

SENEGAL

THE PRIMARY HAZARDS

FACING SENEGAL ARE
DROUGHT, FLOODS
COASTAL STORMS,
AND EPIDEMICS

FLOODS

HAVE CAUSED THE LARGEST
ECONOMIC DAMAGE

EPIDEMICS

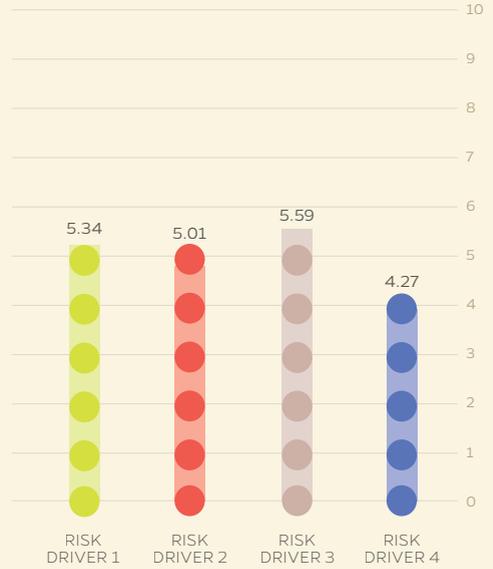
ACCOUNT FOR THE GREATEST
LOSS OF LIFE,
WHILE DROUGHT
AFFECTS THE MOST
PEOPLE

SEA LEVEL RISE,
COASTAL EROSION
AND LAND DEGRADATION
ARE ALSO KEY ENVIRONMENTAL
CONCERNS

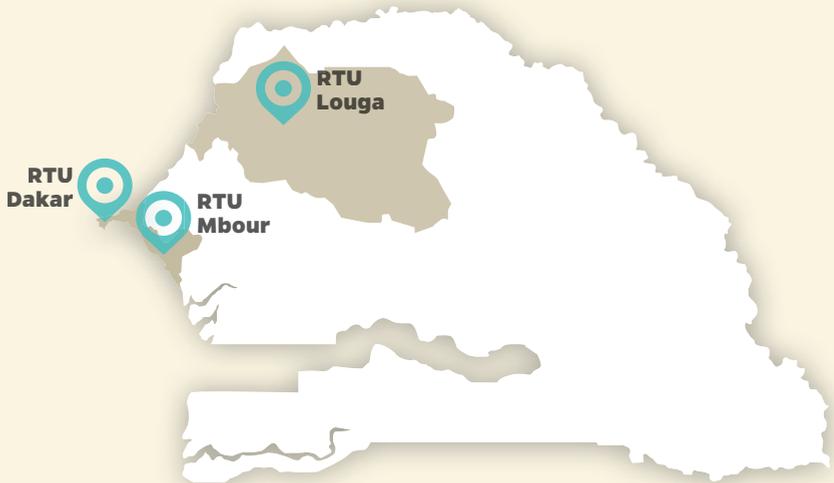
REGULAR LOCUST

INVASIONS ARE A
THREAT IN
THE NORTH
OF THE COUNTRY

SENEGAL SCORES FROM WEST AFRICA RISK MAPPING



Source: EM-DAT (CRED)



INSTITUTIONAL Capacity for DRR

DRR Institutional Setup AND LEADERSHIP

Senegal has undertaken a broad array of measures towards increasing capacity around DRR, including the creation of the Directorate of Civil Protection, a National Platform for DRR, and various national plans and strategies. Nevertheless, several problems and gaps have been identified. There are primary obstacles to realising effective disaster risk management in the country: the lack of coordination among the various government departments, the lack of clearly defined roles and responsibilities, as well as insufficient financial resources. DRR at the sub-national and local levels is particularly inadequate, again related to a lack of budgetary allocations.

