Proceedings from the Conference

Agricultural Research for Development: Scales and Diversity

28-29 September 2011, SLU, Uppsala

Kenyan large-scale intensive agriculture to the left, and an agroforestry system to the right. Photo: Mattias Jonsson

The conference was organised by Agri4D, SIANI, Focali, Future Agriculture, Future Forests, and the Forest Initiative.

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KEYNOTE SPEECHES

Meeting the Global Food Challenge with Effective Technologies, Policies & Institutions

Global food security is under stress. With an increasing global population, continuing soil degradation, mounting effects of climate change and other factors, this stress is very likely to increase. To avoid this turning into a global food shortage of disastrous proportions we need to adapt global agriculture to these challenges with changes in policies, technologies and institutions. In this way we may hope to increase agricultural production by the 100 or 200 percent that is necessary. This was the message of Shenggen Fan, Director General of the International Food Policy Research Institute, IFPRI.

To achieve this a comprehensive strategy of innovative technologies, improved institutions and more effective policies to address food security challenges is needed. Fan grouped his proposals under five headings:

- Promote technological innovations
- Invest in productive social protection programmes
- Support country-led, evidence-based strategies
- Establish new institutional mechanisms
- Engage new actors and partners in global development

Promote technological innovations

Promoting technological innovations is not new, Shenggen Fan pointed out. Technologies need to focus on the recipient's needs, resources, and conditions. That is, they must work for smallholders. This may include crop varieties that are resistant to drought, salinity and arsenic uptake, varieties that need less water, and varieties that can be cultivated in deep water areas.

An important area to work with is reducing post-harvest losses. These losses in developing countries are at least of the order of 10–20%. New technologies needed include low-cost technologies to clean, grade, store and package harvested crops. New technologies can also include communication technologies like village-level internet kiosks, which for example can provide market or weather information, or financial and extension services, like mobile banking.

Water and land saving technologies and land conservation practices are other areas of concern, such as irrigation, mulching, improved fallow methods and ability to store and recycle water for agricultural use. Mixed cropping, cover crops, and integrated or organic farming are other examples.

"It is also important to provide policy and market incentives. Examples are the Carbon Market Initiative in Australia and the Low Carbon Agriculture Program in Brazil. When opening carbon trading markets, it is important to integrate smallholders", said Dr Fan.

Invest in social protection programs

Better-targeted and more productive social

protection policies are needed to secure basic livelihoods and protect poor people from risk and vulnerability. This can include exploring new approaches such as cross-sectoral social protection to reach the poor more effectively.

“The Ethiopia Productive Safety Net Program is an example of a broad food security program with access to both social safety nets and agricultural support. Such combined programs are more beneficial for agricultural productivity and food security than stand alone programs.”

Support country-led strategies

There needs to be local input into this global food challenge. Countries must drive their own agendas but they will need international help to facilitate the process locally.

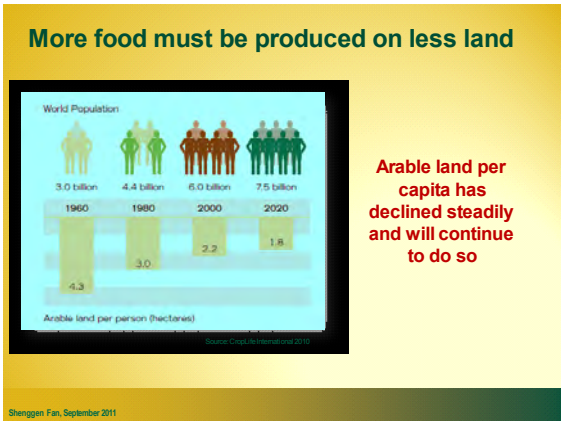
“Another way of helping is by more clearly establishing what policies have worked and what have not. One way of working may be to begin with small-scale, local experimentation, followed by gradual implementation, such as China and Vietnam have done. In this way country-owned policies can be continually tried, evaluated, adjusted, and tried again before being scaled up.”

Establish institutional mechanisms

Institutions must also be owned and organised by those concerned, Dr Fan said. The process cannot be top-down. One important area is to link smallholders to changing markets and supply chains. This can be done by increasing their bargaining power, providing the information demanded and by reducing transaction costs and risk.

An important function of institutions is to allow the sharing of knowledge. Shenggen Fan mentioned an example from Ethiopia, where a cell phone network is used for sharing information, for example about the price levels in the capital Addis Ababa. “With this kind of information farmers are not alone anymore. This can revolutionise their ability to interact with the market.”

Another example of a successful institution is the smallholder dairy grid in India, where a national milk grid of village cooperatives, district unions, and state marketing federations has been created. This grid links small dairy producers to urban consumers through the chain of production, procurement, processing, and marketing. The grid was a factor in the increase of dairy production by 4.5% annually from 1970 to 2001.



Engage new actors and partners

Dr Fan pointed out that there is a need for reformed and new platforms for dialogue and international cooperation that will benefit all sides. Emerging countries like China, India and Brazil are becoming prominent players through trade, investment and aid channels. There is also a need for channels for sharing development experiences among developing countries. “The aim should not

be to just absorb emerging aid into western aid mechanisms."

Public-private partnerships are an important mechanism that must be cultivated. Public and private sectors have complimentary roles; it's not a question of one or the other. To realise the potential of the private sector to help in the struggle against poverty there needs to b e a business-friendly environment, a sound legal and regulatory system, working infrastructure and reduced corruption.

One example is the West African Seed Alliance. This is a public–private partnership that helps smallholder farmers to have affordable, timely, and reliable access to high-quality seed. The network builds the capacity of existing and emerging seed companies while expanding agro-dealer networks. It also addresses regional seed trade harmonisation laws.

Livestock Production in Developing Countries–Globally Significant and Locally Relevant

Livestock production is a global issue. There are global drivers and global environmental implications, and the issues surrounding livestock production have implications for the relationship between the developing and the developed worlds. Yet livestock issues are also relevant locally. They are vitally important for the global poor and the choices we make and the paths we follow will have significant local effects. John McDermott, Deputy Director General of the International Livestock Research Institute, IRLI talked about *Livestock production in developing countries – globally significant and locally relevant*.

Meat consumption will increase

Over several decades the livestock revolution in developing countries has seen a dramatic increase in the consumption of meat and milk. The trends in global per capita livestock consumption point to a continued increase through 2050. The trends point to a slower increase in the developing countries, but still an increase.

Trends also indicate that by 2050 developing countries will consume more than twice the amount of livestock products as the developed world. This is because of the much larger expected population rise in the developing countries.

"But the biggest change will probably not be in population, but in the income increase in developing countries. There is a very strong correlation between income and meat eating. As people get richer they consume more animal products," John McDermott said.

Demand is rising much faster than production so there may be a mismatch between demand and supply. This will have several consequences, for example a dramatic change in the relative prices of grain to meat.

Future major shifts

By 2050 there will be an increase in cropland and rangeland by about 10%, respectively, with a corresponding decrease in natural habitat. Cropland is expanding faster than rangeland. The key driver is the expansion of monogastric production and intensification of ruminant production with grains.

