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Farmers and the future of agro-biodiversity

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Agro-ecosystems and agro-biodiversity contribute to sustainable livelihood securities at the local, national and global levels. They provide a range of goods and services including food, fodder, climate change mitigation, biodiversity conservation and water quality options. Farmers and farming communities have a significant role to play in the preservation and conservation of these resources and ecosystems. The role of agriculture in the provision of ecosystem services depends, however, on the incentives available to it.[1] At present incentives are designed to pay for the goods rather than the services provided by agricultural ecosystems. Payments for ecosystem services interventions often do not reflect correctly the social, environmental, economic and cultural aspects of the environmental services that farmers and farming communities deliver.

Arguments in favour of payments for ecosystem services in agro-ecosystems should be based not only on the current provisioning and regulatory services offered but also on anticipated future services. With growing reliance on increasing productivity systems in agricultural landscapes, food production and allied services agroecosystems offer the best option for provisioning services.

Some of the key issues for consideration by policy makers to ensure the continued engagement of farmers in conservation and the use of agro-biodiversity include the following:

1. In spite of concerns relating to the depletion of agro-biodiversity, awareness of their potential uses is increasing. With growing pressure on land, demand for crops for activities such as biofuel production and bio-fortified food will increase the demand for agro-biodiversity. This pressure will affect the way in which farming will be carried out in the future. It is crucial that farmers are encouraged to continue farming rather than moving to non-farming activities as the mainstay of their livelihoods. This requires some form of incentive system for farmers.

The importance of the services provided by agro-ecosystems including increasing the diversity of pollinator biodiversity and soil biodiversity, maintaining the natural enemy populations, providing of water and climate mitigation and adaptation options means that the conservation of agro-biodiversity is a necessary investment for countries and governments to make. Farmers and farming communities can benefit from the design of payment for ecosystem services mechanisms to encourage them to continue farming.

In either case, the key challenge is to ensure farming remains attractive option. Failing crops owing climate variations, decreasing State support to fix fair prices for crops, disconnected markets influenced by middlemen and a lack of incentives mainstreamed into national procurement and export policies in agriculture all result in farmers being wary of continuing to work in the agricultural sector.[2] Suitable policy and support packages are required to remove these negative forces that threaten farmers and farming communities.

2. Payment for ecosystem services in agricultural systems requires a careful assessment of the characteristics of services provided and the social and economic context within which such payment for ecosystem service schemes are discussed and designed. What should be paid for? Who should it be paid for? How should be paid? These are all the key questions that require consideration by those people who are designing payment for ecosystem services interventions in agro-ecosystems.

3. Policy and regulatory aspects related to access to genetic resources, farmers' rights provisions and the safe use of genetically modified organisms are all relevant to farming practices. Farmers should be made aware of the debates on these issues and educated so that they can make informed decisions.

4. Payment for ecosystem services schemes are designed to encourage farmers to continue providing their service and should not be seen as a poverty reduction tool. This understanding is critical to delivering an appropriately-designed payment for ecosystem services mechanism for agro-biodiversity conservation. While agrobiodiversity is seen as a critical provisioning service, regulatory services such as the provision of water for irrigation and consumption through watershed management should also be considered in the design of payment for ecosystem services.[3]

5. Direct drivers of agricultural production systems and their services include demand for food consumption, availability of crop diversity and their management, land use patterns, climate variability and change, energy provisions and availability of labour. Careful assessment of the links between these drivers and their individual and combined impact on agricultural production systems are critical to ensuring the development of suitable national agricultural and economic packages.

6. Access to credit, capital and assets often pose the greatest challenge to farmers who are engaged in subsistence farming. Most agro-biodiversity occurs in areas where subsistence farming is practiced owing to difficult growing conditions and the importance of farming as a low- risk option. Policy and development packages should consider appropriate interventions to deliver access to credit, capital and assets. Inappropriate credit structure, untimely capital support and unclear asset regimes are bound to create more problems rather than removing obstacles to enable farmers to continue farming in fragile environments and on small land holdings.

