

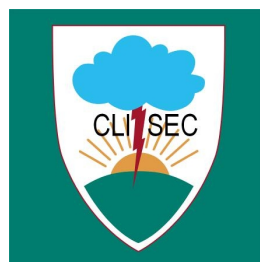


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*From security threat to conflict prevention:
Integrating migration into climate adaptation policy frameworks in Africa*

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From security threat to conflict prevention: Integrating migration into climate adaptation policy frameworks in Africa

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Climate change could affect human livelihood and increase migration pressure in various parts of Africa, potentially posing a security threat in transit and destination regions. To investigate and influence the seemingly conflicting relationship between migration and climate change the paper discusses three concepts which integrate migration into the climate adaptation policy framework. The most common concept, “*adaptation preventing migration*” aims at sustaining the livelihoods of affected populations in order to reduce their propensity to migrate. The second concept, “*migration as adaptation*” considers mobility is a legitimate adaptive response to climate change. Policy and institutions are required to support relocation and help integrating newcomers in destination regions. The third and new concept is “*migration for adaptation*”. Migrant social networks can be resourceful in increasing resilience and adaptive capacities of home communities. Migrants can trigger innovations across regions through co-development activities and the transfer of knowledge, technology and remittances, preventing conflicts by linking strategies for development in the communities of origin and destination. Institutional support in both regions needs to be directed towards channelling Diaspora contributions into climate adaptation measures. To combine theoretical concepts and empirical evidence, three case studies from countries across Africa – Morocco, Senegal and Rwanda – are analysed in view of this integrated framework.

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1. INTRODUCTION

“If you go to rural communities, most health centers and schools were built by immigrants, often with the help of mayors of their host countries.”

(Aminata Lo Dieng, ex-Minister of Senegalese abroad and Tourism, 2008)³

“As migration increases every year, and more evidence emerges of the significant benefits it brings for development in both origin and destination countries, policy makers are seeking to understand this complex relationship better and to maximize its mutual benefits through smarter policies and practices.”

(Rwanda Diaspora Policy, 2009)⁴

The contribution to development of Diaspora⁵ in general and African Diaspora in particular has raised attention of academics and practitioners in recent years (de Haan et al., 2000; Page and Plaza, 2005; de Haas, 2009; Ratha et al. 2011; Tacoli, 2011). These studies often cite figures published by the World Bank, the African Development Bank and national surveys stating the growth of remittances transferred by immigrants to their countries of origin. On average, African immigrants were found to remit twice as much as immigrants from other developing countries (Bollard et al., 2010).

Other than individual remittances, immigrants participate in collective developmental activities in their countries of origin, termed co-development. These involve not only financial capital in terms of remittances and investment, but also contributions in the form of cultural (knowledge-sharing and technology transfer) and cross-border social capital (Østergaard-Nielsen, 2010). The projects are either financed solely by the migrants, or co-financed by governmental and non-governmental institutions and private entities in countries of origin and destination. Being local, participatory and transnational (ibid), co-development is a bottom-up micro-scale approach to meet the communities' needs and to increase their social resilience. Thereby the activities strongly rely on migration networks among the Diaspora organisations and towards the institutions in the countries of origin and destination.

Western countries, especially the EU and the US, often apply this concept of co-development in order to regulate migration, by linking developmental project funding with returnees' programs and signing of readmission agreements of so-called “irregular immigrants” (de Haas, 2009; Panizzon, 2008; Scheffran et al., 2011).

The origins of the European-African co-development however date back to the 1960's when Soninke migrants from the Senegal River valley living in France formed Diaspora associations and introduced developmental projects in their home regions. The best-documented case of this early co-development is the case of the region of Kayes in Mali where it accounted for 60% of the regional infrastructure (Daum 1994 and 1995; World Bank, 2005; Gubert, 2009). Meanwhile immigrant organizations from various African countries have implemented diverse co-development projects in cooperation with governmental institutions, NGOs and private companies in Africa and Europe.

Many African countries have long realized the potential of their Diaspora. National

³ Dakar, Interview 2008. <http://www.codeveloppement.org/index.php?sv=25&aid=1005>

⁴ Rwanda Diaspora Policy opt.cit.

⁵ “Diaspora is made up of migrants from a particular area living scattered outside their place of birth but remaining in contact with it through transnational linkages” (Rwanda Diaspora Policy, 2009)

policies emerged on different levels; they are usually directed towards supporting the country's emigrants abroad on the one hand, and attracting the Diaspora to contribute to the country's development on the other (CARIM, 2010).

One of the major developmental issues for the low-income countries is the adaptation to the impacts of climate change. Initiated by the UNFCCC⁶, these countries have designed National Adaptation Programmes of Action (NAPAs) "to identify priority activities that respond to their urgent and immediate needs to adapt to climate change". In a number of cases, development activities initiated by the Diaspora tackle climate change issues, especially in vulnerable communities (Scheffran et al., 2011). The activities involve water and sanitation, agriculture, infrastructure and renewable energies as well as income diversification.

This paper examines whether the migration and climate adaptation policies can be converged to tie in with these activities and successfully channel the resources of the Diaspora to contribute to adaptation measures.

In view of the "*migration for adaptation*" framework (explained below) the paper discusses the climate adaptation and migration policies on a national level in three African countries with different climate change impacts and migration histories: Morocco, Senegal and Rwanda. Three *good practise cases* in each of the countries are presented to exemplify this approach.

