

# Transforming Agriculture in the Sahel

## What Would It Take?



Africa  
Region  
sustainable development  
THE WORLD BANK

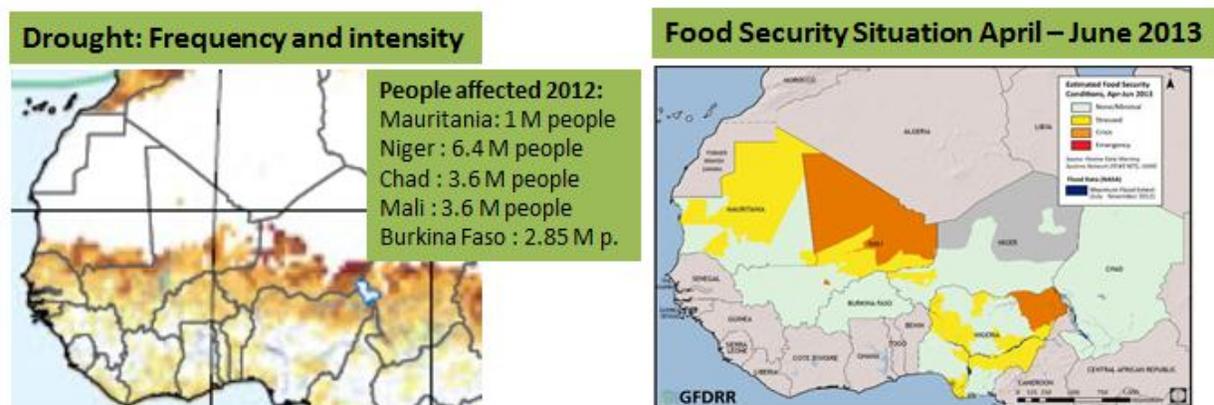


# Transforming Agriculture in the Sahel: What Would It Take?<sup>1</sup>

## 1. Agriculture Risk: New Normal

The Sahel sub-region, owing to its climatic, institutional, livelihood, economic, and environmental context, is one of the most vulnerable regions of the world. Poverty is pervasive, and the countries in the Sahel (Burkina Faso, Chad, Mali, Mauritania, Niger, and Senegal) rank low on almost all of the human development indicators. Agriculture is the most important sector and is the principle source of livelihood for majority of the people. The performance of the agricultural sector, however, due to its high exposure to risks, is very volatile. Land pressures from rapid population growth, food price volatility combined with deteriorating and ever more extreme climate conditions leading to repeated cycles of droughts, desertification, and localized floods are principle risks. The region has experienced multiple shocks, largely induced by agricultural risks over the past 30 years, which impose high welfare cost in terms of food availability, food affordability, and malnutrition. In 2012, approximately 17 million people in the Sahel faced food insecurity due to a combination of drought, poor accessibility to food, high grain prices, environmental degradation, displacement, and conflict.

Figure 1. Impacts in the Sahel: Booms and Busts



Risks are inherent, ubiquitous, and varied in agricultural systems, perhaps more so than in any other area of economic endeavor. They enforce poverty traps and pose serious consequences for all stakeholders. Adverse movements in agricultural commodity and input prices, together with production-related shocks (from weather, pests, and diseases), not only impact farmers and firms active in the agricultural sector, but may also put severe strains on a government's fiscal position. The prevalence and complexity of multiple risks facing agriculture systems (Figure 2), and the failure to address them on an ex-ante and integrated basis, continues to

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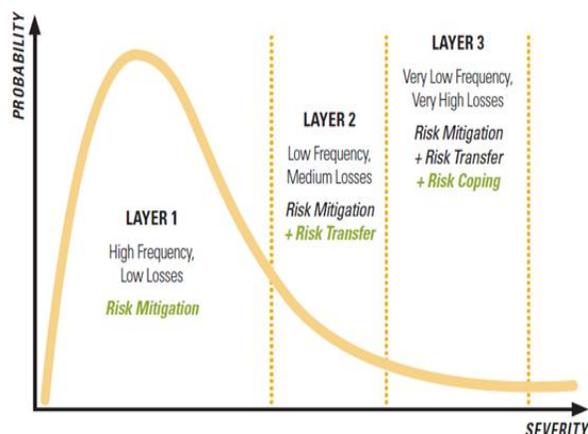
leave countries and their agricultural supply chains at risk. The realization of these risks leads to a perpetual cycle of “shock, recovery, shock”, which endangers the sustainability of ongoing initiatives and remains a major impediment to the development of most agricultural sectors.