1 The State of Food and Agriculture 2007, FAO, Rome.
2 http://www.fao.org/newsroom/en/news/2007/100073/index.html

3 http://www.wri.org/publication/developing-corporate-ecosystem-services#

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Agriculture, Agro-biodiversity and Climate Change

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The agricultural sector is one of the largest contributors to greenhouse gas emissions, second only to the energy sector.[1] Conversely, climate change affects agriculture throughout the world. According to the fourth assessment report of the Inter-governmental Panel on Climate Change, crop yield losses as a result of climate change will be more severe in the tropics than in temperate regions. Estimates indicate that between 75 million and 250 million people in Africa will be affected by water shortages caused by climate change.[2] As in any situation of economic imbalance, the poor will be the most affected – losing livelihood opportunities and access to food and water. Many mitigation and adaptation measures are beyond the reach of countries with severe resource constraints.

Adapting to climate change

Adaptation to climate change should be considered from a contingency planning process perspective. Many least developed countries have had the opportunity to develop National Adaptation Plans of Action in the context of the United Nations Framework Convention on Climate Change but implementation of those programmes and strategic links to resourcing actions are often lacking. Adaptation in the agricultural sector can be seen in terms of both short-term and long-term actions. The provision of crop and livestock insurance, social safety nets, new irrigation schemes and local management strategies, as well as research and development of stress resistant crop varieties form the core of short-term responses. Long-term responses include re-designing irrigation systems, developing land management systems and raising finances to sustain adoption of those systems.[3]

The Canadian agricultural sector has identified 96 distinct adaptation measures in agriculture including altering the topography of land; changing farming systems; using different crop varieties; making governmental and institutional changes and researching new technologies to take up the challenges posed to agriculture by climate change.

Agriculture and mitigation

Livestock and crops emit carbon dioxide, methane and nitrous oxide making agriculture a major source of greenhouse gases. Some 80 per cent of these emissions come from developing countries. Agriculture is also a major cause of deforestation according to reports of the United Nations Framework Convention on Climate Change. Nitrous oxide emissions from soils, because of the use of fertilizers and manures and methane from livestock production account for a third of non-carbon dioxide emissions. Land use change, compounded by agriculture, also reduces carbon sequestration.[4]

Challenges

In light of the foregoing, the agricultural sector faces multiple challenges. While intensification and diversification of agriculture is key to securing food for local people, in the absence of clear understanding of their impacts on agriculture, they can be problematic. Though measures to reduce the use of fertilizers, to increase organic inputs and to deploy new varieties of crops are suggested as better agronomic practices, more clarity is required regarding their impacts on climate. For example, the selection of rice varieties that include wetland rice in sub-Saharan Africa can reduce deforestation as well as management costs and emissions.[5]

Agriculture could also benefit from emerging areas of climate change action. For example, it could profit from the benefits of land uses that sequester carbon, from the emerging markets for trading carbon emissions. Such activities offer higher returns than those arising from forest conversion to agricultural land. Post-2012 discussions under the Kyoto Protocol to the United Nations Framework Convention on Climate Change might consider exploring credits for the sequestration of carbon in soils through conservation tillage in agriculture as well as agroforestry in agricultural landscapes.[6]

Livestock improvements brought about by more research on ruminant animals, storage and capture technologies for manure and conversion of emissions into biogas are additional contributions that agriculture can make towards mitigating climate change.[7]

National agricultural priority setting should consider climate change responses. While the biophysical impacts of climate change on agriculture and vice versa are better understood, the social and economic impacts have not been researched adequately in many developing countries. With increasing trade distortions and the changing prioritization of agriculture in developed countries, developing countries affected by climate change should focus on developing suitable national, regional and global measures that will provide a safety net in the short term, should productivity fail owing to climate variability and change.

Institutional and human resource capacities supported by sustained funding options in the form of direct or indirect investments into adaptation to climate change in agriculture are essential. Mainstreaming climate change issues into national economic and development plans is critical to enabling countries tackle the impacts of climate change on agriculture and reducing the negative effects of agricultural practices on climate change.