2. THE ROLE OF MIGRATION IN CLIMATE ADAPTATION

Moving beyond the threat-victim discourse of migration, we describe communities and migrants as active social agents who shape and create their livelihood under changing environmental conditions. Migration is considered as a complex multi-causal process in which the environment is one among many factors. To understand the multi-faceted relationship between migration and climate adaptation, we discuss three concepts relating migration and adaptation that involve the communities of origin, migrant networks and institutions, and the interactions between them (Scheffran et al., 2011).

1. Adaptation preventing forced migration: In this view, adaptation aims to avoid forced migration as a distressed response to livelihood destruction caused by climate change. When communities are exposed to harsh environmental conditions and climate stress, they are forced to respond to diminish adverse consequences, increase the chances of survival and improve livelihood. Farmers and pastoralists have developed various adaptation mechanisms to deal with a changing climate (Freier et al., 2011; Schilling et al., 2011; Tacoli, 2011), including seasonal migration, which in some areas became part of their culture. Less desirable is permanent distress migration caused by hostile conditions such as the loss of vital assets. What is possible and adequate depends on the exposure, the vulnerability and resilience, adaptive capacity, innovation and capability for self-help, social organization and institutional mechanisms of the community (Christoplos, 2010).

2. Migration as adaptation: Where communities are threatened by climate change despite efforts for local adaptation and protection, migration is a legitimate adaptive response to look for opportunities to acquire income and know-how elsewhere. Before families are relocated, individual members are sent away to a foreign region to diversify income, spread risk, and gather the capabilities necessary to sustain a

⁶United Nations Framework Convention on Climate Change, <http://unfccc.int/2860.php>

community, including assets to insure against future shocks and stresses (de Haan et al., 2000). Accordingly, migration is a possible coping strategy and a component of the demographic transition. It reduces population pressure, lessens the strain on scarce resources, facilitates risk reduction and offers new opportunities for survival. At the same time, it implies the loss of valuable labor, income, wealth and knowledge that is missing to sustain the livelihood and adaptive capacity of a community. Despite significant changes, migrant societies maintain social networks among themselves, as well as with their home communities as long as these exist, and establish new social networks and social capital with their host communities, thus connecting both. The strain on the destination region depends on the magnitude and character of migration, as well as on the resilience of destination communities. If migration movements are sudden, unexpected and large-scale, communities and governments in affected regions face considerable challenges which can overwhelm their management capacities and provoke conflict. If migration occurs at a moderate rate and migrants are absorbed in the target region, they can be more easily integrated. Institutions can help to accommodate emigrants in their new locations and avoid conflicts.

3. Migration for adaptation: New opportunities, resources and networks of migrants in the host regions can diversify livelihood of households, support climate adaptation and build social resilience in the regions of origin, partly compensating for original losses of resources (e.g. brain drain). Capabilities and feedbacks of migrant networks, including transfer of knowledge, remittances and return migration, can contribute to technical and institutional innovations for risk-reduction and climate adaptation in the home communities. Remittance income has direct effects on the resource base, economic well-being and resilience of the home community (Adger et al., 2002). Additional resource flows from migrants could foster alternative strategies for climate adaptation, sustainable development and peace-building. In many countries young, professionally-trained returnees are involved in successful environmental initiatives, diversifying the coping strategies. They understand the local socio-ecological system at home and are in a good position to support their families. Technology use and transfer can help to restore livelihood under changing climate, e.g. by more efficient resource use, new types of natural resources and crop varieties, sustainable energy supply and improved disaster management. Governance and institutions can facilitate livelihood through co-development and co-management of natural resources and agricultural systems.

3. MOROCCO

3.1 Climate Change

Morocco is located in the northwest of Africa spanning through two climate zones – the Mediterranean in the north and the Saharan in the south. In the northern heights the annual rainfall can reach 2 m while in the desert planes in the South it can be below 25 mm (SNC Morocco, 2010). The country has two coastlines – the Mediterranean of ca 500 km and the prominent Atlantic in the west of over 2500 km (ibid). Substantial water reservoir originates from the snow in the High Atlas Mountains with hundreds of peaks reaching over 3000 m (Boudhar et al., 2007). Increased frequency and intensity of droughts have been observed since 1970 as well as the decrease in the snow cover period in the mountain peaks. Climate models project a significant drying along the African Mediterranean coast and the northern Sahara by the end of the 21st century (IPCC, 2007).

Climatic changes	Main Impacts
Temperature rise	Increased evapotranspiration and vegetation water requirements
	Extinction of some crops and tree species
	Deforestation
	Forest fires
	Spread of vector-borne infections, proliferation of malaria in high altitudes
Reduced precipitation	Droughts
	Decline of water resources
	Decrease in cereal yields
	Reduced biodiversity
	Desertification
	Conflicts between water users
	Development of waterborne diseases
Reduced snow cover in the mountains	Disruption of the wadi stream flows
Sea water level rise	Coastal floods and erosion
	Salinization of water and soil

Table 3 Main climatic changes (present and future) and their impacts in Morocco. Own work, combined sources: SNC Morocco, 2010; IPCC, 2007; Boudhar et al., 2007.

3.2 Climate Adaptation Policy

Moroccan adaptation policy is mainly focused on the water sector since water resources are already reaching the limits of supply needs (SNC Morocco, 2010). The adaptive measures include water management and saving, alternative water use (e.g. use of treated wastewater for irrigation), alternative water collection (e.g. collection from precipitation and desalination) and protection of water resources (ibid). Adaptation in agriculture involves changes in irrigation strategies and in farming practices, like intensification of dry farming (date palms and olive trees) and introduction of salinity-tolerant plant species; it includes capacity building programs for the farmers. Research and introduction of new species resistant to water stress is suggested in order to protect forests. In the coastal zone, adaptation choices have to be made between withdrawal of coastal activities and settlements in cases where the destruction is unavoidable and technical protection measures where they seem sound and possible. Furthermore, early warning systems for extreme events like floods, droughts and severe storms need to be developed and improved. In the health sector, Moroccan policy propagates maintenance and development of public health infrastructure as the most immediate strategy to adapt to climate change (ibid).

