

Resilience of Rural Communities to Climatic Accidents

A Need to Scale Up Socio- Environmental Safety Nets (Madagascar, Haiti)

Policy Brief



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Policy Brief

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For the

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, FAO



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EASYPol has been developed and is maintained by the Agricultural Policy Support Service, FAO.

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1. SUMMARY

The rural sector's lack of resilience to climatic accidents seems to be one of the main reasons for the transformation of climatic accidents into environmental, economic and social disasters for local communities. Thus, the integration of activities geared towards the improvement of community resilience seems to be of utmost priority. This can be achieved by integrating prevention and risk-management tools into already existing social safety-nets within the framework of food security and poverty reduction strategies.

“Social protection initiatives are as much at risk from climate change as other development approaches. They are unlikely to succeed in reducing poverty if they do not consider both the short and long-term shocks and stresses associated with climate change. Adaptive social protection involves examining opportunities that approaches to social protection provide for adaptation, and for developing climate-resilient social protection programmes¹”.

The tools to strengthen safety-nets would include the mobilisation of permanent public works projects to maintain and develop rural infrastructure and production systems. The participation of the local workforce from the most vulnerable households would ensure a complementary function for the safety-net through the generation of non-agricultural income. The carbon-binding potential of activities with such high labour intensity provides an opportunity for sustainable financing through the *Clean Development Mechanism (CDG)* or simply through public funds which target climate change mitigation. Here, we address the creation of jobs whose obvious function is rural, environmental and natural resource management.

2. INTRODUCTION

Objectives

The present policy brief aims to capitalize on main findings, action proposals and policy recommendations that have emerged from a multi-partners' review and planning process as well as from group brainstorming sessions.

For the most part, the policy recommendations target ways to enlarge or improve the coverage and impact of existing risk management tools as well as propose new tools. The focus is on market risk and social safety nets in terms of increasing the resilience of rural populations to the effects of climate change.

Target audience

National policy makers and sector decision makers of developing countries who deal with agriculture, rural development, climate change adaptation and risk management

Required background

Agriculture or rural economy master or wide development and planning experience providing understanding of rural situation in developing countries.

¹ www.ccdcommission.org

Readers can follow links included in the text to other EASYPol modules or references². See also the list of EASYPol links included at the end of this module

3. MANAGEMENT OF CRISES AND CLIMATIC ACCIDENTS IN RURAL AREAS

The environment, as shown by micro-changes in the climate in turn caused by both global warming and the impact of natural climatic disasters, is not only a “victim” of disasters, but also one of the reasons that there has been an increase in risk and in vulnerability. Indeed, poor environmental management practices increase the physical vulnerability of developing countries which, in general, must cope with a risky natural environment. In addition, these practices can promote prolonged droughts and progressive desertification. Thus, the links between the environment and disasters are known to be links of cause and effect. In the context of Madagascar and Haiti, countries with fragile environments and which are extremely vulnerable to climatic risks, the political choices concerning risk and disaster management strategies must be preceded by an analysis of the risks and the indispensable consideration of the vulnerability of their populations with respect to their environment.

Madagascar, for example, is one of the most vulnerable countries to weather-related risks in the world. The country is notably exposed to seasonal cyclones, floods and droughts. These threaten agricultural production and livelihoods just as much as public infrastructure and the national economy. It is estimated that between 1970 and 2004 the country was hit by 29 cyclones, suffered 6 periods of extreme drought, 3 major floods and severe locust infestations, causing damages of approximately US\$1.75 billion. According to World Bank studies, 11 million people have been affected over 30 years. In 2008, the central plain of Antananarivo and the Alaotra Mangoro regions were struck by two consecutive cyclones (Fame and Ivan), causing heavy rain on most of the island. These shocks have affected over 239,000 people, causing the loss of 45,000 ha of rice production (in addition to the 90,000 ha that were flooded), the loss of 50,000 ha of cash crops and an additional 42,000 ha of other agricultural production³.

