, Mr. Rusman Hermawan in Liputan 6.com;* http://bisnis.liputan6.com/read/706098/indonesia-kekurangan-penyuluh-pertanian

composition. Recent programs (such as, for example, farmers' schools on integrated pests control and climate change impact, which have had a 15 percent women participation) have (in 2012), started to pay attention to gender composition.

"The absence of women farmers who benefit from climate change information will leave them behind in adapting to and mitigating the climate change".

**Women self-adapt to, and advocate for, Climate Change**

Women strongly recognize their potential to self-adapt to climate change, finding practical solutions to adapt to a changing environment, not only in terms of food production and food stock management, but also in terms of their potential to benefit from alternative crops for food processing.

In terms of agricultural production, many different things have been done by women individually or as members of a community, such as quality seeds selection, crop diversification, fast crop planting, as well as inorganic input reduction, water community management, etc. Advocating for women farmers' needs vis-à-vis climate change is also of vital importance (box.2)

Another case relating to alternative crops: Once a year, in the middle of the drought season, about 50 women farmers in the Pagon village are employed to harvest the rambutan fruit (which is one of the famous commodities of the Pagon Village).

Most of the fruits belong to individual rambutan farmers, who have large cultivations. In order to sell them at the local market, women farmers often have to harvest a hundred pounds of rambutan, which is usually sold at a very cheap price to middle men.

There is, therefore, a common interest of these women to improve the added value of a hundred pounds of rambutan.

Puantani is advocating for alternative activities, from the processing of agricultural product to climate change adaptation activities.

The opportunity for women who are willing to work together is a social capital that can benefit women on a wide scale.

Farmer/Women Farmer Organisations such as Puantani play an important role in facilitating advocacy processes by addressing different needs and priorities of women farmers and enhancing their potential to adapt to climate change.

**Conclusion and Recommendations**

Currently, much attention is being paid to women participating in farmers' schools on climate change, providing them with access to climate-related information, as well programs related to the anticipation, adaptation and mitigation of the impact of climate change (even though there remains a strong bias and women do not have a strong voice in the policy agenda).

Meanwhile, the ability of women to self-adapt doesn't mean that they don't need to be empowered.

Access to adequate climate change information and empowerment programs will hopefully empower and strengthen women farmers and rural women in building their resilience towards climate change.

Farmer Organizations and Women Farmers Organization could play a strong role in advocating for climate change adaptation.

Recommendations include the need to:

1. Respond to women's different needs and priorities towards climate change, adapting policies and programs accordingly, as well as ensuring that an adequate number of women participate, so that women's rights in connection therewith are guaranteed.

2. Provide adequate information and precise climate predictions in order to ensure that women adapt to climate change in a sustainable manner.

3. When women encounter difficulties in self-adapting, they must be empowered and strengthened in order to build up resilience to climate change.

# THE FIRST STEP IN THE PROCESS IS UNIVERSAL: YOU START WHERE IT MATTERS, AT HOME

***Meerim Shakirova,***
*YPARD Kyrgyzstan representative and consultant on climate change and environmental issues.*

*WE ARE people from the developing world who want many things. We want to reduce poverty and hunger. We want to protect the environment, and promote sustainable development. We want climate justice to be put in place and we want everyone to work in a green and clean economy.*

The phenomenon of climate change and the full extent of the linkages between climate change and other drivers of change is still not well understood. UNLESS you live in deep-frozen conditions or in mountains from where you see the impact of receding glaciers and growing lakes, it can be hard to put your finger on changes that are definitely linked to global warming.

Such evidence is, however, all around us and is growing fast.

Local people have always been at the forefront of conservation measures. And I can see that climate change is starting to have a profound impact on the lives and livelihoods of people living within, and downstream from mountains, since it affects water availability, agriculture, ecosystems, infrastructure and disaster vulnerability.

I agree that no one climate scenario is certain, but all of them are at least somewhat likely (together with arguments and accusations that we cannot yet imagine). Indeed, there is a lack of the necessary data and information (which is one of the first steps towards a methodical respon-

se). More systematic scientific information and knowledge is needed that can support the development of appropriate climate change adaptation measures for people living in rural areas.

There is no doubt, therefore, that, in order for our future to be bright, it must be green and resilient. Communities have to adapt their livelihoods and lifestyles to new challenges and opportunities brought about by the ongoing changes.

The other crucial thing, what I have seen so far is a huge migration flow in almost every developing country, as a result of which women and old people (especially in rural areas), have become the main agricultural labor force, playing key roles in local farming and communities.

In the meantime, environmental changes affect men and women differently, just simply because they have different roles in their households and society, different rights and access to resources.

