

## **Adapting Agriculture to Changing Landscapes (and Climates)**

Written by Chase Sova and Andy Jarvis

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CHASE SOVA AND ANDY JARVIS, FEB 4 2014

The role of agriculture has been the subject of serious debate at each of the last global climate change conferences. The most recent event, held in Poland this past December, offered no exception. Chants of “No agriculture, no deal” resonated along the Warsaw Stadium hallways, backed by a host of government, civil society and private sector actors.

Agriculture contributes to approximately 30% of total global green house gas (GHG) emissions when related deforestation and post-production steps are considered. Its treatment by the international community is thus of major consequence, both for mitigation and adaptation outcomes. Yet agricultural mitigation targets — and a binding agreement to back them — continue to be plagued by sticky issues around national security, terms of trade, and climate justice.

Most actors in the international arena have acknowledged the immediate and urgent adaptation needs of nearly 1.5 billion small-scale producers and have promised action. In fact, the world has become a testing ground for adaptation policies and projects in nearly all sectors.

At the international level the UNFCCC has enacted several adaptation programs including the Nairobi Work Program (2006) and Cancun Adaptation Framework (2010), each with associated workstream initiatives. International financing mechanisms have also been mobilized, including the Adaptation Fund, Least Developed Country Fund (LDCF), Special Climate Change Fund (SCCF-A), and the Green Climate Fund (GCF).

Moreover, we’ve seen the successful transfer of internationally established adaptation programs to national contexts. The most widely applied planning mechanism has been the National Adaptation Programme of Action (NAPA), successfully developed in 49 countries. The NAPAs were designed to address urgent and immediate adaptation actions in Least Developed Countries (LDCs) with support from the UNFCCC. They have become the cornerstone of many developing country adaptation policy portfolios.

While NAPAs addressed short-term adaptation, National Adaptation Plans have picked up the baton, so to speak, to provide a planning framework for medium and long-term adaptation needs. NAPs have been engineered for both LDCs and non-LDCs (namely highly indebted poor countries and middle income economies). They have been envisioned as flexible, living documents that promote integration in to existing development and sectoral planning processes.

At the national level, autonomous efforts from governments have led to the creation of Climate Change Committees operating out of the offices of Presidents and Prime Ministers, Climate Change Units through Ministries of Environment, and a host of multi-stakeholder platforms.

This is all to say that the institutional infrastructure to ensure successful adaptation is largely in place, as is the political will. As most developing countries continue to rely on an agricultural based economy, adaptation planning mechanisms are particularly robust in this sector. Yet these successes have yet to translate into real impacts on the

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ground. In fact, some estimates suggest the share of total climate change funding destined to adaptation is as low as 6 percent.

So what is it about agricultural adaptation policy specifically that is so untenable? Why have we made only marginal progress on an issue that so intimately impacts the 870 million people in low and middle-income countries currently suffering from hunger and malnourishment? Here we'll explore the challenges inherent to the agriculture sector that make it politically unwieldy, and outline key opportunities to transform the sector moving forward.

## A Unique Challenge

Private actors dominate the agricultural sector. This includes farmers themselves, input (fertilizer and seed) providers, market agents and consumers, among others. State agricultural adaptation policy is tasked with creating an enabling environment for those private actors to operate within. But policy developers are confronted with immense diversity. Not only are eco-agricultural zones diverse, but so too is the composition of farmer groups. Some smallholders may be subsistence-oriented, consuming all that they produce with no surplus. Others are perhaps medium-scale farmers with some marketable surplus. A final group may participate in agriculture at an export-oriented scale. Agricultural and agricultural adaptation policies must cater to this diversity of needs. This is highly problematic from a planning perspective and can result in ambiguous national level adaptation plans with inadequate mechanisms for implementation.

Agricultural adaptation policies also face the challenge of facilitating coordination across complementary sectors like water, forestry, and energy. This includes agencies charged with creating the macro-economic conditions of the country like the Central Bank and Ministry of Trade. In fact, many of the elements that we consider pillars of agricultural development (subsidies, trade tariffs, and guaranteed price support, for example) are the responsibility of Ministries other than the Ministry of Agriculture. Adaptation policy thus faces a positional problem: which ministry should be tasked with its development and implementation? Efforts at 'mainstreaming' climate change into existing development policies (sometimes referred to as 'Climate Policy Integration') have only just begun to grapple with possible institutional arrangements.

On another front, 'adaptation' as a concept has been slow to transition from theory to practice. Adaptation means different things to different stakeholders and even when a common definition is agreed on interpretations vary greatly. Adaptation can be planned or autonomous, short term or long term, hard (infrastructure) or soft (capacity building), for example.

In the case of agriculture, experts agree that simultaneous 'adaptation' action on several fronts will be required. Countries must address food availability (production), food access ("right to food"), and food use (nutrition and waste) to ensure food security in the face of climate change. Each of the possible interventions associated with these 'fronts' can then be further classified. That is, we may refer to a change in planting dates as 'incremental adaptation', for example, while the development of new crop varieties is perhaps best considered a 'systemic adaptation'. Should livelihood alternatives be required when agriculture becomes unfeasible in a given area 'transformational adaptation' is said to occur. Adaptation practitioners often find themselves lost in translation when it comes to mobilizing the concept into action.