**Figure 2. Agriculture Sector Risks in the Sahel**

Production	Market risk	Enabling environment risk
Drought	Price volatility	Political instability (regulatory risk)
Locusts	Exchange rate	Conflict
Livestock diseases		Insecurity
Crop pest and diseases		Macro-economic shocks
Floods		
Windstorm and bushfire		

There is a need to consider risks and volatility as the new normal and resilience as cornerstone for transformative growth in agriculture in the Sahel. An effective agricultural risk management framework requires a combination of mitigation (action taken to reduce the likelihood of events, exposure, and/or potential losses), transfer (risk transfer to a willing party, at a fee or premium), and coping solutions (activities geared to help cope with losses) to identify a list of potential interventions. A risk layering approach (Figure 3), based on probability of occurrence and potential losses can be used to select an appropriate risk management strategy. Risk mitigation cuts across all the three layers and is a dominant approach across all frequency and severity levels. Risk transfer mechanisms are more appropriate for low frequency and moderate or high losses, while coping mechanisms trigger in for catastrophic losses.

Figure 3. Risk Layering and RM Approaches



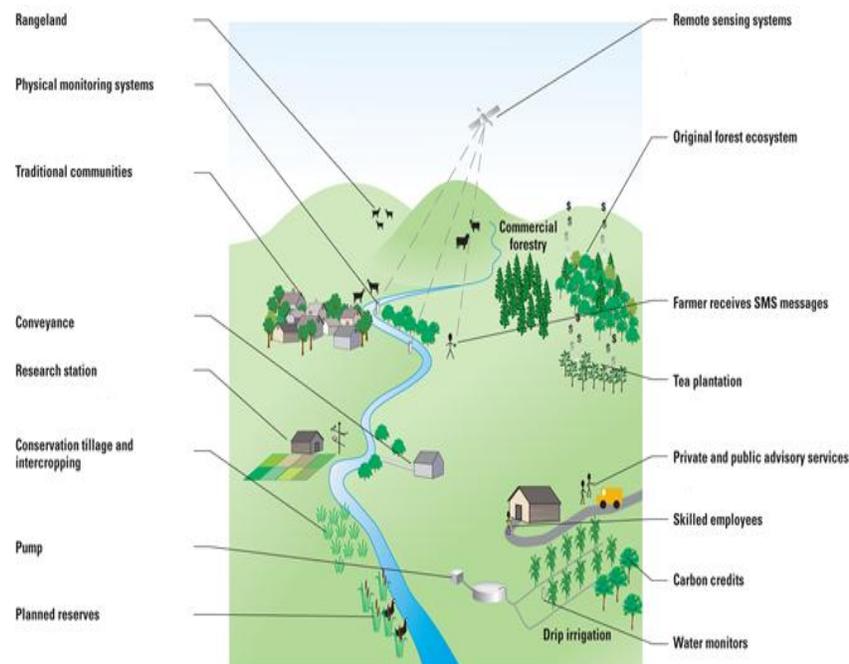
## 2. Doing Business Differently: Mainstreaming a Landscape Approach

Increasing food and nutrition insecurity and increasing poverty in the face of a rapidly changing climate and a degrading natural capital base are daunting challenges for agriculture. To address these challenges, the region needs to move towards an integrated climate smart agriculture approach to managing competing demands for land, water, and other natural resources. This comes out of the simple recognition that it is the most efficient thing to do given the complex inter-linkages between the different components of natural capital and, most importantly, it is essential for the communities that live in a reality in which all is connected: i.e. in the landscape. Taking a landscape view on productive activities also leads to better risk management. Opportunities for income diversification and risk pooling between the different stakeholders will become more visible and thus more feasible; and leads to the triple win of increased productivity, increased adaptation, and increased mitigation.

The Sahel is a case of living perpetually with risk, thus more emphasis on long-term structural solutions is required to improve the resilience of the agricultural sector. Designing and implementing a comprehensive agricultural risk management strategy will require sustained and substantial financial investments, shifting the focus from short-term crisis response to long-term risk management, streamlining disparate donor investments and isolated interventions toward the core problem, supporting decentralized community and farm level decision making, integrating agricultural risk management into the existing development frameworks, prioritizing agricultural risks into government and donor strategies, and focusing on implementation. A landscape approach describes interventions at spatial scales that attempt to optimize the spatial relations and interactions among a range of land cover types, institutions, and human activities in an area of interest. A sustainable landscape approach also has a time dimension: it aims at reaching sustainable landscapes in the long term and through inclusive stakeholder consultations maintaining and enhancing them and the services they provide, leading to a dynamic process (Figure 4). Addressing the challenge of agriculture in the Sahel is an

opportunity to redress past economic imbalances and position the region to become a player in addressing the global increase in food demand. In addressing these challenges there is need for a new approach that takes into account agriculture risks and considers resilience of agricultural production systems in a landscape setting as a driver of productivity growth. Coordinated action, along with stepped-up investments in key intervention areas, are essential dimensions to this approach in setting the stage for transformative change that will allow farmers and pastoralists to capture the opportunities in the Sahel region.