3.3 Migration

Some 3.3 Million Moroccans resided outside their country in 2007, constituting about 10% of the country's population (CARIM, 2010). Since the independence in 1956, large-scale migration of mainly low skilled workers was directed towards France, Germany, Netherlands and Belgium. In the last three decades, Spain and Italy became important countries of destination. The majority of these migrants went to Europe as guest workers, but tightening migration policies often lead to permanent migration (de Haas, 2009). Initially, most Moroccan migrants originated from the regions of Rif and Souss as well as southern oases (de Haas, 2009). Since the 1990s the international

emigration has nearly doubled (CARIM, 2010) and spread across all regions of the country. The Moroccan economy greatly benefits from financial transfers remitted by emigrants. In 2007, remittances by international migrants contributed 9% of the national GDP, reducing poverty by 4% (CARIM, 2010). According to de Haas (2009), agricultural, real estate and business investments by migrants have considerably contributed to development in the regions of origin.

3.4 Migration Policy

The Moroccan government had early recognized the benefits of emigration to the national economy and had implemented policies to support and encourage transfer of remittances and investment. Since the late 1960s, the government has tested several initiatives in order to stabilize and enhance the remittances flows (Collyer, 2009). The state-controlled Banque Centrale Populaire, created in 1968 and designed for emigrants' transfers, investment and savings, is making the remittances available for the governmental development activities (Iskander, 2010). The Moroccan government collaborates with Diaspora organizations in rural co-development projects. The first minister in charge of Moroccans abroad was appointed in 1990 (Collyer, 2009). The mission of the Ministry of Moroccans Residing Abroad is to strengthen the links with Diaspora communities and to facilitate remittances and investments by emigrants (CARIM, 2010). In 2008, the Moroccan government requested the IOM to assess the current policy and to propose new tools to encourage Diaspora investments and knowledge transfer (IOM, 2008).

3.5 Integrating Policies

The participatory approach applied by co-development is explicitly promoted by the Moroccan adaptation policy (SNC Morocco, 2010). It calls for integration of climate change with socio-economical phenomena on political level (ibid), not yet mentioning migration and co-development. However, rural co-development in regions vulnerable to climate change already significantly contributes to climate adaptation; let it be in regions affected by droughts or in the coastal zones (de Haas, 2006). Diaspora is also active in constructing and sustaining healthcare infrastructure along with contributing to education and research, all of them defined as adaptive measures in SNC Morocco (2010). Development projects implemented by Moroccan Diaspora have been supported by the government for decades (Iskander, 2010). Integrated policy in this case would mean systematically approaching available and mobilizing additional Diaspora resources for adaptation activities to maximize the use of skills, technology and financial contribution migrant networks can offer.

3.6 Migration for Adaptation: *Migrations et Développement* in France

The Diaspora organization *Migrations et Développement* (M&D) was founded in 1986 in France by the immigrants from the Souss region. Since its creation, M&D has become one of the most prominent African Diaspora organisations promoting development in the country of origin (de Haas, 2006). The activities of M&D are based on a participatory approach, implying joint decision making of migrants and local population; they also partly provide the project funding. The organisation closely cooperates with local authorities and governmental institutions in Morocco and is supported by Moroccan institutions, the French Ministry of Foreign Affairs, international funding bodies and the EU. M&D emphasizes intra-community solidarity assuring financial assistance for poor community members to pay for the provided services. Over the years M&D has implemented projects in 420 villages

servicing over 100,000 people in the sectors of electrification, drinking water and irrigation, education, health and agriculture (ibid). An important activity of the organization is the so-called “Program against drought”⁷. The region of Souss was severely affected by droughts since the 1970s. In many villages, the wells have dried up forcing women and children to travel several kilometres to collect water. The “Program against drought” includes rainwater collection and storage, construction of wadi dams, water resource management and improved hygiene and sanitation practices. The evaluation of M&D activities commissioned in 2003 by the French Ministry of Foreign Affairs found most infrastructures and institutions implemented by the organization sustained in a good condition after the projects have been finalized.

4. SENEGAL

4.1 Climate Change

Senegal is the most-western country in Africa with about 700 km long Atlantic coastline, spanning through three climatic zones from north to south: the Sahelian, the Sudanian and the Guinean. A large precipitation gradient ranges from less than 200 mm/yr in the north to up to 2000 mm/yr in the south. From the late 1960s to 1990s the annual rainfall went back by 40% compared to the previous thirty years (IPCC, 2007) leading to unprecedented droughts that were observed to be “... among the largest climate changes anywhere” (Bates et al., 2008). These droughts reduced the availability of fresh water and jeopardised the predominantly rain-fed agriculture (Oyebande and Odunuga, 2010). Climate models predict the temperature almost certain to rise up to 0.5°C per decade (ibid). The amount of rainfall may increase or decrease in future, probably with increased rainfall variability and intensity, resulting in less predictability (IPCC, 2007). The unreliability of rain in the past decades has already resulted in loss of soil fertility, poor harvests and food shortages (BBC, 2009). The main environmental problems facing the coast of Senegal linked to climate change are flooding, coastal erosion, salinization of soil and water, degradation of mangroves and changes in fish resources (Niang et al., 2010).