In fact, we may be more adept in defining what adaptation *is not*. The one commonality in defining adaptation to date is that most practitioners, government or otherwise, have been quick to ensure that adaptation is not misinterpreted as 'business-as-usual' development practice. Adaptation must maintain its 'additionality' so that development funds are not diverted from their existing targets.

Finally, agricultural adaptation policy requires credible tools to measure climatic impacts and determine vulnerabilities. Long-term adaptation requires a form of 'anticipatory' policymaking, a variety of planning that most states are not adept at producing. Even when decision makers are able to access long term forecasts and climate projections (which is not always the case), there are serious limitations to the data's legibility and applicability. It has been suggested, for example, that the current generation of climate modelers will not live to see a time when global

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climate models can be scaled down to a resolution usable by today's crop models.

### **An Incentive for Change**

The challenges outlined above are not insurmountable. In fact, they serve to highlight critical shortcomings in the way that we view the agricultural sector and agricultural development historically. The current attention given to climate change and associated funding offer opportunities for revisiting the way we support the sector. Complexity in this case is not a barrier; it is an incentive for structural change.

Our greatest single error to date has been to treat agricultural adaptation policy in isolation. This is the product of the academic handling of adaptation, mitigation and disaster risk management, as well as international forums that identify separate negotiating streams for each concept. Yet we know from the challenges described above that to produce real impact we cannot restrict agricultural adaptation to a single ministry, or target a single population. We need instead to adopt a landscape approach to rural development, and consider the whole food supply chain and governance structure. We need, in short, to adopt climate smart agricultural (CSA) policies and practices.

Agricultural adaptation in the spirit of climate smart agriculture encourages us to recognize the synergies between adaptation and mitigation and sustainable livelihoods. Agroforestry (trees on farms), for example, can increase soil fertility, reduce soil erosion and can help farmers deal with increased climate variability. Similarly, conservation agriculture (minimum tillage) can reduce fertilizer needs by increasing organic matter in soils and help to reduce soil carbon emissions. The adoption of Alternate Wet and Dry Irrigation (AWDI), a technique that allows rice fields to dry intermittently during the rice growing stage, can reduce water consumption by nearly 30% while maintaining or improving average yields. Creating the awareness and necessary capacity for these types of integrated interventions requires equally integrated landscape institutions at higher administrative levels.

Climate smart agriculture also means setting aside our traditional strategies for implementing agricultural policy. The private sector should be engaged as an active partner, as opposed to merely a target of state policy. Agriculture is a growth industry in many countries in Africa, and is transitioning from a subsistence base towards a fully market oriented smallholder production system. Urbanization trends will further support such growth. To effectively enable development, and to confront the challenges of climate change, the private sector needs to penetrate more effectively into rural areas and fulfill the significant (and increasing) demand for inputs including both fertilizers and adapted seed.

Inputs should be accompanied by effective advisory services to support their appropriate use. Significant opportunities exist for the private sector to generate climate information services that are credible, accessible, equitable, and aligned with agricultural advisory services in support of small-scale farmers and the institutions that serve them. These services, such as seasonal forecasts or novel extension services using ICTs, can be accompanied by insurance products and have the potential to deliver agricultural growth, climate adaptation, rural poverty alleviation and profit for business.

Climate smart agriculture means recognizing that we have the resources to act now. Most adaptation options build on existing practices of sustainable development and don't require the elaboration of new technologies. Embracing the fact that farmers are experts too is key in this regard. Rural engagement strategies can ensure that local traditional knowledge is integrated in adaptation policy initiatives. Decentralization policies that place legitimate fiscal and planning autonomy with district and community level officials should be supported as an important step in ensuring local participation.

Decentralization policy represents just one variety of non-traditional policy collaboration for the agricultural sector, but there are more. Climate smart agriculture implies that securing land and resource rights, improving access to public services and markets, providing social safety nets for the poor, enhancing disaster risk reduction, managing food waste and dietary patterns, and increasing participation in value chains among smallholder farmers, all become valid adaptation, mitigation, and sustainable livelihoods actions, and require new institutional networks to emerge.

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Finally, many climate smart practices and technologies provide long-term benefits that are entirely sustainable, but adoption is limited by high up-front investment costs. Novel financial mechanisms, from microfinance and access to credit at the local level, through to global financial instruments for incentivizing positive change are needed. But they must also be accompanied by more practical metrics for finance agencies to measure risk and return on investment. The origin of these funding streams could come from the emerging climate finance sector, but even more important must be mainstreamed into existing and new finance instruments.

Ultimately, our failure to act collectively to reduce GHG emissions globally has left us to find innovative solutions at more localized levels. We can choose to see this as an opportunity, but it requires a reframing of status-quo thinking. Integrated 'landscape' policies offer opportunities for engaging the private sector, integrating local traditional knowledge, and encouraging greater recognition of the political-economic factors that shape local contexts. More importantly, however, linking agriculture adaptation policy with the broader landscape including mitigation and livelihood support provides incentives for investors who may otherwise see adaptation as a stopgap measure with little financial return. It is this critical reframing towards climate smart agriculture that will finally force the vast landscape of institutional gears and cogs around agricultural adaptation into motion.

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## References and Further Reading

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