Meanwhile, Haiti, a country equally known for its climatic vulnerability, experiences an average of one cyclone or flood every 19 months, creating an average US\$15 million in damages. The fragility of the physical environment, the complexity of the climate itself and the high level of population pressure on the land (1,400,000 farmers occupying 1,500,000 ha of which 730,000 are unsuitable for any agricultural activity) all combine to result in significant natural resource degradation.

The impacts of climate variability and change are generally much greater in the rural areas of these countries, as the agricultural and livestock farming sectors are the most sensitive to climatic shocks. When formulating policies related to risk management and improving the resilience of its communities to risk, Madagascar, where 85% of the population lives in the rural areas, must consider the continuous and increasing vulnerability of farmers, who are

² EASYPol hyperlinks are shown in blue, as follows:

- a) training paths are shown in **underlined bold font**
- b) other EASYPol modules or complementary EASYPol materials are in ***bold underlined italics***;
- c) links to the glossary are in **bold**; and
- d) external links are in *italics*.

³ OCHA estimate, 2008

the most at risk (economic loss, soil erosion, siltation of rice paddies, water shortages, precarious housing...), and the least well equipped to cope.

Vulnerability can be defined as the exposure to a shock or a disaster, itself defined as a “break in a trajectory, in the reproduction of a system (...) followed by the emergence or forging of a new trajectory and the establishment of a new system⁴”. Vulnerability is generally broken down into three main components: exposure to shocks; sensitivity to shocks which can characterize the impact of the shock; and the capacity to adapt, or resilience⁵. Specifically, productive vulnerability such as the fragility of a rural system confronted with a shock, during which producers are hardly able to cope with the risk through risk minimization strategies and an acceptable reduction of their losses. Vulnerability evaluates to what extent a socio-spatial system risks being affected by the adverse effects of a hazard, the principle socio-spatial factors of vulnerability being, for the most part, linked to poverty.

Despite a constant adaptation of development strategies in order to enable populations to address the consequences of these disasters, effective tools for weather-related risk management as an integral part of the elaboration of policies fighting against poverty and food insecurity are lacking. Indeed, existing institutions have until now tended to adopt reactive strategies vis-à-vis risks and disasters, associated with emergency operations. Without an explicit link between the rationale of an emergency situation and development, relief aid in a crisis situation creates long-term dependence among beneficiaries, destabilises social structures, changes consumption patterns and introduces a rift between beneficiaries and the rest of the population.

In countries like Madagascar or Haiti, which are poor in financial resources and disaster-prone, strategies aiming to reduce poverty, address the risks associated with disasters, and protect the environment must be mutually reinforcing. Only development assistance that seeks to reduce disaster-related risk and emergency assistance oriented towards development will achieve lasting improvements.

4. VULNERABILITY TO CLIMATE CHANGE AND RESILIENCE CAPACITIES

4.1. Vulnerability of socio-ecological systems

The concept ‘socio-ecological system’ was defined to allow for a coherent approach to understanding the dynamic that exists when eco-systems and communities are intricately linked to each other. In this context, the concepts of vulnerability and resilience appear well-suited to understand socio-ecological responses to climatic risks and global climate change. According to Turner (2003), the concept of vulnerability is the probability that a system where man and the environment are coupled has of suffering significant damage as a result of its exposure to a stress (shock, change) that affects the surrounding society or environment, despite the latter’s efforts to adapt.

A disaster is the fulfilment of a risk which, on a given territory, by the extent and costs of the damages caused, provokes the severe interruption in the functioning of the society

⁴ Brunet, 1993.

⁵ Guillaumont, 2006

occupying that territory. The human, material or environmental losses incurred cannot be overcome solely with the resources which the affected society disposes of⁶.