Climatic changes	Main Impacts
Temperature rise	Increased evapotranspiration and vegetation water requirements
	Changes in agricultural species, reduced diversity
	Deforestation
Changing rain patterns	Frequent droughts and floods
	Less predictability jeopardises rain-fed agriculture
	Increased sedimentation transport (erosion)
Sea water level rise	Floods
	Coastal erosion
	Salinization of water and soil

Table 2 Main climatic changes (present and future) and their impacts in Senegal. Own work, combined sources: NAPA Senegal, 2006; IPCC, 2007; Niang et al., 2010.

4.2 Climate Adaptation Policy

The Senegalese NAPA (2006) identifies three major sectors for adaptive actions:

⁷ *Migrations et Développement*, <http://www.migdev.org/>

Water, Agriculture and Coastal Zones. Defined priority actions include awareness and educational programmes, wastewater treatment and management of water resources, irrigated agriculture, water desalination programmes and fixation of dunes (ibid). Ms Madeleine Diof Sarr, head of division of environmental Impact Assessment at the Ministry of Environment suggests that a greater co-ordination between government institutions is necessary to overcome the funding limitations: “The future lies more in integrated programmes. These should be aimed at ensuring that national development policies incorporate the climate change dimension” (BBC, 2009).

4.3 Migration

Because of its political stability and the strategic location it presents for transit migration, Senegal attracts immigrants from the neighbouring West African countries (IOM, 2009). Lately, the country has solidly become a country of emigration. Up to the 1990s, the emigration was predominantly directed towards Sub-Saharan African countries (mostly Ivory Coast, Congo, Central Africa) but in the last 20 years, North Africa, Europe and the USA began to attract a significant fraction of Senegalese emigrants (ibid). In 2004, some 650,000 Senegalese were residing abroad, consisting of 12% of the total population, two thirds of them without a regular legal status (ibid). In Europe, most Senegalese settle in France; in recent decades Italy and Spain also became important host countries. Currently, over 40% of Senegalese immigrants settle in OECD countries (CARIM, 2010). Emigration is an important form of household strategy in Senegal (Sow and Alissoutin, 2010). A recent survey showed, that 2/3 of the surveyed households had at least one migrant; with an equal share of national and international migrants (Plaza et al., 2011). The inflow of remittances from international emigrants is higher than foreign aid; in 2010 it made out 9% of the GDP (World Bank, 2011). Migrants’ savings are also being discussed as a potential resource for the country’s development in form of Diaspora bonds; they are estimated to be 7% of GDP in 2009 (Ratha et al., 2011).

4.4 Migration Policy

Senegalese migration policy is aimed at encouraging remittances, investment and return of emigrants. In 2003, the Ministry of Tourism and Senegalese Abroad was established with a mandate to initiate, implement and monitor policies and activities related to the Senegalese Diaspora (Okele et al., 2008). The governmental *Agence pour la Promotion des Investissements et des Grands Travaux* (APIX) offers emigrants tax abatements; the Ministries of Exterior, Women Entrepreneurship and Microfinance are also promoting investments of the Diaspora in government-run infrastructure projects and utilizing business contacts and professional networks established by Senegalese emigrants abroad (Panizzon, 2008). The government has also established a fund to support investments from the Senegalese Diaspora (*Fonds d’Appui à l’Investissement des Sénégalais de l’Extérieur, FAISE*). Another government program, Agrobiotech seeks to “reintegrate” return migrants by involving them in modernization of agricultural activities. The program is addressing highly skilled Senegalese professionals in the Diaspora offering them options to return. This and other returnee programs are co-founded by the EU, France and Spain (Panizzon, 2008) in the context of the European “adaptation preventing migration” strategy.

4.5 Integrating policies

The Senegalese Diaspora is strongly organized in village associations, professional and students organizations. Their role is to create and maintain Diaspora networks to

support local communities in the countries of destination as well as to foster developmental projects back home (Riccio, 2008; ADB, 2007; CARIM, 2010). According to Drevet (2000), Senegalese migrants predominantly engage in water development projects – water supply, sanitation, irrigation and desalinization of water. In the years 1996-2000, nearly 70% of all surveyed Diaspora organizations initiated at least one project in the water sector. Those activities correspond to the adaptive actions defined in NAPA Senegal (2006) in all three sectors. 70% of all projects in the water sector were fully financed by the migrant organizations; only 30% were co-financed (Drevet, 2000). For larger projects, co-financing was sought by governmental and non-governmental organizations and businesses in Senegal and other African countries, in Europe and in the US. Projects in education and research are also highly prioritized by the Senegalese Diaspora (ibid). By integrating Diaspora and adaptation policies additional financial and human resources can be offered to communities and the government to adapt to climate change.

4.6 Migration for Adaptation: Senegalese emigrants in Germany

The organisation "*Selbsthilfegruppe der Bürger Waoundés in Europa eV*" was founded in 1994 by the Senegalese emigrants from Waoundé, a village in the Senegal River valley, living in Munich, Germany. Waoundé is strongly affected by droughts since the 1970s resulting in a sharp raise of emigration rate – from 20% of young men before the 1970s to 90% since then (B. Cisse, personal communication). The people of Waoundé adapt to climate change by installing irrigation systems but no institutional support has been offered so far (ibid.) The "*Selbsthilfegruppe*" implemented several developmental projects in their village, predominantly in the sector of education. A vocational training centre was established in 2006 with 40 students; today it offers training to 200 students. Since 2008, the centre participates in a photovoltaic project of the French *Electriciens Sans Frontières* and trains students and teachers in installation and maintenance of solar collectors in schools and dispensaries in the region. In 2010 the organisation purchased a cross-country vehicle to transport the collectors to the remote villages⁸. The organisation cooperates with NGOs in Germany, Austria and Luxemburg as well as with the German Federal Ministry for Economic Cooperation and Development and the Senegalese Ministry of National Education, Technical Education and Vocational Training (Kausch et al., 2007). The work of "*Selbsthilfegruppe*" contributes to income diversification of young Senegalese in a region vulnerable to climate change and facilitates the use of renewable energy, both to be considered as climate adaptation measures.