The way animal protein will be produced will change profoundly. Industrial types of production will grow much faster than land-based production, as grazing systems face important resource constraints. This is the most efficient way to produce meat. Even mixed farming cannot expand at the pace of demand for animal products.

”There is an especially large potential in sub-Saharan Africa for increasing production, since we are starting from a low level,” John McDermott said.

”Implementing industrial systems is not really a problem. We can basically take the whole operation from Iowa and plant it in Africa. But globally most people live in mixed crop–livestock systems, and this will continue to be the case. Policy makers need to realise this.”

Often these small farms are not optimised for agricultural productivity but rather for income. If they can get more income from selling their produce they can buy more food, and other things. So these smallholder farmers are not just producers. They are a complex mix of producers and consumers. But they are also very important. They produce 65% of the beef, 75% of the milk and 55% of the lamb in the developing world.

”This is huge. The challenge is how we organise all these smallholders? To get the kind of intensification we need, it will have to come from mixed crop-livestock and agroforestry systems,” McDermott said.

Need for convergence

One of the problems facing smallholders is a lack of access to knowledge. On the output side they need better organisation to reach the markets. Every institution comes with their own angle ”We come with a technical angle for example–what feeds we can bring, what vaccines etcetera. Micro-finance people come with their angle and other people come from other angles. But these angles have to converge! And they have converged.”

As the input suppliers and the technology suppliers realise that people need finance and markets, the micro-finance people are all getting involved in input supply, because they realize that it's no use getting people money if they have nothing to invest in.

”These institutional improvements are vital. There is no silver bullet. You have to put all the pieces together. These are the key challenges: a combination of institutions, technology and policies.”

Trade-offs

Going forward, John McDermott pointed out some key tradeoffs we will have to manage. Biomass is of course needed for food. In intensive systems, feed shortages for ruminants might increase the demand for cereals further. This will increase competition for biomass with other sectors.

There is an increasing call on biomass to replace fossil resources as fuel, and the preservation of biodiversity and other types of conservation will also require that we set biomass aside. Regarding sustainability, there can be trade-offs between socioeconomic and environmental sustainability so we need to get a better handle on valuation.

”We are not very good at that, and we have to get better. This will lead us to serious choices. It is probably not a good idea to cut down all our rainforests. But unless we get better tools, the Congo rainforest is going to go at least as fast as the Amazon rainforest,” John McDermott pointed out.

”Another choice is whether we favour ruminants that can digest lots of stuff that people can't eat, or monogastrics, who basically eat what we eat?”

Can livestock be sustainable?

Livestock has a big impact on climate change, and accounts for about 10–18% of GHG emissions. ”But it is possible to have low environmental bads and high productivity. Livestock production is also the biggest opportunity by far to mitigate climate change in the developing countries. In developing countries livestock production today produces lots of GHG per kilogram of protein. The potential for improvement here is huge. The question is who should do it and who should pay for it? My opinion is that developing countries shouldn't pay. They are not part of the problem. But they can be part of the solution. This is a win-win situation but they need incentives”, John McDermott said.

What might change in future?

1. Dramatic change in relative prices of grain to meat (ruminants versus monogastrics)
2. Improvements in inputs and arrangements for sustainable intensification of smallholder agriculture to meet demands
3. Better valuation of environmental and / or social (equity) externalities and how to manage these
   - Incentives and rules (poor versus richer countries)
   - Livestock in drier versus wetter areas

Looking forward

McDermott identified three major areas for further study. One is the biomass trade-off, and the relative prices of grain compared to meat and ruminants versus monogastrics. What can we do from the supply side and how can we manage that?

The second major area he pointed to was the institutional side, where we need to achieve a sustainable intensification of smallholder agriculture to meet demands.

The third area is how we can learn more about how we value various things. He pointed out that value here is not necessarily monetary value. It is also how we can value environmental and social externalities and manage these. Those valuations can help us with the tough questions like how we value our rainforests. Another aspect of valuation is how we can create incentives and rules that work in interactions between poor versus richer countries.

Smallholder Intensification–The Role of Women Farmers

Women farmers in Africa operate in resource environments that can be very challenging but they often find innovative ways to generate yields in the marginal lands that they occupy, even if these yields are not always very high.

Africa has the highest proportion of the population in agriculture in the world. It is also the continent with the highest levels of poverty in the world, with many rural households struggling to survive on less than US$ 1.25 a day. Yet the continent has one of the fastest growing populations, with current forecasts estimating a 50% population increase by 2050.

"With the rate of growth of food production not meeting the demands of a rapidly growing population, it is no surprise then that several million of its people, especially women and children, go hungry and suffer from levels of malnutrition not seen in most other parts of the developing world," said Margaret Kroma. "Clearly sub-Saharan Africa lags behind the rest of the world in its ability to feed itself," she stated.

Margaret Kroma is program officer at the Alliance for a Green Revolution in Africa. She talked under the heading *Smallholder agriculture intensification in sub-Saharan Africa – means and research needs*.

Intensification strategies required

The twin challenges of increasing food production to meet the demands of increasing population density and of scarcity of arable land continue to drive calls for intensification in African smallholder agricultural systems. Stress on natural resources (scarcity of land and of water) is also increasing the intensification and diversification pressure.

"This is clearly a more rational response than extending production into marginal lands that are already vulnerable to degradation and loss of biodiversity. There

is no doubt that sub-Saharan Africa must embrace more intensive use of its arable land in order to effectively address current and future food needs and agricultural growth," said Margaret Kroma.

As Margaret Kroma pointed out, the question is what kind of intensification will effectively respond to the vagaries of Africa's diverse and highly complex agro-ecological and social systems?

Intensification and diversification is clearly a more rational response than extending production into marginal lands that are already vulnerable to degradation and loss of biodiversity.

Challenges to a gender-sensitive and climate-resilient agriculture

The question of what constitutes sustainable intensification takes on an added gender dimension in sub-Saharan Africa.

"In this part of the continent food and agricultural systems are dominated by female small-scale farmers located in socio-cultural structures in which they exercise only subordinate rights to decision making vis-à-vis their husbands or male relatives. This gender dimension is not often recognised in debates about the future of food and agricultural sustainability," said Margaret Kroma.

The use of different technologies to intensify production has been roundly

criticised by proponents who take issue with its ecological, health and social risks. Their arguments are that although intensification of production systems is an important goal, smallholder agriculture systems need to be sustainable to provide for current needs without compromising the ability of future generations to meet their own needs.

"But the different views of agricultural intensification suffer from a deficit of attention to the complex human dimensions of African smallholder farming. Production systems are rooted in cultures and traditions and intensification is not gender neutral. Female smallholders, who dominate Africa's food production systems, do not have the luxury of choice about what forms of agriculture they practice," said Margaret Kroma.

If women had the same access to productive resources as men (FAO 2011)

- ✓ **total agricultural output could increase by 2.5 to 4%**
- ✓ **global number of undernourished people could reduce by 12 to 17%**

Reference: Shenggen Fan's presentation

Gendered implications

Agricultural economists would suggest that farm investment is a direct function of two categories of variables: incentive to invest and capacity to invest.