Both men and women are vulnerable to climate change, but women are the main victims of natural disasters. They have to play, therefore, a major role in disaster preparedness and responses (using and managing natural resources, food preservation etc.). Addressing the issues of women for development is thus a complex task, not least in terms of the diversity of cultural contexts and national capacities.

Additionally, many young people from rural areas cannot get an adequate education, make a living or create a secure home and have to move to sprawling urban areas or foreign countries which they believe offer more hope. Some make good and contribute to their communities by sending money home. Too many others become, however, mired in urban poverty. This is a tremendous loss of human potential for their families, and for their nations.

Global development and environmental sustainability are interlinked. Similarly, the need to slow the pace of global warming and avoid its severe impacts is as much an issue of OUR humanitarian responsibility as it is one of environmental stewardship. We definitely need to create one-planet livelihoods. We need a new model of sustainable well-being and we need to do it within our lifetimes.

*WE ARE - people from the developing world who will have many things. We will reduce poverty and hunger. We will protect the environment and promote sustainable development. We will have climate justice and everyone will work in a green and clean economy.*

This will all happen! The first step in the process is universal: You start where it matters, at home.

## CLIMATE CHANGE THREATENS FOOD SECURITY IN THE WEST AFRICAN REGION

The International Food Policy Research Institute (IFPRI) offered valuable recommendations to the governments and regional agencies of West African countries. The research, carried out by IFPRI in cooperation with other international food agencies - including the West and Central African Council for Agricultural Research and Development (CORAF /WECARD), which is a regional agricultural research and development organization, as well as scientists from each of the countries involved- warned the countries about possible future threats to agriculture and food production due to climate change. The lack of data in the region has greatly affected the work of policy makers and farmers.

Now that more data is, however, available, the hope is to contribute to informed decision-making, thus enabling higher productivity and long term investments in agriculture.

http://allafrica.com/stories/201310150596.html

## WORKSHOP ON THE IMPACT OF CLIMATE CHANGE ON FORESTRY WORK

The UN Economic Commission for Europe (UNECE), the Food and Agriculture Organization of the UN (FAO) and the International Labour Organization (ILO) Joint Expert Network to implement Sustainable Forest Management (SFM), are organizing a meeting to assess the projected impact of climate change and determine how to address such an impact. The meeting will focus on assessing climate change in relation to forest health and forest operations.

http://climate-l.iisd.org/events/workshop-on-the-impact-of-climate-change-on-forest-work/

## WORLD STARES AT DOUBLING OF FOOD PRICES BY 2030

Oxfam International has published a research report, in which it warns the global community about the rising prices of staple foods. in particular, Oxfam International calculated that the average prices of staple foods will double by 2030. The main cause of this peak in prices, according to the report, is climate change: The floods and droughts of the past years, which have occurred in the US as well as in the Southern hemisphere of the world, will lead to an increase in prices, serving as a wake up call to governments.

The detrimental effects of climate change are further exacerbated by the growing world population.

More and more people need to be fed, and this represents a threat to food security. The role of governments is crucial: They need to invest in new technologies, such as integrated watershed management in order to halt desertification and grow crops in areas thought in the past to be unviable for farming. Furthermore, there is another human driven problem: Waste of food. A lot needs to be done to ensure food security, but tackling global warming is the first step towards successfully ending world hunger.

http://www.business-standard.com/article/markets/world-stares-at-doubling-of-food-prices-by-2030-113101501088_1.html

## 3rd GLOBAL CONFERENCE ON AGRICULTURE, FOOD AND NUTRITION SECURITY AND CLIMATE CHANGE, 3-5 DECEMBER 2013, JOHANNESBURG, SOUTH AFRICA

The Government of the Republic of South Africa has joined forces with the Government of the Netherlands, FAO, and the World Bank in order to organize the *3rd Global Conference on Agriculture, Food and Nutrition Security and Climate Change*. The conference will be held in Johannesburg, South Africa, from 3 to 5 December 2013: It will include high-level discussions on the impact that climate change has on agriculture and food security, as well as possible solutions and perspectives. The aim of the conference is to share best practices and knowledge, as well as form partnerships in order to better face the challenges ahead.

http://www.arc.agric.za/home.asp?pid=1&toolid=3&itemid=7863

## 9th WTO MINISTERIAL CONFERENCE, 3-6 DECEMBER 2013, BALI, INDONESIA

The 9th Ministerial Conference of the World Trade Organization (WTO) will be held in Bali, Indonesia, from 3 to 6 December 2013. Considering that the economic crisis is still affecting the global economy, the role played by the multilateral trading system is crucial. It plays a significant role in fostering fair global trade, sustaining world economic growth, eradicating poverty and creating job opportunities.

http://www.wto.org/english/thewto_e/minist_e/mc9_e/mc9_e.htm ◇◇◇


WORLD FARMERS ' ORGANISATION