The Direction de la Protection Civile (DPC), or directorate of civil protection, is located in the Ministry of the Interior and is primarily responsible for DRR efforts in the country. The DPC is the focal point for Senegal's National Platform for DRR, which was established in 2008. The DPC is also the home of the Plan ORSEC (Organisation des Secours), Senegal's National Relief Organisation Plan. Other frameworks of note include the National Action Plan on DRR 2010-2015, also under the direction of the DPC and with a budget of \$9 million over 6 years, and the Plan de Contingence National (PCN), which targets

seven regions: Dakar, Saint Louis, Matam, Kaolack, Thies, Diourbel and Tambacounda.

The DPC is the secretariat of the High Commission for Civil Protection, which advises the Ministry of the Interior on related issues. Regional and Auxiliary Civil Protection Commissions serve to coordinate activities at the local level. However, there is little decentralisation of the DPC in its activities or resources, with no regional or communal offices in place, and thus a low level of local DRM. This contributes to the evaluation of the DPC as being weak institutionally and in need of reform in order to raise its status and capacity for intervention. There are also problems related to capacity of the DPC. The capacity of the Plan ORSEC at central and local level, for example, remains limited compared to the magnitude of the problems.

Senegal has also created various other measures related to DRR and CCA, which, while not covered in detail here, are worth noting. These include a National Flood Prevention and Control Unit, an Operational Early-Warning Centre, National Committee for the Fight against Locust Invasion, National Strategy for the Protection and Fight against Coastal and Marine Erosion, and a National Plan to Combat Desertification. Various relevant laws have also

been passed, including laws related to fisheries, forestry, water usage, the environment in general, and mining. The extent to which these incorporate DRR has not been analysed in the context of this study, but their existence exhibits awareness of the challenges related to issues such as coastal erosion and desertification, among others. How these risk drivers are addressed at a more general level is part of this study's purpose.

Senegal has directed efforts primarily at drought and locust invasion, including monitoring and assessment mechanisms and risk mapping. The government has also determined that protection against flooding is one of its current priorities as shown by

the establishment of the *Ministère de la Restructuration et de l'Aménagement des Zones d'inondation*.

At the regional level, Senegal participated in the recently launched, EU-led Global Alliance for Resilience Initiative (AGIR). It is also a member of the *Comité Permanent Inter Etats de lutte contre la Sécheresse dans le Sahel* (CILSS). The African Urban Management Institute (IAGU) is based in Senegal, and offers research and technical assistance for the West and Central African regions on urban risk management, planning, and environmental management.



Overall, while DRR now figures in the country's national strategy, including the government's most recent PSRP (2011-2015), financing remains limited and actual programming is highly dependent on outside donors.

Strategic

DOCUMENTS AND PLANS

Disaster Risk Management was a priority pillar in Senegal's Poverty Reduction Strategy Paper 2006- 2010 (Pillar 3, Social Protection and Risk Management), when the government recognised the need to implement a national social protection strategy, extend its social security coverage, and integrate DRR and DRM into its development planning. Senegal's most recent PRSP (PRSP III, 2011-2015) continues along the same line, and likewise includes a third section on "social protection, risk and disaster prevention and management (drought, floods, locust invasion)".

According to Senegal's National progress report on the implementation of the Hyogo Framework for Action (2009-2011), DRR has been integrated into development plans and strategies, including the government's 2006 PRSP and more recent PSRP (2011-2015), as well as in local development plans. DRR has not been included in sectoral plans, however. Overall, while DRR now figures in the country's national strategy, financing remains limited and actual programming is highly dependent on outside donors. Indeed, Senegal has not allocated any percentage of the national budget to DRR. Similarly, while legislation has made local governments responsible for DRR planning (Code des Collectivités Locales 1996), no budget has been allocated to them in order to do so. Thus DRR policies in practice remain more focused on rescue and response support to victims of disasters, rather than actual prevention, preparedness, and mitigation measures.

In addition to highlighting the lack of financial resources and budgeting for DRR implementation, the HFA progress report also found an overall lack in terms of awareness raising and information sharing related to DRR. Furthermore, multi-risk evaluations are not currently conducted. Nonetheless,

Senegal reports progress along several fronts. Evaluations of potential impacts of building projects are carried out, as are environmental impact studies, although dissemination of findings is limited. In addition, a mapping of risk zones has occurred, and a comprehensive early warning system is currently being developed as a government priority. Regional contingency plans are in the process of being developed, and the national DRR platform is being reinforced through the expansion of a research network involving universities, NGOs and local organisations. In general, the government reports that the inclusion of DRR in the political discourse is well on its way.