"One cannot ignore the importance of this. I would argue that for female smallholder farmers, vulnerability is both an additional and a significant determinant," stated Margaret Kroma. "Women farmers face gender specific obstacles to agricultural intensification investments that are largely driven by cultural and social norms. They also often suffer disproportionately from negative impacts that increase their vulnerability," she said.

Margaret Kroma identified five main gender-specific implications of agricultural intensification and the effects on the female small scale farmer in sub-Saharan Africa:

- ✓ women's land rights and tenure,
- ✓ climate change impacts on agricultural intensification,
- ✓ access to credit and finance,
- ✓ access to knowledge and skills, and
- ✓ gender-blind policy making.

Land rights and climate change

Among the most critical obstacles in most parts of sub-Saharan Africa are women's land rights and tenure insecurity. Access to and ownership of land is among the most intractable of gender disparities. Even in countries where women constitute the majority of smallholder farmers and do a large proportion of the agricultural work, they are routinely denied the right to own the land they cultivate and on which they are dependent to raise their families, due to statutory and/or customary laws that restrict women's property and land rights.

A significant number of female smallholders already work in fragile production environments. Climate change may thus have more negative impacts on the natural resources available to them, which to a significant degree explains their risk-averse responses to intensification.

Access to credit and finance

Access to financial capital is a critical determinant of smallholder responses to agricultural production. "Women farmers, just as their male counterparts, are rational actors, but female farmers often have less financial capital. Agricultural intensification, whether it is to meet productivity goals through high input use, or through more ecological approaches for improving soil fertility, requires sufficient financial capital or credit," stated Margaret Kroma.

"Women farmers are less likely to be able to optimally invest in inorganic fertilisers

or soil and land conservation infrastructure such as bunds, terraces, grass strips and hedgerows due to lower financial assets and/or credit status."

Access to knowledge and skills

Sustainable intensification builds on knowledge-intensive innovations that require a keen understanding of the ecological system and its components. Extension systems, which in Africa are primarily public, will need to provide the technical and management recommendations suited to small-scale farms. But extension services in sub-Saharan Africa are frequently very weak in terms of their capacity to reach women and youth groups.

Policy making must include women

Women constitute the majority of farmers in most countries yet almost all agricultural policies assume farmers are men, and rural women's voices seldom influence policy or budget decisions. Focusing agricultural policies on women means overcoming discrimination in access to existing resources, but also introducing new services and technologies that respond to the specific needs of women farmers.

Sustainable intensification builds on knowledge-intensive innovations that require a keen understanding of the ecological system and its components.

Areas for further research

There is clearly no doubt that agricultural intensification is a necessary step forward. Intensification can be accelerated through research that should consider socio-economic, natural resources, technical and institutional factors that influence productivity and sustainability.

Margaret Kroma said that to be able to make informed decisions as to how a particular land activity may affect women and men, evaluation instruments are needed to make detailed gender assessments.

Another researchable area relates to the implications of climate change. What roles do men and women play in climate change mitigation strategies at the community level? A key question is whether there are effective models of innovative financing that have worked elsewhere for smallholder women farmers and if there are, what should be the roles of governments in promoting these.

Ensuring Food Security

The world needs to feed 9 billion people by 2050 in what will be a more challenging climate. We need to change production systems to meet this demand. In addition, the ecological footprint of agriculture must be reduced. Meeting these challenges will require coordination with the mechanism known as Reduced Emissions from Deforestation and Forest Degradation (REDD+) and other efforts to conserve forests. REDD+ will have to limit the expansion of agriculture if it is to be successful.

Bruce Campbell is Director of the Climate Change, Agriculture and Food Security (CCAFS) research programme at CGIAR, the Consultative Group on International Agricultural Research. He talked under the heading *Ensuring food security while mitigating climate change: an integrated role for agriculture and forestry*.

"I think three of the greatest challenges facing humanity in the 21st century come together in agriculture. These are food security, adaptation to a changing climate, and reducing the ecological footprint of agriculture. How do we feed 9 billion people while reducing the ecological footprint of agriculture? Can agriculture and forestry work together?" asked Campbell.

He concluded that there are some really important policy-related questions waiting to be answered. "Our program is really looking for collaboration from academic institutions that are interested in science policy in these areas," he explained.

There are considerable challenges in simultaneously adapting to and mitigating climate change and securing an adequate food supply. For example, will climate change adaptation sometimes drive increases in emissions? Increased food production can also drive increases in emissions, by for example deforestation. Coping strategies can in turn reduce adaptive capacity in longer term. "So, will we be able to achieve agricultural production systems that find the balance between adaptation, mitigation and food security?" asked Campbell.

Agriculture hit by climate change

Agriculture is one of the sectors that will really be hit by climate change. Climate change is likely to progressively shorten the growing season in developing countries. Under a scenario of a four degree temperature rise by 2090–not optimistic but also not an unreasonable scenario–large parts of sub-Saharan Africa will have a 20% shorter growing season. "For Africa, this is a revolution," Campbell said. "The significance of this change is beyond our understanding, really."

One of the effects will be an increase in the price of staple foods, such as rice, maize and wheat. For maize, economic and demographic factors will likely lead to a price increase of about 50% by 2050. Climate change will likely add another 50% and this is an optimistic scenario. For rice and wheat, the likely price increase will be smaller, but still significant.

Agriculture is also one of the drivers of climate change, and emits about 1/7 of all GHG emissions. Three quarters of this is driven by agricultural expansion. "Some

say that we should not touch agriculture. But I think the top scientific circles agree that every sector has to contribute to lowering GHG emissions," said Campbell.

Agriculture also plays a major role in pushing human activities beyond the safe operating space regarding, for example, biodiversity loss and disruption of the nitrogen cycle."From my understanding of this kind of data, within two decades we have to see a radical transformation n of agricultural production systems in order to operate within safe limits," Bruce Campbell stated.

Agriculture integral to plans

About 75% of deforestation is probably driven by agriculture. Reducing Emissions from Deforestation and Forest Degradation, REDD, is a set of steps designed to use market or financial incentives in order to reduce the emissions of greenhouse gases from deforestation and forest degradation. It can also deliver co-benefits such as biodiversity conservation and poverty alleviation.

"There is plenty of action on the ground, with people trying out different systems, getting monetary systems in place, but there is poor consideration of agriculture as a driver of deforestation. Plans don't deal with agriculture. They don't really address how we can maintain agricultural production and also stop deforestation," Bruce Campbell pointed out.

Agriculture has a high status in UNFCCC documents, Bruce Campbell noted. "But unfortunately it ends there. There have been draft texts, but very little success in actually getting agriculture into international agreement texts. What is needed is a text on agriculture and food security in the common vision for Long-Term Cooperative Action (LCA), and an agriculture work program under the Subsidiary Body for Scientific and Technological Advice (SBSTA)," Campbell stated.

Link intensification to preservation

"One of the key areas of work at the moment is the role of commodity round tables, like certifications, so there can be plenty of good practices in these commodities," said Campbell.