To perceive vulnerability implies accepting that risks are also the result of factors that are internal to a society, and not only the result of random chance (hazards). This weak perception generates (just as much as the absence of perception of a hazard) an underestimation of the risk. The concept of resilience, borne out of research on the dynamic of ecological systems⁷, is defined in a way that is almost diametrically opposed to that of vulnerability: indeed, it is “the capacity of a complex system to absorb shocks while still maintaining function, and to reorganize following a disturbance.”

In more practical terms, the issue is to first take into consideration the principal impacts of global changes on local ecosystems, describe the immediate implications of these on living conditions and resource levels populations dispose of, show which responses they deploy with varying degrees of success- in the face of these changes, and finally study the consequences or potential consequences of these responses on ecosystems. Understanding this entire process is necessary to be able to define governance options, tools for “adaptive management” and public policies that could reduce vulnerability and develop the resilience of socio-ecologic systems confronted with global changes.

4.2. Vulnerability and adaptation to climate change: Analysis of the PANA

The objectives of the Malagasy plan for adaptation to climate change⁸, fits well within this logic:

“Madagascar’s vulnerability to climate change requires the adoption of an adaptation policy and coping strategies which mainstream climate considerations into the different processes of sustainable development planning and programming. Implementation requires staggering activities through time and space and certain expected results will only be manifested over a long time period. [...] Projects are designed to provide increased protection to poor populations who are more vulnerable”.

In fact, adaptation measures to climate change include the development of tools for taking into consideration the climatic risks inherent in economic and social development policy.

The actions proposed by Madagascar’s PANA directly affect agricultural production, community institutions and infrastructure, while indirectly affecting the well-being of rural households. The following elements can be found within the PANA:

- **The adaptation of cultural techniques and of livestock farming to climate change:**
 - Establishment and/or strengthening of a decentralised Weather Service;
 - Training/Supervision of farmers to adapt their cultural calendar to the Weather Service’s climate predictions;

⁶ Veyret Y. and Meschinet de Richemond N. 2004. - *Géographie des risques naturels en France. De l’aléa à la gestion* - Hatier.

⁷ Holling, 1973.

⁸ National Action Plan for Adaptation, PANA, 2006

- Popularisation and support for the adoption of cultural practices that respect the environment; enhancement of watersheds by restoring soil fertility;
 - Intensive grazing that requires the rational use of green fodder during the rainy season;
 - Use of conservation techniques and storage of fodder (hay, silage) during the dry season.
- **Standardisation, construction and upgrading of infrastructure:**
- Improvement and protection of production infrastructure (water systems, watersheds, irrigated areas)
 - Development of water ponds; promoting the construction of communal and regional silos.
- **Food security:**
- Extension of the “Safety-Net” program to all 22 regions;
 - Raising awareness and providing farmers and herders with nutritional education;
 - Making secure all farmers and their areas of production.

This overview of environmental risk management policy allows us to understand the complex nature of different social, economic and ecological systems. It also highlights the interconnection between different types of vulnerability (production, infrastructure, watershed and household food insecurity).

We must consider how to develop responses that would be integrated into such systems, i.e. the operational actions which would allow for a combined impact on several factors (securitisation of production centres, infrastructure resilience and social safety-nets). This brings us to the case of watershed management in Madagascar and Haiti, while integrating relevant tools for the safety-nets that protect the communities in question.

5. REACTIVATING RESILIENCE TO CLIMATIC ACCIDENTS: PUBLIC WORKS AND SAFETY-NETS

5.1. Climatic risks and the role of watersheds in Madagascar and Haiti

Whether or not floods arrive with tropical cyclones or hurricanes, they generally follow heavy rains and generally affect a country’s low geographical areas (basins, low-levels, etc.). Highlighting and protecting watersheds is generally the most suitable tool for managing flood risk. Indeed, the value of a forested watershed stems from its capacity to absorb and clean water, recycle excess nutrients, maintain the stability of the soil and therefore prevent flooding. When vegetation is removed or disturbed, not only do water and wind rush across the earth, but they carry the precious arable topsoil with them.