In 2006 Senegal produced its National Adaptation Programme of Action (NAPA) for climate change adaptation. Under its NAPA, Senegal identified salt water intrusion, coastal zone inundation, drought and low flows, storm surges, and extreme temperatures as urgent climate-related hazards and as such in need of immediate action to avoid further increasing vulnerability. In looking at areas of vulnerability and possible adaptation options, Senegal's NAPA focused on the water resources sector, agriculture sector, and coastal zones. In line with these principal hazards and areas of concern, Senegal's NAPA prioritises adaption projects related to the development of agro-forestry, programmes to promote the rational use of water, protection of the coastline, and programmes to raise awareness and educate the public on related issues.

International

ENGAGEMENT AND SUPPORT

Donors have demonstrated a commitment to DRR in Senegal through a number of projects and by integrating it into various initiatives, including the UNDAF 2007-2011. The World Bank (WB) has been active in Senegal in a range of initiatives related to DRR and CCA, including a US\$1.1 million project that will support the country's disaster risk reduction plans, with support from the World Bank's Global Facility for Disaster Reduction and Recovery (GFDRR), Disaster Risk Management and Climate Change Adaptation project. The project will focus its efforts on increasing the capacity of the civil protection agency in the first instance, with various other components to follow. Other projects include the US\$55.5 million WB International Development Association credit agreement with Senegal for storm water drainage in Dakar's suburban neighborhoods.

Senegal is a priority country for GFDRR's Disaster Risk Management and Climate Adaptation (Track II). GFDRR efforts have included spatial hazard mapping of coastal erosion and risk mapping in peri-urban areas of Dakar, mainstreaming DRR within sustainable development programmes, and building capacity for DRR at the local level and in coastal communities. Other donors active in the country include: the International Federation of Red Cross and Red Crescent Societies (IFRC), DRR at School, partnership with the national meteorological services and CCA in the community; the United Nations Office for Disaster Risk Reduction (UNISDR), Strengthening National Platforms for DRR; the United Nations Development Programme (UNDP), mainstreaming DRR within development programs; and Prevention Consortium, African Urban Risk Analysis Network (AURAN).

UNDERLYING Risk Factors: Local Perceptions

RTUs Selected

AND SUPPORTING RATIONALE

The RRI in Senegal looked at three RTUs, each of which represented a different risk typology —Dakar, the capital (urban), Mbour, a coastal, semi-urban area (urban expansion), and Louga, a rural, agricultural region further inland (rural). All three RTUs are located in the Niayes zone, which represents characteristics of Senegal's coast. Senegal presents an interesting

case for disaster risk reduction work, given its location both on the West coast of Africa and on the southern border of the Sahel and with territory expanding into this zone. The three RTUs attempt to cover at least in part the different types of geography, climate-related challenges, hazards and risks Senegal faces. The rural versus urban locations also provide a more comprehensive picture of the underlying issues affecting the people of Senegal and the conditions in which they live that make them more or less vulnerable to natural hazards.

Dakar

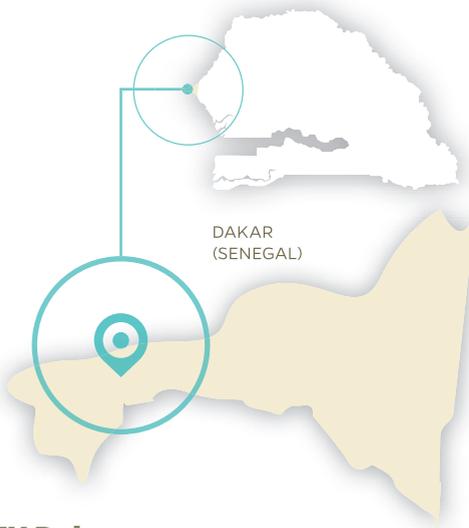
The Dakar metropolitan area accounts for approximately 25% of Senegal's population (est. 2.45 million), but represents less than 1% of the national territory. It is the capital and largest city in Senegal, and is located on the Cap-Vert peninsula. The main natural hazards facing Dakar are floods and coastal erosion. These hazards are compounded by the effects of climate change, including sea level rise, advancing sand dunes and threats to urban agriculture. Degradation of forest cover in the region of Dakar is another concern, as is illegal logging.