Another key question for research is how incentives for smallholder agriculture can be linked to compliance in terms of reducing deforestation. Many agriculturalists say they need to intensify agriculture, in order not to have to spread into forests. But that doesn't seem to work in practice. "There is good research that shows that if you intensify a particular crop in a particular locality, it becomes of great economic value and spreads into the forest. So a key question is how to link intensification to forest preservation," Campbell explained.

Agriculture must be climate-smart

Agriculture needs to be climate-smart to achieve the triple win that will strengthen the impacts of REDD+. What technologies and approaches are the best bets? Which technologies are most appropriate for the respective regions? What are the landscape and livelihood outcomes of different options? The outcomes can be very different on the little plot level and at the landscape level. The trade-offs can be very different. "In Vietnam, for example, emissions from increased paddy rice cultivation and pig rearing are predicted to overtake mitigation from carbon sequestered from avoided deforestation after 20 years. This is another example of

how closely we have to link agriculture with forestry," Campbell said.

The combination of climate science work, meteorological info and cell phone technology can give farmers access to information on the conditions they will be facing. These are farmers who have never had access to such advice before.

Financing needs to be improved

Financing is currently insufficient for agriculture to tackle climate change and food security challenges in support of REDD+. There must be a substantial increase in the funds available to meet the challenges faced by the agriculture sector. Science to support this agenda will cut across scales and disciplines, and will involve deep engagement with stakeholders.

There are technologies that are waiting to take off, like alternate wetting and drying of rice cultivation systems. By managing water it is possible to reduce water consumption by 50%, and GHG emissions by about the same.

Climate change can also make large-scale changes in agricultural systems, like relocation of farming and farmers, and shifting to other crops. Rich countries can do this.

"Forests are really very important for agriculture production. One example is pollination services. This is a wonderful area of research," Bruce Campbell said.

"What environmental services are really needed? How much of these environmental services? What percentage should remain as forests in these agricultural landscapes in order to provide these services?" he asked.

What are the costs and benefits of the respective technologies and practices? How can good incentives be put in place to make the changes? When is transformative adaptation needed? This needs input from both climate science and agricultural science. What will the cost be? "These are important questions that need to be answered," Bruce Campbell concluded.

Three of the greatest challenges facing humanity in the 21st century come together in agriculture. These are food security, adaptation to a changing climate, and reducing the ecological footprint of agriculture.

REDD+ Implications at Different Scales

Land-use change accounts for a significant proportion of anthropogenic emissions, mainly from tropical deforestation but also from forest degradation. The exact figures for this are disputed, as there is a discrepancy between old and new data. The range is from 6–20%, with 12% being a reasonably accepted figure.

Reducing emissions from deforestation and forest degradation in developing countries, REDD, can be a feasible and economically viable mitigation option. This includes the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries. REDD is therefore an important issue within the GHG emission reduction framework.

Madelene Ostwald talked about *REDD+ implications at different scales*. Ostwald is a researcher at the Center for Climate Science and Policy Research, CSPR, at the Swedish Meteorological and Hydrological Institute, SMHI and Linköping University, and is also the research leader for FOCALI, the Swedish research network for Forest, Climate and Livelihoods.

From Kyoto to Cancun

The question of emissions from deforestation within the framework of international climate negotiations has been varied. It was on the agenda for Kyoto in 1997, but in the end was omitted. What was left was the afforestation and reforestation Clean Development Mechanism (CDM). The question returned to the international climate politics arena again in 2005 in Montreal, when it was presented by Papua New Guinea, Costa Rica and a coalition of tropical developing countries as a plan whereby wealthy countries would pay poor countries to preserve their rainforests. A modified version of the proposal was accepted by the UN, but how this should be implemented is still being discussed. The question of emissions from deforestation was included in the Bali Action Plan of 2007, with programmes established for pilots, such as UN-REDD and FIP. "Presently it is one of the most unifying issues within UNFCCC," Ostwald said.

So there is not much controversy about the text produced by the Cancun ad hoc working group on Long-term Cooperation Action under the Convention. This text says there should be policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries (REDD), and also points to the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries (the "plus" in REDD+).

The contents of the Cancun agreement on REDD+ was that parties should collectively aim to slow, halt and reverse forest cover and carbon loss, and that there should be broad country participation in all phases. There should be a phased approach, and the phases drawn up were; to prepare and make pilot programmes ready; implement policies and measures; and performance-based payments. The phases are not tied to a time frame. The agreement also said that parties should find effective ways to reduce the human pressure and address the drivers of deforestation. There are safeguards

included, regarding, for example, forest communities and biodiversity, and support for national strategies or action plans and national forest reference emission levels. "But there are really no details on how this is supposed to be done," Madelene Ostwald commented.

Four main programmes

REDD+ at the global level is now awaiting a new international climate agreement with clear commitments. In the meantime, there have been several meetings outside the UNFCCC, and the process has moved outside the UNFCCC to a set of programmes, bilateral agreements and partnerships. The REDD+ partnership now counts 72 countries. There are 42 countries receiving support in 4 main funding programmes: United Nations Collaborative Programme on RED (UN-REDD), Forest

Carbon Partnership Facility (FCPF), Forest Investment Program (FIP) and Congo Basin Forest Fund (CBFF).

Country–specific challenges

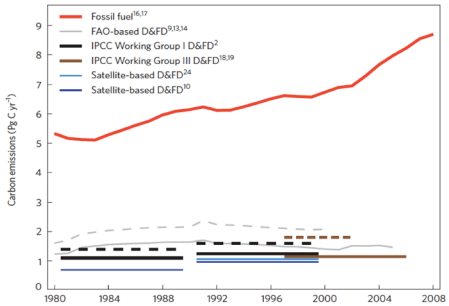
Madelene Ostwald used three national cases to show the wide spectra of national circumstances and REDD implications.

Burkina Faso and Sri Lanka both have moderate forest cover, 21% and 29% respectively, while Guyana has very high forest coverage, 77% of the land area.

Burkina Faso is involved in the Forest Investment Program, FIP, as one of eight countries as of March 2010. The country is suffering from deforestation of around 1% a year, and there is little action. Burkina Faso has been targeted because there are lessons to be learned in terms of semi-arid lands, and because the country has a decentralised forest governance. Burkina Faso will receive US $250000 as a preparation grant, and US $20-30 million for implementing the REDD structure. In general Burkina Faso is considered to have a low mitigation potential, as climate impact is low and the potential future carbon related REDD+ payments will do little for poverty reduction.

Half of Sri Lanka's GHG emissions 1990–2010 have come from deforestation. There is a lack of past forest inventories and problems in creating a baseline for above-ground biomass due to diversity. "There is a vast problem in describing carbon levels, so reference levels for how much carbon there is and how the carbon is distributed in the various types of ecosystems, must be created, and this should not include agroforestry home gardens, which are a large proportion of the land. How can this type of land be excluded?" Madelene Ostwald asked.

Emissions from deforestation and forest degradation 12% (uncertainty at 50%)



Source: van der Werf et al. 2009

Sri Lanka has not yet been targeted, but is an observer country to UN-REDD and is applying to become a UN-REDD country. The country is struggling with the administrative documentation for the application. "But there is a political will to halt deforestation and apply sustainable forest management" says Ostwald.