1 World Development Report, 2008. World Bank, Washington, United States of America.
2 Adaptation to climate change in agriculture, forestry and fisheries: perspective, framework and priorities. 2007. FAO, Rome
3 FAO, 2005 Background document for thirty first session of the Committee on World Food Security. FAO, Rome.
4 World Development Report, 2008. World Bank, Washington, United States of America.
5 Fisher and others 2002. Research Report 02, IIAPA, Austria.
6 Adaptation and Mitigation of Climate Change in Agriculture, Policy brief, World Development Report, 2008.
7 Livestock's long shadow. 2006, FAO, Rome.

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Agricultural growth, securing food and ensuring that people have adequate purchasing capacity are necessary precursors for achieving several of the Millennium Development Goals. For each of the above, careful and planned investments are required from both the public and private sectors. Countries need to have information as well as analytical capacities to prioritize, design, implement and monitor investment programmes in agriculture in a manner that enhances productivity and conserves the broad genetic base. Recent developments in research and development cannot by-pass local people and rural and urban livelihood securities. Although some countries have succeeded in making agriculture a dynamic sector with rapid technological innovation accelerating growth and reducing poverty, global and national market failures continue to pave the way for under-investment in research, development and extension systems in many countries.[1] Estimated returns for investments in agricultural research and development are high in all regions of the world at an average of 43 per cent.[2,3] Even in sub-Saharan Africa this figure stands at 37 per cent. As noted in the World Development Report (2008), the high pay-offs relative to the cost of capital also indicate that agricultural science is grossly under-funded.

Private investment in agriculture and agrobiodiversity conservation is limited in developing countries. Some 94 per cent of agricultural research and development in developing countries is derived from public sector.[4] Developing countries as a group invested 0.56 per cent of their agricultural GDP in agricultural research and development in 2000, this is to say one-ninth of the 5.16 per cent invested by developed countries during the same period. While close to 50 per cent of investment in research and development in developed countries is derived from the private sector, in developing countries it is a mere 6 per cent. It should be noted, however, that the intensity of investment in agricultural research and development in developing countries (in relation to agricultural GDP) is five times higher than in developed countries.[5] What do these figures indicate? Developing countries have problems not only in investing in research and development but also in making the best use of investments. Solutions may lie in clarifying the appropriateness of investment, sequencing, timing and assessing its effects.

Some key interventions

Some key answers may be derived from the observation that public expenditure decisions often focus on short-term payoffs that are politically correct. Long-term assessments of investments are often not considered. Increasing trade distortions and related national policies on the fixing of fair prices and the spreading of subsidies reduce incentives for farmers to continue working in agriculture, making public and private investments in agriculture unattractive.

1 http://www.fao.org/newsroom/en/news/2004/50703/index.html and, http://www.un.org/apps/news/story.asp?NewsID=25926&Cr=food&Cr1=prices
2 World Development Report, 2008. World Bank, Washington, United States of America.
3 Aiston and others 2000 cited from chapter 7 World Development Report, 2008.
4 World Development Report, 2008. chapter
5 http://www.asti.cgiar.org

The challenges to increasing investments and returns in agriculture and related conservation activities are based on micro- meso and macro-level actions. At the local level, there is a need to provide organized, sustained and relevant credit and technological systems for poor farmers to help increase productivity and reduce output costs. At the regional level, input supply and financial delivery systems need to be organized better and perhaps supported by suitable and trained institutional mechanisms. At the national level, there is a need for governments to provide adequate coordination (fair procurement prices, appropriate concessions, insurance mechanisms) and infrastructural services (storage, movement, processing, marketing) that are based on rational assessment of types of crops (such as cash crops, staples etc.), agronomic conditions (rain-fed or irrigated) and future potential for private sector investment. This kind of sequencing that works in both directions would enhance investments in agriculture and conservation and also provide for better local economic empowerment[6].

Attracting investment from the private sector for agrobiodiversity conservation and agricultural development is a challenge, as the private sector traditionally has not been interested in crops without a good market value. Unfortunately for the agriculture of developing countries non-cash crops are a priority in ensuring local food security. One way to break this dead-lock would be to develop and use innovative mechanisms such as tax concessions for private sector investment in research and development for non-cash crops. Complementary funding activities from the public sector and external donors that attract the private sector could increase research into staple crops.