Dakar provides an excellent picture of the particular risks facing urban centre in West Africa. Urbanisation is occurring at such a fast pace that already scarce land reserves and

agricultural areas are being transformed into residential areas. While Dakar represents the bulk of the country's economic activities and is the social and cultural centre of Senegal, the high concentration of the population in the capital city and its corresponding high rate of urbanisation have had a negative impact on the living conditions of its households.

One of the key concerns in Dakar in light of the rate of urbanisation is its poor and inadequate infrastructure, particularly related to water drainage and waste removal systems. Rapid expansion, both demographically and physically as the capital spreads, has rendered current drainage systems insufficient. The combination of increasing population and inadequate drainage and sewage disposal systems directly contributes to the city's increased flood risk. Heavy rains in 2005 and 2009 revealed the shortcomings of the water drainage system, especially in the suburbs where many neighborhoods experienced severe flooding. This justified the initiation of the Plan ORSEC and the continued and accelerated construction of retention basins and pumping stations in low-lying areas, particularly along national Highway No. 1.

For residents of certain low-lying neighborhoods, floods have become a regular occurrence every rainy season. One way in which the government has sought to address this issue is through relocation of families through the Plan Jaxaay (*plan gouvernemental de relocation*). Some 3,000 families have been moved from flood-prone areas in Dakar's crowded suburbs to a new settlement located 15 miles east of the city. Experts have been positive about the Plan Jaxaay as a long-term solution to the floods that affect Dakar's suburbs each year. However, with floods affecting more than 100,000 a year, the plan is in fact quite limited in scope. In addition, not all residents feel that the housing is adequate, given their small size and distance from the capital.



RTU Dakar

POOR DRAINAGE / WATER DISPOSAL SYSTEMS

ARE LINKED WITH HEALTH RISKS
FROM CONTAMINATED WATER
AND ENVIRONMENTAL PROBLEMS

CRITICAL PUBLIC FACILITIES

SUCH AS SCHOOLS LOCATED
IN FLOOD-PRONE AREAS, INCREASE
EXPOSURE TO WATERBORNE DISEASES



LOUGA
(SENEGAL)

RTU Louga
 DEFORESTATION
 CONTRIBUTES TO INCREASED
 RISK OF DROUGHT
 AND MORE SEVERE
 WINDSTORMS

Louga

Louga is a predominantly rural area located in northwestern Senegal that represents characteristics of Senegal's Sahelian regions, with a particularly hot and dry climate. The population of Louga is estimated at 831,309 inhabitants (2009), with an average annual growth rate of 2.7%. It is a cattle market centre and has rail and road links with both Dakar and the port city of Saint Louis. The primary hazards in Louga are drought, locust infestation, soil erosion and desertification. Louga is on the northern edge of the country's peanut and groundnut producing agricultural areas. Agriculture is difficult in the region, due to the climate, quality of the soil, and increasing desertification. The area experiences low and unstable levels of rainfall.

Various factors contribute to making the area highly vulnerable. These include high levels of poverty, drought, susceptibility to locust invasions, rain-dependent agriculture, soil degradation, low levels of education, poor access to basic social services, child malnutrition and inadequate health care. The region also experiences a high rate

of out-migration. Indicators suggest that poverty has increased in the last five years. The proportion of households living below the poverty line is estimated at 65%. Levels of educational achievement in Louga are extremely low, particularly for girls and women, and access to other essential social services is weak.