Guyana was one of the first to have a bilateral REDD+ agreement, with Norway. Guyana received US $30 million in 2010, and will receive perhaps US $250 million by 2015 to limit deforestation. These funds are going into something called the Guyana Low Carbon Development Strategy, LCDS. Their scenarios for the future point to a massive expansion of commercial agriculture, which, under projected scenarios, will lead to

deforestation of over 4% in the very near future. Guyana has experienced virtually no deforestation up until today. This high forest cover and low deforestation is the reason the country was targeted in order to save the forest that is there.

A new climate deal can be key

Madelene Ostwald summed up REDD+: "The implications for agriculture are that REDD+ is inherently defining agricultural expansion as bad. REDD+ is also not happening yet, as there is no agreement but it is a very good experimental arena and there is a lot of talk about it. If there is a new climate deal, there are 42 nations that are prepared for REDD, as opposed to the other 50 or so forest nations that are not prepared. Tremendous work has also been done on topics such as methodology, and '+' definitions, baselines, permanence, leakage, monitoring, addressing drivers and funding."

If there is ***not*** a new climate deal, the interest will fall, Madelene Ostwald said. "We can already see that investment peaked in 2009 and is now declining. There was funding of US $2200 million in 2009, US $1800 million in 2010 and US $1500 million this year. The question is; can we then go for more regular overseas development aid to protect forests that may be at risk?"

Postscript: The REDD+ status after Durban and COP 17

There was little hope that the COP 17 meeting in Durban in December 2011 would deliver an overall international climate agreement to take over after the Kyoto Protocol. Considering the slow development during the last COP meetings there was, however, a touch of success after Durban in terms of keeping the idea of a future agreement alive at least, even though a decision on such an agreement will be several years into the future.

Discussions continued on several parts of a potential new agreement. One such part is REDD+. The Subsidiary Body for Scientific and Technological Advice (SBSTA) put forward suggestions on text regarding safeguards relating to the security of issues indirectly associated with conservation efforts such as indigenous peoples and biodiversity and reference levels including monitoring, reporting and verification (also called MRV). The COP adopted these two texts. In terms of safeguards, the meeting decided to give countries the flexibility to report on how safeguards have been or should be incorporated into their REDD+ programmes. Critique was put forward that it contained too little details and too many loopholes; others argued that it burdened developing countries with yet another reporting constrain.

For reference levels (RL–including increase of carbon stock in standing forest) or reference emission levels (REL–only the emissions) it was decided that historical emissions and national circumstances were to be included. Worries were raised that each country will create its own national circumstances and in the end lower credibility of the system.

Finally, the question of how to finance REDD+ was discussed; or rather how to discuss the issue was debated. The reluctance of including markets is still strong among some countries as is the whole issue of using conserved forest investments for offsets, which is reflected in the EU's emission trading scheme (EU-ETS) that do not trade in REDD related offsets. The issue of funds, markets and finance will be continued through submissions from parties, expert workshops and technical reports.

Risk Management of Animal Diseases

Policies for disease control must protect livestock from disease and thus help keep people safe. The death and killing of livestock due to disease represents an immediate loss of income for large numbers of smallholders, primarily in developing countries. Such policies must also reduce the disruption of the millions of livelihoods involved, and balance all these factors. The intensification of livestock production, the concentration of intensive production systems in close proximity to urban population centres, and husbandry practices with inadequate biosecurity all contribute to the emergence of diseases and developing countries.

To counter these threats effectively it is imperative not to look at disease emergence in isolation. It must be systematically viewed alongside dynamic changes in farming, animal agriculture intensifications, natural resource depletions, land utilisation patterns, trade globalisation, human behaviours, food consumption, and evolving trends in agricultural production, distribution and marketing systems.

This was the subject of a talk by Philippe Ankers from the Livestock Production Systems Branch of the Animal Production and Health Division, FAO. He spoke under the heading *Risk management of animal diseases in different production systems–lessons learned*.

Demand will increase

Over previous decades the production of meat has increased immensely yet the relative price has declined. The trend is for global demand for livestock products to continue to grow. There are three factors driving this: population increase; urbanisation (which changes purchasing habits); and income growth (there is a strong correlation between income and consumption of livestock products).

The impact of animal diseases on human well-being is two-fold. It will affect human health through pandemic diseases, and through the many endemic diseases and food-borne illnesses. Yet many diseases also have an economic impact through loss of livestock productivity, disruption of the livestock market, and livelihood risks for livestock producers. Such impact can easily run into the billions of dollars range, such as for SARS in Asia, Foot & Mouth in the UK, BSE in the UK and avian flu in Asia. "Yet there is generally very little information on the costs of diseases, and we really need that," Philippe Ankers said.

Examples of animal-borne diseases

Ankers presented two examples of animal-borne diseases: Porcine Teschovirus Encephalomyelitis in Haiti and H5N1, a highly pathogenic avian influenza in Egypt. Haiti is one of the world's poorest countries. There are 9 million people and about one million pigs in the country, with no commercial farms. In February 2009 Haiti had its first case of Teschen disease in pigs. The mortality is high, especially in piglets, and there is no vaccine. "The recommendation was first to inform neighbours that disease is there. That Teschen disease is not a public health issue since it cannot be transmitted to people was an important message to get out. The provision of training for veterinarians and technicians was also essential because the disease is very infectious and can be transferred by boots," Ankers said.

Other recommendations were provide information to producers, improved surveillance and regular collaboration with reference laboratories regarding sampling and diagnosis. "There were attempts to start a vaccine programme but this did not happen as nobody was interested in producing a vaccine," Ankers stated.

Avian influenza in Egypt

There have been over 2400 outbreaks of avian influenza in Egypt since 2006. In 149 cases humans have been infected, with 51 fatalities. Avian influenza is now endemic in Egypt, in all production systems.

Poultry is the meat most consumed in Egypt, and there are over a hundred million birds. Home-based poultry production contributes a quarter of all meat consumed in Egypt. Home-based poultry production is different from in, for example, sub-Saharan Africa, as the poultry are often housed in an empty room in the house or apartment. "There are 7 million households raising poultry like that in the middle of Cairo," Ankers said.

In addition, there are 25000 small-scale commercial farms and 6 large-scale, integrated companies. "In commercial farms you can have 5000 birds per floor in large buildings. These are suspected to be the main cause of outbreaks, since the viral security is not very good."

The strategy of the Egyptian Ministry of Agriculture and Land Reclamation (MoALR) in 2007 was to cull infected birds and birds at risk, vaccinate nearby birds, follow-up vaccinated flocks and monitor selected sentinel birds. "There were also a ban on live bird markets and a ban on urban poultry production, so people hid what they were producing," Ankers said. This strategy was revised in 2010 with the aim of working with the producers not against them, and to work with the many poultry production systems in the country. There was emphasis on limiting transmission of the virus along production and marketing chains in ways that do not unreasonably impact on livelihoods.