Adequate protection measures for investments, through options such as suitable protection of intellectual property rights, breeders' rights or farmers' rights are another area that developing countries need to focus on to attract investment in agriculture.

In conclusion, it is important to note that attracting and sustaining investment into agriculture and agro-biodiversity conservation needs strategic long-term planning, understanding of local needs and the dynamics of agronomic practices and market potential, dialogue with the private sector and donors to encourage partnerships and enormous political will to move from securing the vote bank to securing sustainable livelihoods.

6 Droward Andew, 2006, IFPRI, Washington, United States of America.

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Agricultural innovations and their impact on agro-biodiversity

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Agriculture and agrobiodiversity sustain human life. Today, more than a decade after the 1996 World Food Summit, there are 820 million more hungry people around the globe than there were in 1996.1 If we are to keep the promise of the Summit, 31 million people must be removed from undernourishment every year until 2015.1 At present the number is climbing at a rate of about 4 million people per year. The proportion of people suffering from lack of food has, however, decreased as the global population has increased over the last decade.[1]

In addition to the issue of absolute hunger, there is 'hidden hunger' that results from the lack of micronutrients available to people around the world, especially in sub-Sharan Africa. Agro-biodiversity offers the best solution to overcoming that 'hidden hunger'. Reduced yields of traditional crops, increasing reliance on farm-based subsidies and the decreasing market value of many traditional crops have taken their toll on agro-biodiversity at the rural and household levels.[2] The decreasing availability of land, labour, water and energy mean that engaging in agriculture is increasingly challenging.

Research, institutional and policy settings for technological innovations in agriculture are, however, changing rapidly. Innovations now requires plurality of systems and multiple sources.[3] Linking technological progress with institutional and market changes is the need of the hour. Some key recent conclusions emanating from technological innovations include that: genetic improvements are successful, but not everywhere; there is a need for management and system technologies to complement genetic improvement; more investments are needed into research ad development; the use of available technologies such as Information and Communication Technology have still not permeated some parts of the world to improve the efficiency of agricultural systems; and innovative partnerships are key. Sharing of data and information and infrastructural developments and deployment will help to ensure better reach and impacts of available innovations.

Innovations and impacts

The characteristics of the various paradigms of agricultural innovation are changing rapidly, thereby having distinct effects, including , a move away from key innovators being scientists to potentially any of a range of actors,- including farmers; the intended outcomes of interventions changing from mere technology transfer and uptake to enhanced capacities to innovate; and the changing role of policy from setting priorities and allocating resources to being a integral part of innovation capacity and strengthening the enabling environment.[4]

Technical and technological innovations

Some regions such as sub-Sharan Africa continue to experience limited gains from the green revolution owing to the slow adoption of new and improved varieties by the farmers; agro-ecological heterogeneity; lack of infrastructure and lack of public policies that encourage better use of land and adoption of technologies; and poor market structures and related policies. Although the Consultative Group on International Agricultural Research, for example, invests some 35 per cent of its resources (twice the amount of investment in genetic improvement) in sustainable production systems the adoption and use of those systems remain limited, warranting an assessment of agricultural policies in these regions.

Public funding that contributes to about 94 per cent of current investment in agricultural research and development is scarecely able to match investments needs. There is limited private sector investment in research and development in agriculture in many developing countries, which is a cause for concern. Globally, research in agriculture is focusing more on maintaining yields than on improving them. In the absence of national policies on investment in agricultural research and development commercial interests may erode the thin base available to farmers in the form of agro-biodiversity.

Innovative ideas such as participatory plant breeding offer sustainable solutions to address the need for improved research and development in agriculture. Through participatory plant breeding, for example, farmers will be trained to be more efficient in the use of their varieties and to improve them to suit local agro-climatic conditions in addition to providing them with an opportunity to be mainstreamed into commercializing and protecting their varieties through mechanisms such as 'farmers' rights'.