In Madagascar, coastal areas, especially in the east of the country, are the most prone to flooding, as a result of their topographical attributes and their exposure to cyclones and

storms. Certain upland regions are also prone to flooding due to excess runoff after extreme rainfall. In 2001, 606 municipalities of the 1385 surveyed (44%) perceived the silting of low-lying land to be a very serious issue.

Table 1: Perception of municipalities of the silting of low-lying lands (2001)

Perception	No of communes	%
Very serious	259	18,7
Serious	347	25,1
Ss Total Municipalities	606	43,8
Not at all serious	377	27,2
Not very serious	402	29,0
Ss Total Municipalities	779	56,2
Worried municipalities	1385	100,0

Source: FOFIFA / INSTAT / Cornell – 2001

The status of soil degradation is also considered an important cause of problems related to poverty and malnutrition in Haiti. It is the source of many natural disasters that have hit the country in recent years. The current situation is characterized by a low forest cover (1-3% of Haiti's total surface). Nearly 85% of the watersheds in the country are heavily or entirely deforested. The degradation of national resources is manifested through such phenomena as soil erosion, salinization, loss of fertility, deforestation and the depletion of water resources and of their quality. In Haiti, it is increasingly the North-East of the country and the coastal plains that are affected by floods. The same scenario of excess runoff due to the sharp deterioration of stripped watersheds is systematically repeated. Whatever the causes, the effects of excess precipitation are heavily determined by the topography of the area and its vegetation, and they are often exacerbated by the degradation of the environment. Floods can be highly destructive as a result of the intensity of their flow or their duration (crops cannot resist immersion for more than a limited number of days, depending on the species, variety and maturation stage) as well as the silting of irrigation canals, dams and the fields they run through.

5.2. Land management and risk prevention policy: Integration of "social safety-net" tools

In 2000, the World Bank started a watershed development and management project (PGBV) in Madagascar with the support of FAO. By focusing on (a) increasing the productivity of irrigated lands; (b) enhancing degraded and poorly exploited (tanety) zones; (c) preserving production infrastructures (promoting soil conservation techniques, reducing the sedimentation of perimeters; maintaining canals); (d) strengthening the institutional environment (support for water users' associations); and (e) improving producers' access to agricultural inputs, credit and trade opportunities, this program aims to balance the goals of

climate risk prevention and environmental protection as well as the economic objectives of productive development.

This programme suffered institutional resistance to the detriment of its watershed components, which were only partially implemented (comparable to a “lesser component”); In addition, the institutional strengthening of users’ associations and the local capacities for land-use management are not yet sustainable. In addition, a social “safety-net” dimension which would protect vulnerable communities that are the most likely to deteriorate watersheds through the cultivation of tavy is absent. To some extent, this illustrates the challenges that exist within current programs that combine irrigation and watershed management.

More generally and with the aim to integrate these social and institutional dimensions, we have to define an approach for the development of communal land-use management which would reinforce the survival of both production centres and public infrastructure through the intermediary of public works sites. Land-use policy⁹ is a part of prevention policies whose goal is to anticipate the eventual manifestation of a risk by mitigating its destructive effects, which brings about a greater resilience on the part of the area where these infrastructures have been developed.

The elaboration of communal development plans, linked with land-use management plans, would be an interesting operational basis from which to identify the priorities of such public works projects. In this way, a first diagnostic would allow for the elaboration of a needs assessment related to maintenance-based public works, the reinforcement of infrastructure and the development of sensitive zones at the municipal level.

The establishment of workplaces for the maintenance/rehabilitation of public capital and structural infrastructure (roads, irrigation schemes, management of watersheds and catchment areas) in districts where the environment has been particularly degraded would require the sustained mobilisation of a specific workforce for several months of the year. Such an initiative on the part of semi-permanent public works projects (6 months per year) with high labour intensity would provide the opportunity to establish safety-nets for households that are structurally vulnerable and particularly affected in times of crisis.