5. RWANDA

5.1 Climate Change

Rwanda is a landlocked country in the Great Lake Region in Eastern Africa. The equatorial climate is deeply modified by the relief at a varied altitude (from 900 m in south-west to 4500 m in the regions of Congo-Nile Crest). Rwanda has two dry seasons - from June to mid September and from mid December to February, and two rainy seasons. Since the 1980's, Rwanda like other central and eastern regions of Africa is confronted with either prolonged drought episodes or intensive floods (WMO, 2003). According to the climate models, the mean temperature in East Africa is likely to rise by 3.2° by 2080, while the annual mean precipitation is likely to

⁸ *Selbsthilfegruppe der Bürger Waoundés in Europa eV*, <http://www.waounde.de/html/Projekte.htm>

increase by 7%, and by 13% during the December to February dry season. As in most tropical regions, all seasons are expected to be extremely warm by the end of the 21st century, and one in five seasons is expected to be extremely wet, compared to one in twenty at the end of 20th century (IPCC, 2007). The main impacts of the observed and expected climate changes are summarized in the Table 1 below:

Climatic changes	Main Impacts
Temperature rise	High evapotranspiration leading to low river flows
	Low water levels and drying up of lakes and rivers
	Loss of aquatic ecosystems
	Decreased production of main agricultural products: bananas, maize and beans
	Reduction of hydroelectricity production
	Bush fires
	Low production of wood resources
Changing rain patterns	Proliferation of malaria in high altitudes
	Seasonal droughts, dry spells ⁹ , recurrent droughts
	Decreased production of main agricultural products: bananas, maize and beans
	Favourable conditions to parasites
	Reduction of hydroelectricity production
	Rains with high intensities (over 50 mm/h)
	Floods
	Water pollution and proliferation of water diseases
Frequent landslides and landslips	

Table 1 Main climatic changes (present and future) and their impacts in Rwanda. Own work, combined sources: IPCC, 2007; NAPA Rwanda, 2006; NC Rwanda, 2005

5.2 Climate Adaptation Policy

Based on observed and expected climate change impacts, the Rwandan government has defined six priority options for adaptive actions (NAPA Rwanda, 2006): Integrated water resources management; set-up of early warning information systems; promotion of income-generating non-agricultural activities in vulnerable regions; intensive agriculture; introduction of resistant agricultural varieties; and development of alternative energy sources. Adaptive measures to protect human settlements are proposed by the government in the National Communication under UNFCCC (NC Rwanda, 2005) and include planning and implementation of clustered villages – *imidugudu* – in rural areas. This program is meant to enable better protection and monitoring of human settlements and infrastructure and avoiding settlements in vulnerable zones.

5.3 Migration

Rwandan Diaspora has always played an important role in the tragic post-colonial history of the country. A large proportion of Rwandan emigrants left the country as refugees. The mass exile began 1959 following the so-called “Rwandan revolution” which initiated ethnic oppression and violent persecutions of the Tutsi minority. These refugees mostly fled to the neighbouring countries (Uganda, Kenya, Zaire),

⁹ Short period droughts in rainy seasons

some of them formed the resistance group RPF (Rwandan Patriotic Front). In 1994, the Rwandan crisis culminated in one of the most tragic genocides in human history. After the RPF took over the country and ended the genocide, masses of Rwandans fled in fear of revenge by the new government and the genocide survivors. Many of the 1959-1994 refugees and their descendants felt strong ties with their country of origin, some of them returned while others are eager to contribute to the country's development (Rwanda Diaspora Policy, 2009). The Rwandan government is running repatriation programmes for the refugees of 1994, which is a difficult undertaking, since armed former militia groups are still active and recruiting supporters from this population of Rwandan refugees. Apart from refugees, there is a number of Rwandan emigrants who left the country for economic and/or career development reasons, most of them highly educated (ibid).

5.4 Migration Policy

Rwandan government is eager to engage the Diaspora in its ambitious development plans (Rwanda Diaspora Policy, 2009). In 2008, the Ministry of Foreign Affairs and Cooperation has established the Diaspora General Directorate (DGD), with the mission "To mobilize Rwandan Diaspora for unity/cohesion among themselves targeted for the promotion of security and socio-economic development of their homeland"¹⁰. The DGD organizes events in the host countries in order to inform the Diaspora communities on development and opportunities in Rwanda and to mobilize the Diaspora youth. The Rwandan Diaspora Policy, issued in 2009, is aiming at promoting remittances and investments by the Rwandans living abroad, facilitating capacity building and knowledge transfer and promoting community links between the Diaspora and local organisations (Rwandan Diaspora Policy, 2009). The DGD cooperates with international partners such as the IOM¹¹ (MIDA project Great Lakes) and the UNDP¹² (TOTKEN project) to promote knowledge transfer by volunteer programs of highly skilled Rwandan emigrants. It also promotes the Rwandan Diaspora Mutual Fund, a collective investment initiative in treasury and corporate bonds (Ratha et al., 2011).

5.5 Integrating Policies

Rwandan Diaspora Policy (2009) is integrated in the Economic Development and Poverty Reduction Strategy (EDPRS), so are adaptation priority options like water resource management and income diversification in vulnerable communities. Co-development projects and private business activities initiated by the Rwandan Diaspora employed in these sectors could receive additional institutional support. The capacity building and knowledge transfer by the emigrants can be especially useful in the alternative (renewable) energy sector and for the development of the early warning systems, also identified as priority options by the NAPA Rwanda. Programs could systematically aim at approaching Diaspora specialists in these fields.