The way forward

FAO's One Health Plan of Action is based on a collaborative, cross-sector way of addressing threats and reducing risks related to livestock diseases to attain optimal health for people, animals and the environment. It works with animal health (both domestic animals and wild), and food safety issues, as well as fisheries. Agro-ecosystems and land use issues, socio-economic issues such as marketing and trade, animal production and feed safety issues are other focus areas.

A goal of the action plan is to build robust animal health management systems. The plan aims to address current diseases rather than disease threats, particularly in poor farming communities. Other goals are to understand and control the drivers of disease emergence, persistence and spread. "We're not only here to identify a disease outbreak. We also need to find the reason why the disease emerges," Ankers said.

It is important to build capacity for disease risk management using cross-sector and multidisciplinary approaches. Experts from all relevant disciplines–medical, social, governance, business–must be involved to reduce the risk of emerging diseases. "The capacity of national institutions to coordinate disease control efforts must be developed, as well as the capacity of regional institutions. There is also a need to identify opportunities for partnerships within a broader range of stakeholders and to strengthen such partnerships, involving both the private sector and civil society in the control of diseases.

SUMMARY OF SESSION PRESENTATIONS

1) Future Agricultural Research

This session was chaired by Ulf Magnusson, SLU and dealt with the identification of general and critical research issues for the future of Sub Saharan Africa, and with the drivers and dynamics of change in smallholder agriculture. At least three common trends were noted: Firstly, to combat the simplification regarding the interpretation of the concept of "sustainable development" in the Swedish development agenda, participants determined that future development research must comprise all three elements of sustainability: namely, social, economic and environmental.

Secondly, given the first observation, there is potential for more successful research if broader multidisciplinary approaches are taken when attacking the research issues of the future. Thirdly, it was clear that research into the drivers and options for risk reduction for smallholders is critical.

2) Scales and Diversity in Forest Ecosystems

This session focused on issues related to scales and diversity in forest ecosystems and participants recognised that the number and variety of demands being placed upon forest was ever increasing. There was some discussion concerning the rehabilitation of degraded forest landscapes and the difficulty in generalising between cases, regions and countries about the opportunity for, and effect of, tree planting, was acknowledged.

The relationship between trees, carbon and water in agroforestry systems was explored noting that intermediate tree densities in Africa appear to allow optimal groundwater recharge, as well as providing livelihood benefit. Forests as a carbon sink were discussed and the challenges inherent in the large variation between forest type, condition, successional stage, were recognised. The need for forest inventories and empirical studies to validate models was emphasised. The stimuli for farmer tree planting initiatives were found to vary between countries and may be institutional and political in nature, or resource-base determined. The opportunities for Reduced Emissions from Deforestation and Forest Degradation (REDD) were considered and the scale and diversity of approaches and analysis highlighted.

3) Land Tenure and Governance

This session covered a range of perspectives, from individual to national scales and a global outlook. On the individual level, the session leader Gunnar Köhlin presented a paper describing an experiment performed in Ethiopia to test policy options for reducing tenure conflicts. This presentation was put in context by a presentation of trends and issues in land tenure policy in Africa. The tenure situation in many African countries is characterised by a lack of clarity and security. However, many reforms are underway, particularly to recognise customary and community land rights.

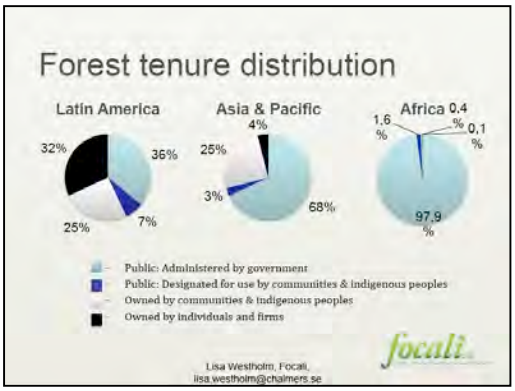


Image: Lisa Westholm

This overview was then put in the perspective of Reducing Emissions from Deforestation and Forest Degradation (REDD+). Tenure security has been identified as crucial to systems involving performance-based payments for conservation. Secure tenure has been described as a prerequisite both for efficient and equitable REDD+ implementation. Due to this, tenure reforms are often seen as important parts of REDD+ preparations. A particular case study from China provided another perspective on this, relating to how tenure security can affect investment decisions and incentives to invest in forest management.

Four of the presentations dealt with contemporary issues of tenure and governance in poor countries. This was then put in perspective by a historic review of the transformation of the Swedish forest tenure system during 400 years. This opened up a discussion on similarities and differences in tenure development in different times and settings.

4) Future Forest Research

This session was run by Future Forests, a Mistra research programme. This a joint initiative between SLU, Umeå University and the Forestry Research Institute of Sweden. While this programme focuses on boreal forest applications it retains a strong emphasis on global linkages and drivers of global change, particularly–climate change, globalisation, and changing consumption patterns–all issues of broad development research relevance. The program also aims to tackle questions from a cross-disciplinary perspective, issues of conflicts and tradeoffs, as well as the constructs upon which research is based such as ideas of sustainability and resilience.

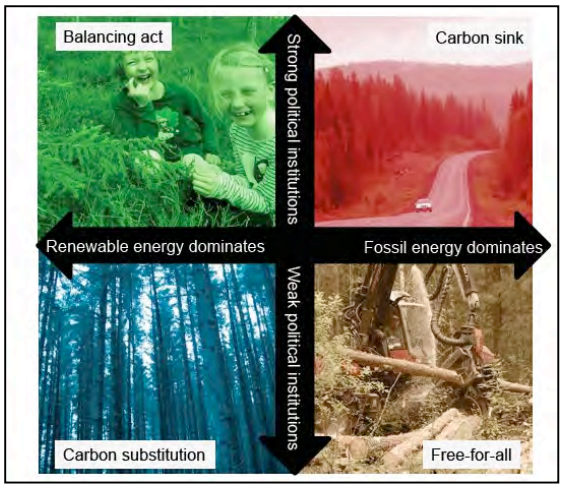


Image: Jon Moen, SLU

This session therefore focused on interdisciplinary research problems and methods integrating the themes of scales and diversity. The session included two talks focusing on sustainable forest management, both from the conceptual and practical level as well as in the context of new challenges such as climate change

adaptation and mitigation. Particularly interesting was the linkage of local examples, such as forest restoration, up to efforts tackling global trends and futures research and analysis. A conclusion emerging from this session was that such approaches, combined with basic research, are a vital component in tackling the challenges in the context of global change.

5) Transboundary Pathogens

This session focused on the micro-organisms that make plants (including trees) and animals sick. The mobility of these pathogens creates special problems, especially in situations where their regulation (or enforcement) is somewhat irregular. Problems can develop in animal production where proximity to markets is often prioritised over and above animal health issues, or the environmental impacts associated with waste disposal.