6. GRASSROOTS COMMUNITY DEVELOPMENT AND SCALING UP

6.1. Complexity and potentials of scaling up dynamics

Grassroots community development (GCD) is encouraged by government, multilateral agencies, NGOs and other partners, but, with the exception of a few, these initiatives are most often taken on a small scale. Its potential to generate a large-scale impact through its adoption by a high number of communities has rarely been confirmed through practice. Even though we can speak of marginal GCD activities, this type of activity is not yet taken

⁹ *Land-use planning* is also an intelligent response to the issue of economic growth and the security of the society. An efficient land-use scheme insures good spatial distribution of activities and guarantees a coherent rural renovation policy. Specifically, this ultimately means rebuilding the national territory on the basis of integrating the national space, solidarity between rural and urban areas and the competitiveness of different areas.

into consideration during the formulation of substantial national projects. Even if dispersed local activities are very effective, the achievement of national and international goals (MDGs) will not be possible without shifting them into a larger scale¹⁰.

Scaling up allows for “higher quality benefits for a greater number of people in a larger geographical area, in a way that is faster, more equitable and which comes at a propitious time.” This change can occur either vertically or horizontally. A vertical procedure begins with grassroots organizations and is applied at the level of national institutions and policies. A horizontal procedure refers to either a geographical expansion or a replication on a larger scale of households, from hundreds to thousands, if not millions of people¹¹.

Within the framework of Participatory and Decentralized Development (PDD), the challenge of generalisation is that of developing a replicable methodological approach which simultaneously ensures the effective participation of the entire community, the strengthening of organisational capacity, the accountability of partners and the sustainability of the system.

6.2. Case study of scaling up dynamic: FENU12

In the field, the Fund achieves concrete results by implementing programmes through an innovative approach in the local development and microfinance sectors, with a view to replicating these programmes on a larger scale. This approach begins with the creation of a **partnership with local community groups**, local authorities, community organizations, civil society and the private sector. **The use of Local Development Programmes (LDP)** allows for the combination of technical assistance and support for local community group budgets, in order to pilot innovative experiences at the local level.

It is also a question of providing appropriate assistance for **institutional strengthening at the local and central levels**. Indeed, it is necessary to give actors at local institutions the responsibility to manage financial resources, finance local development and establish a framework for fiscal transfers. A real scaling up is initiated using the lessons learned through the pilot initiatives and promotes a decentralization policy and local governance reforms to contribute to poverty reduction, better infrastructure and social service provision and sustainable natural resource management practices.

When a community-based approach leads to a successful project while remaining limited to a few communities, it will not really contribute to national or international development objectives such as the MDGs unless it is multiplied within a larger implementation framework. This requires a geographic extension or an expansion of activities through other projects or partners.¹³

6.3. MERET (Managing Environmental Resources to Enable

¹⁰ IFPRI, *Scaling Up Community Driven Development: A Synthesis of Experience*, Stuart Gillespie, 2003
http://www1.worldbank.org/sp/ldconference/Materials/Parallel/PS2/PS2_S5_bm1.pdf

¹¹ Sustainable Agriculture and Rural Development (SARD) Policy Brief 21
<ftp://ftp.fao.org/SD/SDA/SDAR/sard/SARD-upscaling%20good%20practices%20-%20english.pdf>

¹² Fonds d'Equipement des Nations Unies

¹³ Gillespie 2004

Transitions to More Sustainable Livelihoods and PNSP (PAM) Programs in Ethiopia

Ethiopia is one of the poorest countries in the world, whose natural resource degradation constitutes a serious obstacle to development. In this context, for more than 30 years donors and WFP have developed a partnership with the government on the topic of reforestation and soil conservation within the framework of the MERET project (Managing Environmental Resources to Enable Transitions to More Sustainable Livelihoods). This project covers 600 communities, and benefits over one million people every year. It is based on a participatory approach to supporting local communities. Since 1991, soil and water conservation uses a local-level participatory planning approach (LLPPA), through which local district (woreda) authorities collaborate with communities for participatory planning, implementation and evaluation. Regional and federal authorities ensure the piloting of accompanying measures and provide technical and financial resources.