5.6 Migration for Adaptation: Collective Diaspora projects

Rwandan Diaspora is collectively participating in the "Bye Bye Nyakatsi" project aimed at building a model village of 500 houses for poor families replacing grass

¹⁰ Diaspora General Directorate, Mission, <http://www.rwandandiaspora.gov.rw/about-us/missionvision.html>

¹¹ International Organisation for Migration <http://www.iom.int>

¹² United Nations Development Programme <http://www.undp.org>

thatched houses (*nyakatsi*) in the Bugesera District in the south-east of the country. The precipitation in this region declined by 70% since the 1990s and led to severe harvest failures due to droughts and proliferation of parasites (NC Rwanda, 2005). A community development project in this region could strengthen its resilience and increase its adaptive capacity. The houses will be connected to biogas systems, water and electricity. The basic infrastructure and public utilities, such as health centre, school and commercial areas will also be provided (DGD, 2010). In 2010, Rwandan Diaspora organisations worldwide have been fundraising for this project and the construction is about to begin this year (Kwizera, 2011). District Authorities provided land for the project construction and installation of the infrastructure facilities. The Diaspora General Directorate (DGD) is coordinating the activities. The project intends to involve experienced Diaspora members in its implementation. Twelve houses have been donated by the American company contracted for the house construction (DGD, 2010).

6. CONCLUDING REMARKS

The paper discusses constructive approaches how migration, usually seen as a threat in the climate change context, can be integrated into the climate adaptation framework. While migration is a possible adaptive response to climate change, migrant networks can strengthen the social capital, livelihood and resilience of their origin communities and develop innovative approaches for climate adaptation.

The case studies across Africa present three countries with different climates and climate change impacts, migration histories and policy responses. However, they all illustrate that we do not have to reinvent the wheel since emigrants across the continent have been involved in improving living conditions in their communities of origin for decades. In communities vulnerable to climate change these activities often facilitate climate adaptation. Co-development projects initiated and run by migrant organizations in water, food and energy, infrastructure and education can be successful if jointly supported by institutional frameworks, involving governmental and non-governmental organizations and companies in countries of origin and destination.

To integrate migration and adaptation policies one must first recognize that sustainability and participation are the pillars on which both, co-development and climate adaptation rest. Diaspora's transnational knowledge, networks and financial resources in terms of co-financing, investment or bonds can be systematically used for climate adaptation. Operating on a micro-level, co-development offers only one possible source to adaptive sustainable development. Not having the potential to finance and implement macro-level structural projects, Diaspora can contribute human and social capital to their design and implementation. By promoting the "*migration for adaptation*" approach communities and governments can converge all potential resources and make the best use of them.

Building on the 2010 Cancun Accord, the United Nations can play an important role in supporting financial and institutional mechanisms to strengthen migration-adaptation linkages.

7. REFERENCES

- ADB (2007) *Migrant Remittances: A Development Challenge*. African Development Bank [Internet]. Available from: <http://www.co-developpement.org/?p=309> [Accessed 27 July 2011].
- Adger, W.N, Kelly, P.M., Winkels, A., Huy, L.Q., Locke, C., (2002). Migration, Remittances, Livelihood Trajectories, and Social Resilience, *Journal of the Human Environment*, 31(4), 358-366.
- BBC (2009) *Senegal talks Climate. The public understanding of climate change* [Internet]. Available from: <http://www.africatalksclimate.com/> [Accessed 27 July 2011].
- Bollard, A., McKenzieb, D. and Mortenc, M. (2010) The Remitting Patterns of African Migrants in the OECD. *Journal of African Economies* 19 (5), pp. 605–634.
- Boudhar, A., Duchemin, B., Hanich, L., Chaponnière, A., Maisongrande, P., Boulet, G., Stitou, J. & Chehbouni, A. (2007) Snow covers dynamics analysis in the Moroccan High Atlas using SPOT-VEGETATION data. *Sécheresse* 18 (4), pp. 278–288.
- CARIM (2010) *Migration Profiles. Consortium for Applied Research on International Migration Report* [Internet]. Available from: <http://www.carim.org/> [Accessed 27 July 2011].
- Collyer, M., Cherti, M., Lacroix, T. and van Heelsum, A. (2009) Migration and Development: The Euro-Moroccan Experience. *Journal of Ethnic and Migration Studies* 35 (10), pp. 1555-1570.
- Christoplos, I. (2010): Understanding Climate Change Adaptation: Lessons from Community-based Approaches. *Climate and Development* 2 (1), pp. 73-74.
- DGD (2010) Diaspora General Directorate. *Nyakatsi Concept Paper* [Internet]. Available from: <http://www.rwandandiaspora.gov.rw/diaspora-initiatives/nyakatsi-project.html> [Accessed 28 July 2011].
- Drevet, O. (2000) *L'implication des associations de migrants dans le domaine de l'hydraulique au Sénégal*. Document réalisé par Séverine Champetier pS-Eau, Paris.
- Daum C. (1994) Ici et là-bas, immigration et développement: les associations des immigrés ouest-africains en France. *Migrations Société* 32, pp. 99–110.
- Daum C. (1995) *Les Migrants, Partenaires de la Coopération Internationale: Le Cas des Maliens de France*. OECD Document Technique No. 107, Paris.
- de Haan, A., Brock, K., Carswell, G., Coulibaly, N., Seba, H. and Toufique, K.A. (2000) *Migration and Livelihoods: Case Studies in Bangladesh, Ethiopia and Mali*. IDS Research Report, 46, Brighton, Sussex.
- de Haas, H. (2006) *Engaging Diasporas. How governments and development agencies can support diaspora involvement in the development of origin countries*. International Migration Institute University of Oxford, UK, study for Oxfam/Novib.
- de Haas, H. (2009) International Migration and Regional Development in Morocco: A Review. *Journal of Ethnic and Migration Studies*, 35 (10), pp. 1571-1593
- Freier, K.P., Brüggemann, R., Scheffran, J., Finckh, M., Schneider, U.A. (2011). Assessing the Predictability of Future Livelihood Strategies of Pastoralists in Semi-

Arid Morocco under Climate Change, *Technological Forecasting & Social Change* (in press).