Investing in innovations

Mis-investments are pervasive in many countries.[5] Mis-investments include spending on private goods such as subsidies and transfers and call public spending into question. Reviews of public expenditure show that public budget allocations for subsidies and transfers are as high as 75 per cent in India, for example, and as low as 26 per cent in Kenya. Interestingly, as economies grow these allocations also grow. It should be noted, however, that not all subsidies are inefficient. Some countries such as Viet Nam are using evidence-based assessments to focus on spending in core public goods in their medium-term expenditure plans.3 Sound estimates of the effects of expenditure in agriculture coupled with rational political economy would help many countries not only to attract more investment but also to use their national budgets more efficiently. We must provide sound advice on the need to balance development economics with welfare economics and a greater understanding of the best use of funds to assist agriculture to take advantage of the benefits of reform and avoid the costs arising from an inability to adjust.

Policy innovations

Recent studies have demonstrated that there is a particular trend with respect to the changing nature of food security and consequent policy reform6. The general direction is towards greater openness and competition in national markets with respect to domestic and international trade. Countries, however, differ in their institutional and infrastructural set ups and their capacity to deal with these changes. Policy reform should focus on developing and sustaining rural infrastructure, developing non-farming employment options, transitional compensatory measures and improving productivity and market access to rural people. Trade and related domestic policy reforms do not always run contrary to food security and the agricultural sector, although may appear to do so owing to the lack of subtlety in the design and sequencing of actions to implement the reforms. Countries require an innovative and responsive policy package that is designed to offset the negative impacts of liberalization.

1 State of Food Insecurity in the World, FAO, Rome, 2007.
2 FAO. 2004. *The market for non-traditional agricultural exports.* Rome: FAO.
3 Janssen and Braunschweigg 2003 Trends in the Organization and Financing of Agricultural Research in Developed Countries: Implications for Developing Countries. ISNAR Research Report no. 22. The Hague: International Service for National Agricultural Research (ISNAR).
4 Adapted from Andy Hall, 2007, IDS Conference, University of Sussex, United Kingdom of Great Britain and Northern Ireland.
5 Agriculture for development policy brief, 2008, World Bank, Washington, United States of America.
6 Hall. A 2007. Challenges to strengthening agricultural innovation systems: where do we go from here? IDS Conference Paper, University of Sussex, United Kingdom of Great Britain and Norethern Ireland.

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Biofuels and agro-biodiversity

Bios - Auteurs (droits gérés) ; Bringard Denis ; / Still Pictures

One of the great benefits of using biomass for energy production is its potential to reduce the green house gas emissions associated with fossil fuels.[1] The associated risks, however, include potential effects on land use, agricultural production systems, habitats, biodiversity, land, air and water qualities. For this reason, discussions and activities related to bioenergy and biofuels are receiving attention at the environmental, economic and social levels especially with regard to the effects linked to agro-biodiversity, food security and the costs of food production.[2]

The increase in the price of maize, for example, by 60 per cent between 2005 and 2007 in countries such as the United States of America is prompting economists and agriculturalists to assess the impacts of the global surge in biofuel production and distribution policies globally. With 240 kilograms of maize required to produce just 100 litres of ethanol, surely the choice is between producing more food or more fuel. That quantity of maize is equal to the food requirement of one person for one year!

According to a recent World Bank review,[3] the potential environmental benefits of biofuels including their impacts on biodiversity, air, water and soil qualities cannot be generalized and need to be assessed on a case-by-case basis, evaluating cropping and land use patterns as well as the type of crop used for biofuel production. Bioenergy and biofuel production planning and policies require the integration of relevant sectoral policies, such as energy, agriculture, environment, economics and rural development. According to the World Bank reviews, the reduction of green house gases in the United States of America owing to the production of ethanol from maize will be in the range of 10 to 30 per cent, at best, while in Brazil the use of ethanol could reduce green house gas emissions by 90 per cent. According to several studies,[4] although biofuels have the potential to enhance national energy security, the benefits of this technology will remain limited for smallholder farmers. Countries will need sound schemes to ensure smallholder participation catering to local energy demands.

It is widely known that biofuel production in developed countries is backed by high protective tariffs in conjunction with large subsidies paid to biofuel producers. It is still debatable as to whether developing countries can afford such policies in addition to supporting policies that may have to deal with increased grain prices because of the diversion of grain to biofuel production. Challenges will remain until we are able to rely on first generation technologies for biofuel production. Second generation technologies such as production of fuels from microbes, [5] may offer some respite, but not in the immediate future.