Since 2005, the MOARD (Ministry of Agriculture) rallied heavily in order to train technical personnel at the district levels to implement a large-scale Productive Safety-Nets Programme (PSNP), supported by WFP and other donors. It includes employment in public works programs which have the ability to cover the construction of soil and water conservation structures in zones that are not covered by the MERET project. We are currently tending towards the expansion of funds destined toward social safety-nets for vulnerable populations. The example of PSNP, launched in 2007 to consolidate the resilience of vulnerable populations to shocks which are becoming increasingly severe with the effects of climate change, exemplifies this phenomenon¹⁴.

6.4. Recommendations and innovative approaches: Towards socio-environmental safety-nets

In a recent study conducted on behalf of DFID, IDS researchers revealed how country experiences of social protection instruments can enhance the resilience of vulnerable communities and point to ways in which social protection measures could better integrate climate change adaptation¹⁵.

In Madagascar, a Fund for the Strengthening of Community Infrastructure was thus proposed to fill a triple role: (i) Strengthen the social safety-net of structurally vulnerable populations in rural areas, (ii) Strengthen the resilient capacity of infrastructure and fragile areas faced with bad weather through the reforestation of hillside ponds, anti-erosion dams, consolidation of embankments and bridge infrastructure, (iii) Fill the gaps in maintenance and desilting of irrigation canals in order to reduce the recurrence of floods and the loss of crops.

The Fund would also allow for (i) an improvement in the resilience of production centres (irrigation, terraces, watershed reforestation), trails, markets, etc., and (ii) the creation of jobs for structurally vulnerable populations.

Its ability to operate would require the development of a communal planning approach which strengthens the resilience of production centres and public infrastructure with a

¹⁴ IRIN: Africa safety nets help to climate-proof the poor <http://allafrica.com/stories/200712050944.html>

¹⁵ *Social Protection and Climate Change adaptation, Commission on climate change and Development, March 2008, www.ccdcommission.org*

harmonisation of social, property and land, environmental and agro-climatic risk mitigation aspects. It would become a reality with the establishment of work places specialized in maintenance/public capital rehabilitation and structural infrastructure (roads, irrigation schemes, watershed management). These would be organised as semi-permanent, professionalised, highly labour-intensive workplaces (6 months per year), mobilising 5-10% of the most vulnerable households usually targeted by social safety-nets.

Such activity would require the consideration of the following factors:

- Strengthening the quality of HIMO work in order to attain professional norms (standardisation, supervision with the support of agricultural engineers);
- Strengthening the capacity of NGO partners to manage such workplaces;
- Collaboration in the development of Communal Development Plans (CDP) and Regional Development Plans (RDP), as well as land-use planning initiatives;
- Mobilisation of funds.

In Haiti, in terms of rendering more secure the economic activities in rural areas, similar activities have been identified: (i) preparation of specific intervention plans in the high-risk areas (agricultural damage, irrigation infrastructure or road damage), (ii) strengthening and consolidating infrastructure (anti-erosion dams, protection of riverbanks, etc.) through HIMO public works projects, (iii) taking advantage of CRIF (Caribbean Catastrophe Risk Insurance Facility) funds, managed by the MEF, in order to finance projects.