IOM (2008) *Engaging Diasporas for Development IOM Policy-Oriented Research* [Internet]. Available from: <http://www.iom.int> [Accessed 10 August 2011].

IPCC (2007) Regional Climate Projections. In: *Fourth Assessment Report, Climate Change 2007 - The Physical Science Basis*, pp. 847-940.

Iskander, N. (2010) *Creative State. Forty Years of Migration and Development Policy in Morocco and Mexico*, New York: Cornell University Press.

Kausch, I., Riestler, A. and Schuettler, K. (2007) *The Senegalese Diaspora in Germany. Its Contribution to Development in Senegal*. Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH, Economic Development and Employment Division, Eschborn, Germany.

Kwizera, C. (2011) Construction for diaspora village begins next month. *The New Times*, Kigali, January 20, 2011 [Internet]. Available from: <http://allafrica.com/stories/201101200312.html> [Accessed 28 July 2011].

IOM (2009) *Migration au Sénégal. Profil National 2009*. Organisation internationale pour les migrations, Genève.

NAPA Rwanda (2006) *National Adaptation Programme of Action to Climate Change, Republic of Rwanda* [Internet]. Available from: <http://unfccc.int/resource/docs/napa/rwa01e.pdf> [Accessed 27 July 2011].

NAPA Senegal (2006) *Plan d'action nationale pour l'adaptation aux changements climatiques, République du Sénégal* [Internet]. Available from: <http://unfccc.int/resource/docs/napa/sen01f.pdf> [Accessed 27 July 2011].

NC Rwanda (2005) *Initial national communication under the United Nations Framework Convention on Climate Change*. Republic of Rwanda [Internet]. Available from: http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php [Accessed 27 July 2011].

Niang, I., Dansokho, M., Faye, S., Gueye, K. and Ndiaye, P. (2010) Impacts of climate change on the Senegalese coastal zones: Examples of the Cap Vert peninsula and Saloum estuary. *Global and Planetary Change*, 72 (4), pp. 294-301.

Okele, V., Medrano, J.G. and Cordahi, A. (2008) *Obstacles to investment of Diaspora funds into domestic economies*. Study to Explore Mechanisms to Facilitate the Contribution of the African Diaspora to the Domestic Economies [Internet]. Available from: http://www.acpbusinessclimate.org/PSEEF/Documents/Final/ADIF_obstacles_en.pdf [Accessed 27 July 2011].

Østergaard-Nielsen, E. (2010) Codevelopment and citizenship: the nexus between policies on local migrant incorporation and migrant transnational practices in Spain. *Ethnic and Racial Studies* 34 (1), pp. 20-39.

Oyebande, L. and Odunuga, S. (2010) Climate Change Impact on Water Resources at the Transboundary Level in West Africa: The Cases of the Senegal, Niger and Volta Basins, *The Open Hydrology Journal* 4, pp. 163-172.

Page, J. and Plaza, S. (2005) Migration Remittances and Development: A Review of Global Evidence. *Journal of African Economies* 15 (2), pp. 245-336.

- Panizzon, M. (2008) *Labour mobility: A win-win-win model for trade and development. The case of Senegal*. Geneva Trade and Development Forum, 24–25 April, Geneva [Internet]. Available from: http://www.gtdforum.org/themes.php?table=themes&theme_id=37&status= [Accessed 27 July 2011].
- Plaza, S., Navarrete, M. and Ratha, D. (2011) *Migration and Remittances Household Surveys in Sub-Saharan Africa—Methodological Aspects and Main Findings*. World Bank, Washington, DC.
- Ratha, D., Mohapatra, S., Ozden, C., Plaza, S., Shaw, W. and Shimeles, A. (2011) *Leveraging Migration for Africa: Remittances, Skills, and Investments*. African Development Bank, World Bank, Washington, DC.
- Riccio, B. (2008) West African Transnationalisms Compared: Ghanaians and Senegalese in Italy, *Journal of Ethnic and Migration Studies*, 34 (2), pp. 217-234.
- Rwanda Diaspora Policy (2009) *Ministry of Foreign Affairs and Cooperation*, Kigali, Rwanda [Internet]. Available from: <http://www.rwandandiaspora.gov.rw/diaspora-policy.html> [Accessed 27 July 2011].
- Scheffran, J., Marmer, E. and Sow, P. (2011) Migration as a resource for resilience and innovation in climate adaptation: Social networks and co-development in Northwest Africa. Working paper (to be submitted).
- Schilling, J., Freier, K., Hertig, E. and Scheffran, J. (2011). *Climate change, vulnerability and adaptation in North Africa with focus on Morocco*, Working paper CLISEC-13 [Internet]. Available from: http://clisec.zmaw.de/fileadmin/user_upload/fks/publications/working-papers/Working_paper_CLISEC-13.pdf
- SNC Morocco (2010) *Second National Communication under the UNFCCC* [Internet]. Available from: http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php [Accessed 13 August 2011].
- Sow, P. and Alissoutin, R.L. (2010) *ICT and codevelopment in Senegal and Catalonia*. Fernandez-Ardevol, M. and Ros, A., eds., IN3 Spain.
- Tacoli, C. (2011) *Not only climate change: mobility, vulnerability and socio-economic transformations in environmentally fragile areas of Bolivia, Senegal and Tanzania*. Human Settlements Working Paper Series. *Rural-Urban Interactions and Livelihood Strategies*, 28.
- WMO (2003) *The Global Climate System Review, June 1996–December 2001*. World Climate Data and Monitoring Programme, WMO-No. 950.
- World Bank (2005) *Global Development Finance: Mobilizing Finance and Managing Vulnerability*, Washington, D.C: World Bank.
- World Bank (2011) *Migration and Remittances Handbook*. Second Edition [Internet]. Available from: <http://siteresources.worldbank.org/INTLAC/Resources/Factbook2011-Ebook.pdf> [Accessed 27 July 2011].