The impacts of biofuels on agrobiodiversity

According to a number of recent reports,[6] biofuels have the potential to contribute to an increase food grain prices, increased competition for land and water, as well as deforestation and destruction of agro-biodiversity.[7] Socially and environmentally relevant strategies and policies on biofuels are therefore needed for developing countries. Significant international activity is underway to determine sustainability criteria, including through the Global Bioenergy Partnership and the Roundtable on Sustainable Biofuels. Tools developed by the Food and Agricultural Organisation of the United Nations led consortium such as the 'analytical framework'8 are expected to provide guidance for countries on dealing with the bioenergy industry to respond to energy security in a manner that does not jeopardize the food security of poor farmers.

Biofuels are currently produced using conventional food crops such as maize, wheat, sugar cane, oil palm and oilseed rape. The use of these crops for biofuels on a that too in large scale, will in near future create a direct competition between biofuels and food security as well as eroding agro-biodiversity. Research has shown that perennial rhizomatous grasses such as Arundo donax (native to Asia) and Phalaris arundinacea (reed canary grass native to Europe, Asia and North America) that are currently regarded as biofuel species are in fact invasives. Species such as Miscanthus that are regarded as potential sources of biofuel are again reportedly invasives9. The following policy and research needs may assist in avoiding these difficulties :

Policy and research needs

Existing policy frameworks focus on supply targets rather than on delivery mechanisms and the impacts of production strategies on environmental, social and economic benefits. National strategies on biofuels should consider the cost of technologies, their deployment and use, the short, medium and long term impacts of their use on farmers and biodiversity and assess the economic viability of biofuel technology;

Developing a coherent policy that balances feedstock supply against other uses of land and water would reduce the impacts of biofuel production on agro-biodiversity conservation;

Adequate investments and fiscal and regulatory incentives to develop further technologies that minimize the effects of biofuel feedstock on food crops are needed;10

Continuing the discussion on national food, energy and environmental security in an integrated fashion to assess impacts would improve the development of research and policy options that are balanced towards future food and security needs;

Investing in second generation technologies such as the broadening range of feedstock, including dedicated energy crops, perennial grasses, forestry species that combine the properties of high carbon to nitrogen ratios, higher yields of biomass or oils, easily process able lignocellulosic material, use of organisms such as those from the marine environment (micro-algae)11and direct production of hydrocarbons from plants or microbial systems are critical to reduce the potential impacts of biofuels on agrobiodiversity. Care should be taken, however, that such technologies are managed properly so as not to endanger agriculture and biodiversity.

1 See http://esa.un.org/un-energy/pdf/susdev.Biofuels.FAO.pdf
2 Document UNEP/CBD/COP/9/26
3 World Development Report 2008, World Bank, Washington, United States of America .
4 The Royal Society Policy Document 01/08, 2008, London, United Kingdom of Great Britain and Northern Ireland; Cramer Commission Report, 2006, London, United Kingdom of Great Britain and Northern Ireland; UN Energy, 2007, United Nations, New York, United States of America.
5 http://www.financialexpress.com/news/second -generation-biofuels/271495
6 The Royal Society Policy Document 01/08, 2008, London, UK; Cramer Commission Report, 2006, London, UK; UN Energy, 2007, United Nations, New York, USA.
7 World Development Report, 2008, World Bank, Washington, USA; XXXX; XXXX
8 http://www.fao.org/newsroom/en/news/2008/10000782/index.html
9 Ragu S, et.al. 2006, Science, 313:1742.
10 For additional information see Rosegrant et.al. IFPRI, Focus 14, Brief 3 of 12, 2006.
11 http://www.financialexpress.com/news/second -generation-biofuels/271495

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Governance and agriculture

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Agriculture is one of the most promising instruments for reducing poverty and securing local livelihoods. One of the critical conditions required of the agricultural sector is to ensure that good governance structures and related policies are in place at all levels. Studies have shown that agriculture-based economies around the world are to be found mostly in developing countries and countries with economies in transition. It is in these countries, however, that scores for governance are at their lowest and often negative.[1] Good governance has a number of dimensions: political stability; the rule of law; voice and accountability; effective governments; regulatory quality and control of corruption, among others.[2] In spite of the recommendations of the 1982 World Development Report that governments should focus on governance to improve agriculture, very little has been achieved in that regard to date.