In this way, the articulation of risk – land-use management (silting problems, maintenance of irrigation areas and the issue of watershed reforestation which would reduce the effects of flooding) seems strategic. This brings us to recommend the following points:

- The involvement of the Technical Minister in charge of Decentralisation and Land Use Management (MDAT) is very important.
- A joint expertise in irrigation, local development, land-use management and social safety-nets (Cash for Work) must be mobilised.
- The need to consult the service for land-use policy because the integration of the proposed tools may require adjustments to the current land-use policy, in order to strengthen the operational capacity of each municipality.
- The importance of not neglecting the aspects of property and the utilisation of land because their economic re-evaluation could provoke usage conflict.

The expansion of such an approach, essentially managed at the community and district levels, would require an accompaniment in terms of capacity-building of the municipalities and decentralised institutions.

Thus, as a practical example, with an annual budget of semi-permanent workplaces (6 months per year) of 50-80 people/workers per municipality, supervised by a technician in agricultural engineering totalling between US\$30,000 and US\$40,000/year/municipality, such an approach would be easy to expand on the basis of social safety-net funds for vulnerable populations in rural areas or funds aimed at the mitigation of climate change

(MDP, GEF, etc.) With a basis of US\$6 million per year, it would be possible to maintain a constant activity in the 200 most vulnerable municipalities of the targeted country while strengthening resilience to climate change, ensuring a social safety-net for 16,000 of the most vulnerable households and generating a highly positive carbon balance.

“Social protection initiatives are as much at risk from climate change as other development approaches. They are unlikely to succeed in reducing poverty if they do not consider both the short and long-term shocks and stresses associated with climate change. Adaptive social protection involves examining opportunities that approaches to social protection provide for adaptation, and for developing climate-resilient social protection programmes”¹⁶.

7. READERS' NOTES

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9. METADATA TABLE

1. EASYPol module	204
2. Title in original language	
English	Resilience of Rural Communities to Climatic Accidents
French	Résilience des communautés rural aux accidents climatiques
Spanish	
Other language	
3. Subtitle in original language	
English	A Need to Scale Up Socio-Environmental Safety Nets (Madagascar, Haiti): Policy Brief
French	Un besoin de changement d'échelle (Madagascar, Haiti) : Note de Politique
Spanish	
Other language	
4. Summary	
<p>The rural sector's lack of resilience to climatic accidents seems to be one of the main reasons for the transformation of climatic accidents into environmental, economic and social disasters for local communities. Thus, the integration of activities geared towards the improvement of community resilience seems to be of utmost priority. This can be achieved by integrating prevention and risk-management tools into already existing social safety-nets within the framework of food security and poverty reduction strategies. <i>"Social protection initiatives are as much at risk from climate change as other development approaches. They are unlikely to succeed in reducing poverty if they do not consider both the short and long-term shocks and stresses associated with climate change. Adaptive social protection involves examining opportunities that approaches to social protection provide for adaptation, and for developing climate-resilient social protection programmes"</i>. The tools to strengthen safety-nets would include the mobilisation of permanent public works projects to maintain and develop rural infrastructure and production systems. The participation of the local workforce from the most vulnerable households would ensure a complementary function for the safety-net through the generation of non-agricultural income. The carbon-binding potential of activities with such high labour intensity provides an opportunity for sustainable financing through the <i>Clean Development Mechanism (CDG)</i> or simply through public funds which target climate change mitigation. Here, we address the creation of jobs whose obvious function is rural, environmental and natural resource management.</p>	
5. Date	
2009	
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7. Module type

- Thematic overview
- Conceptual and technical materials
- Analytical tools
- Applied materials
- Complementary resources

8. Topics covered by the module

- Agriculture in the macroeconomic context
- Agricultural and sub-sectoral policies
- Agro-industry and food chain policies
- Environment and sustainability
- Institutional and organizational development
- Investment planning and policies
- Poverty and food security
- Regional integration and international trade
- Rural Development

9. Subtopics covered by the module

10. Training path

11. Keywords

risk-management tools, social safety-nets, Clean Development Mechanism (CDG), local communities Madagascar, Haiti