CLISEC Working Papers

Scheffran, J. (2009): *Climate change, Human Security and Societal Instability: Conflict or Cooperation?*, Paper presented at the Synthesis Conference of the Global Environmental Change and Security program, Oslo, Norway, 22-24 June, 2009. Working paper **CLISEC-1**, Research Group Climate Change and Security, University of Hamburg.

Kominek, J. (2009): *Analysing the path of "using cyclical patterns for interpreting the situation" – a different approach using path dependency theory*, submitted. Working paper **CLISEC-2**, Research Group Climate Change and Security, University of Hamburg.

Scheffran, J., Link, P.M. & Schilling, J. (2009): *Theories and Models of the Climate Security Link*, Paper presented at the Conference "Climate Change, Social Stress and Violent Conflict", Hamburg, Germany, 19-20 November, 2009. Working paper **CLISEC-3**, Research Group Climate Change and Security, University of Hamburg.

Kominek, J. (2009): *Each institutionalization elementary is a self-reinforcing process increasing path dependency*, submitted. Working paper **CLISEC-4**, Research Group Climate Change and Security, University of Hamburg.

Kominek, J. (2009): *A new action model – deducing an 'ideal type path dependent' for scenario simulation*, submitted. Working paper **CLISEC-5**, Research Group Climate Change and Security, University of Hamburg.

Link, P.M., Piontek, F., Scheffran, J. & Schilling, J. (2010): *Integrated Assessment of Climate Security Hot Spots in the Mediterranean Region: Potential Water Conflicts in the Nile River Basin*, Paper presented at the Conference "Climate Change and Security", Trondheim, Norway, 21-24 June, 2010. Working paper **CLISEC-6**, Research Group Climate Change and Security, University of Hamburg.

Kominek, J. (2010): *Global climate policy reinforces local social path dependent structures: More conflict in the world?*, submitted to *Springer Hexagon Series*, Vol. 8. Working paper **CLISEC-7**, Research Group Climate Change and Security, University of Hamburg.

Kominek, J. (2010): *The Pursuit of Rational Action leads to Herding Behavior – an Example of Reinforcing Dynamics Shaped by Organizational Structures and Behavioral Paths in Financial Markets*, submitted. Working paper **CLISEC-8**, Research Group Climate Change and Security, University of Hamburg.

Link, P.M., Piontek, F., Scheffran, J. & Schilling, J. (2010): *Impact of climate change on water conflict and cooperation in the Nile River Basin*, submitted. Working paper **CLISEC-9**, Research Group Climate Change and Security, University of Hamburg.

Link, P.M. & Schleupner, C. (2010): *How do tourists perceive and accept changes in landscape characteristics on the Eiderstedt peninsula?*, submitted to *Coastline Reports*. Working paper **CLISEC-10**, Research Group Climate Change and Security, University of Hamburg.

Alwardt, C. (2011): *Wasser als globale Herausforderung: Die Ressource Wasser*. Working paper **CLISEC-11**, Research Group Climate Change and Security, University of Hamburg.

Kominek, J. & Scheffran, J. (2011): *Cascading Processes and Path Dependency in Social Networks*, submitted. Working paper **CLISEC-12**, Research Group Climate Change and Security, University of Hamburg.

Schilling, J., Freier, K., Hertig, E. & Scheffran, J. (2011): *Climate change, vulnerability and adaptation in North Africa with focus on Morocco*, submitted. Working paper **CLISEC-13**, Research Group Climate Change and Security, University of Hamburg.

Schilling, J. & Remling, E. (2011): *Local Adaptation and National Climate Change Policy in Kenya: Discrepancies, Options, and the Way Forward*, submitted. Working paper **CLISEC-14**, Research Group Climate Change and Security, University of Hamburg.

Schilling, J., Akuno, M., Scheffran, J. & Weinzierl, T. (2011): *On arms and adaptation: Climate change and pastoral conflict in Northern Kenya*, submitted. Working paper **CLISEC-15**, Research Group Climate Change and Security, University of Hamburg.

Scheffran, J., Marmer, E. & Sow, P. (2011): *Migration as a resource for resilience and innovation in climate adaptation: Social networks and co-development in Northwest Africa*, submitted. Working paper **CLISEC-16**, Research Group Climate Change and Security, University of Hamburg.

Marmer, E., Scheffran, J. & Sow, P. (2011): *From security threat to conflict prevention: Integrating migration into climate adaptation policy frameworks in Africa*, submitted. Working paper **CLISEC-17**, Research Group Climate Change and Security, University of Hamburg.