Weak governance in agriculture led to major problems during the 1980s and 1990s when strong State interventions were undermined by structural adjustment programmes, emphasizing the role of markets.[2]

Lack of macroeconomic policies and unstable political situations are pre-conditions to governance problems. Policy biases, underinvestment, mis-investment and lack of capacities underpin weak governance in agriculture.[3,4] To address these issues, it is important to focus on the following key challenges.

Invigorate the roles of the public sector, private sector and civil society with guidance and support

The time has come for the public sector to think and act differently in relation to agriculture in all countries. The private sector and its role in dealing with agricultural governance need to be strengthened. Getting market dynamics right, improving macroeconomic policies and ensuring that State policies are strengthened to compliment the needs of civil society are critical to ensuring that partnerships are stronger and more responsive to the emerging challenges of national and global agricultural scenarios. Strong political will and support are essential.

Governance reform can be approached from the demand or the supply side[2]

Reforms that improve accountability, transparency, voice and impact are needed to promote a sound political economy that favours good governance. It is important to understand the characteristics of agrarian communities to enable the demand-side approach to agriculture to be better addressed. Similarly, reforms to improve public sector capacity, efficiency and delivery must take into account problems affecting the performance of agriculture ministries, agencies and extension services. This focus will enable the supply side to be more responsive.[5] Introduction of e-governance programmes in India and ISO 9000 certification management schemes in El Salvador and Mexico, for example, improved the supply side of the equation considerably by making agricultural administration more accountable. Similarly, the involvement of non-governmental organizations in decision-making processes and the implementation of reforms have provided positive experiences to dealing with the demand side of the issue in countries such as Ethiopia and Senegal. Decentralization is seen as an effective answer to some of the questions related to better governance in agriculture.

Better implementation of "Paris" agenda on aid effectiveness

Along with national and local partners, donors also have a role to play in improving governance in agriculture. Donors need to coordinate their efforts to provide support and mainstream their aid policies to ensure that they respond to national needs than the needs of their own capitals. There is a need for replication of ideas such as the Global Donor Platform for Rural Development, TerrAfrica or the Neuchatel Initiative, which provides an informal platform for bilateral and multilateral donors to develop common views and guidelines for in-country donor coordination.

Global action for agriculture

Managing global common challenges such as climate change; regional challenges such as pandemic plant and animal diseases and invasive species; conducting research and development into 'orphan crops' that are important for national and local food security (eg. cassava) and reducing transaction costs through standards and rules all need support at the global level. In addition to reforms in national and regional level governance, reforms in the global governance of agriculture are much needed. From the United Nations reforms to changing agribusiness and increasing the influence of non-governmental organizations in setting the global agenda on governance - all will have to consider their role in ensuring that good governance structures are adopted and provided for in developing countries.[6] Training and human resource development to address agricultural governance, as in other areas of focus, needs special attention.

Ethics, equity and justice are the three pillars to ensuring that global action for better governance makes sense at the local level in addition to making a difference to the livelihoods of millions of people in developing and least developed countries. Unless effective governance systems are put in place, reforms in agriculture and their impact on achieving food security and poverty reduction will remain ineffective.

1 Kaufamnn, Kraay and Mastruzzi, 2006 cited in World Development Report, 2008, World Bank, USA.
2 Agriculture for development policy brief, World Development Report, 2008, World Bank, USA.
3 http://ifpriblog.org/2008/04/01/toward-a-new-global-governance-system-for-agriculture-food-and-nutrition.aspx?0eee8fe0
4 Bachev Hrabrin, 2009 Risk governance in agriculture. MPRA Paper 7770, University Library of Munich, Germany.
5 Birner and Palaniswamy, cited in World Development Report, 2008. World Bank, United States of America.
6 Alaian de Janvry and Elisabeth M Sadoulet, 2007. Agriculture and development: the Latin American difference, UC Berkeley, United States of America.