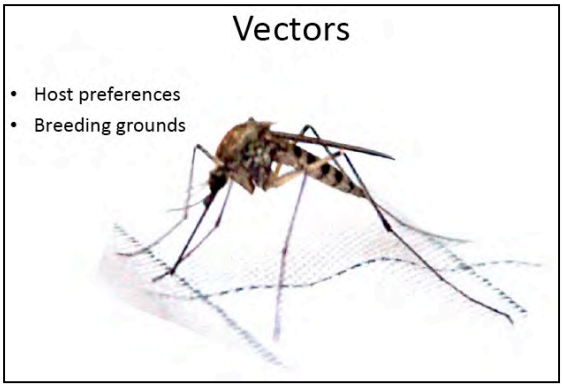


Image: Sara Persson, SLU. From Johanna Lindahl's presentation

While veterinary pathogens are often associated with the movement of animals, many plant pathogens can be wind or vector-borne, leading to difficulties in documenting and regulating their movement. One common area of interest is the use of modern techniques in molecular biology to identify pathogens, or study their population structure. Such studies have previously been difficult to conduct, but can now give more information on pathogen movement.

6) Smallholder Diversification

This session considered smallholder diversification and discussed the role of changing productivity, agricultural organisations, and access to capital and diffusion of technology. The lack of alignment between the perspective of the individual farmer versus the needs of a farmers' cooperative was debated: the horizon problem (age of farmer and their business planning horizon not identical to those of the cooperative) and the portfolio problem (diversity and risk in their farming operations not aligning with those of the cooperative).

Research showed that households reducing their dependence on agriculture by increasing their non-farm income had rapidly rising incomes. This phenomenon was not restricted to the wealthy, and had important gendered dimensions. Smallholder transformation and diversification may be powered by the state or from the grassroots and the path taken therefore is country-specific.

Image: Emmeline Laszlo Ambjörnsson and Ylva Nyberg, Vi Agroforestry

Participants also noted the broader context of agriculture becoming less of a priority in the mid-1980s. Indeed the role of off-farm activity increased significantly during the 1980s and 90s when compared to the 1970s. This is despite the increased and widespread impact the green revolution was having on farm productivity (particularly in Asia) during this period.

PANEL DISCUSSIONS

Day 1: Smallholder Agriculture and Forestry

The panel discussed a wide range of topics related to the state of smallholder agriculture in different parts of the world. The discussion covered land rights, the role of research, the concept of sustainability, links between oil prices and food production and lessons learned from the green revolution. The keynote speakers and the session leaders from the first day of the conference participated in the panel.

Panel Participants:

- Margaret Kroma, Alliance for a Green Revolution in Africa
- John McDermott, International Livestock Research Institute
- Shenngen Fan, International Food Policy Research Institute
- Ulf Magnusson, Swedish University of Agricultural Sciences
- Anders Malmer, Swedish University of Agricultural Sciences
- Gunnar Köhlin, University of Gothenburg

Land Tenure

The discussion began by highlighting one of the key issues of the day concerning land tenure and governance. Agricultural intensification is essential for future development, but how this is best achieved and the best way to secure land rights, are uncertain.

It was acknowledged that while access to land is extremely important, it is not always everything. For example, whilst land is a proxy for power in South Africa, in East Africa it is not. This broader perspective must be given greater consideration. The panellists affirmed that land management must also take a gender perspective to be effective. It was recognised that whilst access to land is critical, it is just one of several variables.

Scaling Up

Discussion then reflected on the complex topic of scales and diversity. Research has a role to play in developing country-based and evidence-based strategies, yet this requires thousands of well-educated people involved in the research and the policy making, not just a couple of PhD holders. There is a need to scale up to enable countries to implement their own research and to educate their own students. Such a development would make it easier to assess who is carrying the risk, who will benefit from the investment, and how farmers can be empowered.

Transparency

Transparency of investment was agreed to be of pivotal importance. Many farmers today are prevented from investing due to lack of transparency and lack of security. For investments to be a viable option land rights must be secure, smallholders must be respected, and smallholders must benefit from the investments. Social safety is particularly important in this regard. In Kenya, for example, many of the poor are protected by social safety programmes, although many poor people suffer in other parts of the world.

Concerning land security, panellists proposed a global information system to register all land deals. For transparency this database should contain information about who will benefit from the deal, who is investing, and how big the investment is. This is a critical issue generating considerable interest today, for instance in relation to biofuel production. The World Bank may become an important actor to support the legislative capacity to secure land rights.

The importance of knowing who will be the beneficiary of an investment was reiterated. A database would have to answer who would be involved and why.

Other implications of an investment would also have to be considered, for instance access to water. Many large deals could have major implications for smallholders nearby–water is key to their production.

Research Incentives

Panellists underlined the need to understand which incentives will make it possible for smallholders to invest. This is a complex problem where institutional regulation must be addressed. The environmental risk cannot be separated from economic and social risks.

Energy versus Food

The panel also addressed the topic of energy production versus food production. Bio fuel production was considered a threat to food security and not an environmentally sustainable solution either. Participants were concerned that biofuel should not be grown instead of poor peoples' food.

The panel was asked about the potential of co-operatives as a platform for dialogue between stakeholders in agriculture. Answers noted that Sweden has supported co-ops in Africa for a long time but that they usually failed to work in the long term as they became political platforms, and it was not clear whose interests they were representing. It was agreed that smallholders need a more powerful organisation to represent them, but its form is not yet clear.

Smallholder Vulnerability to Price

Another question raised concerned the problems of both high and low food prices. In 2003 high productivity and large subsidies pushed down the price of food, which hurt smallholders since they could not compete. Yet in 2007 global food prices were high and this also hurt smallholders as they consumed imported foods. Price volatility was agreed to be a major difficulty for smallholder farmers. Stable prices might give smallholders a better chance to adapt and to invest.

The discussion moved to lessons from the green revolution of Asia. It was agreed that the green revolution brought many benefits and has reduced hunger for millions of people, but at that time research did not pay enough attention to other topics so the broader impact is less easy to evaluate. Current research considers a broader range of complex and integrated problems, such as hunger protection, nutrition and health.

Panellists concluded that one of the lessons from the green revolution is the importance of research. Governments need to take responsibility for implementing research and making new technology useful. Technology will not walk by itself.

Future Research

Further discussion agreed that future agricultural research must take on board the following three factors:

1) stakeholders must emphasise the need for evidence-based (researched) policies
2) sustainability should be addressed as an environmental, economic and social topic. Agriculture needs more research from the economic and social dimensions to become innovative, sustainable and balanced.
3) these issues are diverse and complex. The challenges of food security and poverty do not always go hand in hand. Each country will follow its own specific path to some degree or another.

Day 2: Raising Smallholder Productivity

Discussion covered several angles of smallholder development within both agriculture and forestry and addressing both Africa and Asia. Diversification, multi-purpose land use, and the difficulty in finding the means to invest were a few of the key issues discussed.

Panel Participants:

- Philippe Anckers, FAO
- Madeleine Östwald, Linköping University
- Lucy Rist, Umeå University
- Jonathan Yuen, Swedish University of Agricultural Sciences
- Magnus Jirström, Lund University
- Agnes Andersson Djurfeldt, Lund University
- Bruce Campbell, CCAFS

Discussion began by considering how agricultural productivity can be raised when smallholders have a hard time making a profit growing staple crops?

Smallholders under Threat?