**Figure 4. Sustainable Landscape Approach: A Dynamic Process**



### **3. Prioritized Interventions to Manage Risks and Increase Productivity within a Landscape Approach**

Developing and adopting a sustainable landscape approach for transformational impact in agriculture in the Sahel translates into six core intervention areas:

1. Massively Scaling-Up Irrigation Investments
2. Facilitating Wide-Spread Adoption of Sustainable Land and Water Management (SLWM) Practices in Rain-Fed Agriculture
3. Enhancing Pastoralists Development and Livestock Management
4. Accelerating Adoption of Resilient Agricultural Technologies: Drought Tolerant Crop Varieties
5. Improving Post-Harvest Management Practices and Market Access and Integration
6. Improving Emergency Preparedness

Based on specific targets for each of these intervention areas we estimate a global investment envelope of about US\$25.7 billion for transforming agriculture in the Sahel over the next 10 years requiring investments by Bank and external partners.

#### **4. Innovations for Agriculture Transformation and Resilience**

**Massively Scaling-Up Irrigation Investments:** Invest in a wide range of investment opportunities in irrigation from low cost small scale individual and community equipment to large scale public and private schemes, each requiring different types of public support including infrastructure, policies, institutions, and business environment. New generation of investments need to consider profitability and sustainability with increased reliance on private investors and commercial financing. In these partnerships, public investment in irrigation infrastructure is leveraged by private investment in value chain development and the provision of productive and marketing services to smallholder farmers enabling a virtuous process of intensification and reliable irrigation service to users at affordable prices. Institutional reforms are critically needed for improved management of public irrigation schemes and to develop public private partnerships with land governance and secure water rights being the most substantial issues.

**Facilitating Wide-Spread Adoption of SLWM Practices in Rain-Fed Agriculture:** Focus on sustainable land and water management around West Africa river basins with an emphasis on natural regeneration of tree cover, soil and water conservation, watershed planning, water harvesting, integrated nutrient management, low tillage, secure biodiversity and agroforestry to form the foundation for achieving the goals of food security and inclusive green growth through innovative financing instruments and comprehensive policy frameworks for land tenure, land use planning, and payments for environmental services. The TerrAfrica partnership, in particular, supports the scale up of SLWM practices by reinforcing strategic investments to address natural resource degradation through an integrated ecosystem approach, institutions with increased adaptive capacity to reduce risks and respond to climate variability, and generating information and knowledge at country and regional levels.

**Enhancing Pastoralists Development and Livestock Management:** Secure existing natural rangeland and animal capital (including health, genetics, nutrition, herd and rangeland management practices, and conflict management), and cultivate complementarities between extensive pastoral systems and semi-intensified agricultural farming systems to unlock economic potential of animal value chains (including through infrastructure, regional integration, and market access development). Develop access to basic social and financial services, and foster an enabling environment (strengthened institutions, policies, regulations, and investments) for transformational impact encompassing national and regional level cooperation, particularly for trans-boundary mobility (people, animal, goods, and services), disease control, and livestock trade facilitation. A major lesson learnt is to include herders, particularly pastoral communities, in inclusive decision making processes through

decentralization. Policy change involves developing secured land tenure systems, and recognizing mobility for resources management and conflict resolution. Interventions are most effective within a value chain approach including product distribution to end markets, where public funding should encourage private sector participation.

**Accelerating Adoption of Resilient Agricultural Technologies—Drought-Tolerant Crop**

**Varieties:** Improve resilience of small holders by developing and upgrading seed systems to provide adequate quantity and quality seeds and planting material to meet the demands of producers. A top priority is to reform seed policies and regulations to increase the quantity of breeder seeds and biofortified crops for nutrition enhancement, consolidate and develop biotechnology laboratories, strengthen capacity of national seed certification system, and improve R&D capacity. A substantial increase in agricultural yield and output is expected to be realized by implementing interventions aimed at speeding-up the assimilation and adoption of improved agricultural technology in a comprehensive support program for private sector and agro-dealers involvement in the seed value chain.

**Improving Post-Harvest Management Practices and Market Access and Integration:** Promote commercial agriculture by improving post-harvest management practices, enhancing storage capacity to build resilience and reduce variability in supply, developing both downstream and upstream business activities and supporting linkages of small holders and small enterprises to productive value chains by identifying key products, production systems, and marketing strategies. Harmonize product specifications and upgrading of processing, packaging, and quality standards would promote agribusiness development and reduce barriers to regional trade and integration. Innovative ways of providing collateral such as the use of movable assets and warehouse receipts also foster agricultural competitiveness. Modern information and communication technologies offer new ways to improve market integration, reduce transaction costs, and provide robust extension services through financially sustainable public private partnerships.

**Improving Emergency Preparedness:** Develop cross-sectoral early warning systems for overall resource management, disaster preparedness, mitigation, relief, and reconstruction efforts in a collaborative effort to address floods, droughts, locusts, and other hazards. Invest in hydro met infrastructure, conduct drought risk assessments, build capacities of regional centers for climate and weather forecasting and facilitate data exchange. Policy reforms involve supporting the formulation of national and regional drought and disaster risk reduction practices and planning for strengthening disaster risk response in the Sahel for effective impact.