Panellists debated the impression given that smallholder farming is under threat and concluded that it depends on whether you look at things from the producers' point of view or from the consumers' point of view. Consumers want cheap, safe products, and that cannot be ignored. One risk for smallholders is compliance with standards. Flexibility and finding the right balance is essential in order not to hurt the smallholders. An option to integrate small-scale farming into large-scale operations, for instance by contract farming, was mentioned as a conceivable way forward.

Large-scale not reason for wealth

The problem of scale versus access to markets was considered and it was agreed that moving to large-scale production systems is no quick solution. If smallholders can make a profit they can move out of poverty, and invest in their land.

The panel discussed differences between development in Europe during the last century and the developing countries today. One major difference is the time-scale. Development in Europe took place over a hundred years. It was also noted that it has not been proven that the existence of large-scale farming led to Europe's wealth. In support of this is a current trend of European farmers moving from large-scale to small-scale, even within Sweden.

It was suggested that there may be a lack of focus on the medium scale, although the panellists' view was mainly that the focus must shift according to context. A focus on the large scale was deemed appropriate in most cases where forestry is concerned.

The Middle Class

The importance of focusing on the middle class when discussing how agriculture could be combined with other incomes was noted, especially in Africa. This group often makes a living from multiple incomes. It is impossible to try intensifying in every case. It is an issue of diversification rather than of intensification. An additional challenge is linking the knowledge of urbanisation to issues of production.

Multi-purpose Land Use

The multi-purpose use of land was suggested as one way of increasing productivity. The same piece of land can provide several services, including forestry and farming, as shown for instance by the home gardens of Sri Lanka, or similar set-ups within the palm oil industry.

Financing small-scale development

The panellists then discussed the problems of financing small-scale producer changes and considered whether it would be possible to find a way for smallholders to generate the funding necessary for the investments needed to adapt. Large-scale producers generate enough income to fund investments themselves. The scale of the challenge for family farms in Africa to increase productivity by 50-70% was acknowledged. Such a level was achieved in Asia through specialisation on rice production, and might be achieved in Africa through diversification, since monoculture and highly specialised systems cannot be relied upon. Yet coordinating the development of about 2.8 billion smallholders in Africa was recognised to be a considerable challenge.

The enormous regional differences in Africa must be considered, and panellists noted the difficulty for governments to prioritise between regions. African governments commit 10% of their GDP to the agricultural sector, which was noted to be more than most other countries commit.

An example of foreign investments in agriculture in Africa was given in the expansion of flower production, which has become an alternate income source for smallholders in Eastern Africa. Participants debated such investments yielding flowers or cash crops for export, rather than food for local consumption.

One major difference between Asia and Africa was highlighted; that Asia had the purchase power to drive development for smallholders. This purchase power is lacking in Africa. In China the policy has a mainly top-down orientation, which has resulted in about 2,000 programmes where poor land has been converted to productive land. Such a top-down approach could not happen in Africa.

It was also suggested that there are lessons to be learned from the poultry industry, where many small-scale producers flourish. Other sectors may also have the same potential.

CONFERENCE 2012

Agricultural Research for Development: Innovations and Incentives

26th and 27th September 2012, SLU Uppsala

Agricultural Research for Development is an annual multi/inter-disciplinary and multi-stakeholder conference on agriculture, livestock and forest research in an international development context. Swedish research and development assistance exist in this international context and requires influence and ideas from outside, thus we invite prominent international scientists, development practitioners, policy makers and other stakeholders to participate in this event. As farming is a multi/inter-disciplinary endeavour, science must also be. Accordingly, not only is forestry and livestock included in our definition of agricultural research, but also everything from microbiology to macro-economy, putting local people, their livelihoods, land use and environments in focus.

Innovations & Incentives is the theme of this year's conference. This encompasses innovative land use policies and market approaches as well as technological innovations at the farm or village level. It also includes incentives for increased agricultural productivity at different scales; from farmers and local markets, to countries and global trade. Some innovations and incentives may have unforeseen or even negative social and/or ecological consequences, or contain scientific and policy related controversies. Such controversies and unknowns may themselves be incentives for innovative research. We intend that the conference should be a forum for balanced and science-based discussion on ways forward, and on how science could and should contribute.

The organisers' are the networks: Agri4D (www.Agri4D.se), SIANI (www.SIANI.se), Focali (www.focali.se), Future Agriculture (www.slu.se/futureagriculture) and Future Forests (www.futureforests.se).

Format: Distinguished international guests will give keynote presentations on pertinent research and/or developmental questions. Individual participants are invited to present their research in parallel sessions. Sessions will be thematic and led by a session leader who will also give a session keynote presentation. Some theme titles and content is pre-organised but will also depend on participants' contributions. If you want to contribute with a presentation or want to organise and lead a session please contact Gert.Nyberg@slu.se and/or respective session leaders. There will also be poster sessions.

More information will be available on www.Agri4D.se shortly, but book the dates now!

Venue: Swedish University of Agricultural Sciences (SLU), Uppsala, Sweden

Time: 26th and 27th of September 2012

Welcome

ABOUT THE ORGANISERS

The Swedish Research Network: Sustainable Agriculture and Forestry for Development (Agri4D) was founded in 2009 with the goal of contributing to agricultural development and poverty alleviation in developing countries by stimulating the utilisation and growth of Swedish research competence. Agri4D is a platform adding further value to existing research by promoting multidisciplinary cooperation, analysing broad thematic issues related to pro-poor development, and increasing cooperation between Swedish expertise and other stakeholders in international development.

The Swedish International Agriculture Network Initiative (SIANI) is a response to the 21st century's food and farming crisis. They are an inter-disciplinary and multi-stakeholder platform where government, civil society, industry and research collaborate to address the crucial need for global agricultural development strategies that ensure food security, poverty alleviation and environmental sustainability.

Focali is a Swedish multidisciplinary research network focusing on forest/bio-energy, climate change and poverty issues. The purpose is to contribute relevant knowledge to Sida and other Swedish authorities for the effective use of forest operations that achieve climate-poverty targets. Focali also aims to increase the flow of information between academia, government, industry and civil society.

Future Agriculture is a strategic multi and interdisciplinary research programme developed at the Swedish University of Agricultural Sciences (SLU). Researchers, together with various stakeholders, are developing a research programme on social, economical and environmentally sustainable agricultural production, including livestock, crops and land use. Future Agriculture aims to strengthen cooperation within academia, and between academia, industry and society.

Future Forests produces research that analyses conflicting demands and ways of using and managing forests. They aim to produce a comprehensive knowledge base–including scenarios and models of the future–pertaining to boreal forests, working with researchers and experts from both the natural and social sciences. In addition, forestry stakeholders participate to discuss topical issues in working groups.

The Forest Initiative is a strategic partnership between Sida, the Swedish Forestry Association and the Swedish Forest Agency. The aim is to build a platform for issues related to global forest development where Swedish stakeholders contribute knowledge and build capacity within their organisations. The initiative is based upon Sweden's policy for global development (PGD) and focuses on governance and rights issues related to sustainable forest management and utilisation. The objective is that the forest cooperation development shall contribute to poverty alleviation and sustainable development.