Louga is part of the Millennium Cities Initiative (Earth Institute, Columbia University), a programme that works with local governments and partners towards the realisation of the Millennium Development Goals. As part of the programme, needs assessments have been completed (in French and English) in the arenas of gender, public health and education, and a water/sanitation needs assessment is planned for 2013.

Mbour

Mbour, a principal city in the region of Thiès, is located on what is known as the Petite Côte about 80 km south of Dakar. Thiès is an important area for tourism in Senegal, as well as fishing and to a lesser extent agriculture. The region is the most populous after Dakar, with its population having increased from 1,322,579 inhabitants (2002) to 1,610,052 inhabitants (2009), an average annual growth rate of 2.85%. Mbour's population is 153,503 (2002 census), and the city's major industries are tourism, fishing, and peanut processing. The main natural hazards in the Thiès region are drought, coastal erosion, locusts, and desertification. Studies of the vulnerability of the Senegalese coast also indicate its risk from salinisation

of land. The socio-economic costs of these impacts are significant.

Agriculture in the region is heavily dependent on rainfall, as elsewhere in the country. But market gardening is also practiced and provides an alternative source of produce. Fishing is the region's main economic activity, both artisanal and industrial. This is also characteristic of Senegal as a whole. In both sectors there is a problem related to inadequate equipment and access to markets. Tourism is the second most important economic activity after fishing. In the period between 2005-2009, the number of hotels in the Thiès region more than doubled, from ninety-one to two hundred ten, with the majority (87.6%) concentrated in Mbour.

Mbour is Senegal's fifth largest city and one of its fastest growing. As a gateway city to the capital, Mbour is experiencing trends related to urbanisation, including increasing population, inadequate infrastructure and housing, and poor drainage and waste disposal systems that are characteristic of larger cities in the West Africa region. High unemployment is also a pressing concern, as Mbour is the destination of migrants from more rural areas in search of work in the tourism sector. Findings from the RTUs confirmed these similarities between Dakar and Mbour.



RTU Mbour
COASTAL
EROSION
 IS IDENTIFIED AS A THREAT
 TO BOTH HOUSING AND THE
 LOCAL TOURISM-BASED
 ECONOMY



NATURAL HAZARDS AND UNDERLYING RISK FACTORS OF SELECTED RTUS

	<p>DAKAR</p> <p>(URBAN)</p>	<p>LOUGA</p> <p>(RURAL)</p>	<p>MBOUR</p> <p>(URBAN EXPANSION)</p>
<p>NATURAL HAZARDS</p>	<p>FLOODS, INSECT INFESTATION</p>	<p>DROUGHTS, INSECT INFESTATION</p>	<p>INSECT INFESTATION, FLOODS, WILDFIRES</p>
<p>RISK DRIVER 1</p> <p>1</p>	<ul style="list-style-type: none"> • Air pollution • Coastal erosion • Deforestation • Water contamination • Soil erosion 	<ul style="list-style-type: none"> • Soil erosion • Deforestation 	<ul style="list-style-type: none"> • Coastal erosion • Deforestation
<p>RISK DRIVER 2</p> <p>2</p>	<ul style="list-style-type: none"> • Poverty • Unemployment • Limited access to land • Low levels of literacy 	<ul style="list-style-type: none"> • Limited access to land • Low levels of literacy • Food insecurity • Poverty • Unemployment 	<ul style="list-style-type: none"> • Poverty • Unemployment • Poor levels of health
<p>RISK DRIVER 3</p> <p>3</p>	<ul style="list-style-type: none"> • Overcrowded conditions • Poorly built housing • Housing in dangerous locations • Poor drainage/water disposal • Basic infrastructure in dangerous locations • Critical public facilities in dangerous locations • Productive infrastructure in dangerous locations 	<ul style="list-style-type: none"> • None selected 	<ul style="list-style-type: none"> • Overcrowded conditions • Poor drainage/water disposal • Productive infrastructure in dangerous locations
<p>RISK DRIVER 4</p> <p>4</p>	<ul style="list-style-type: none"> • Corruption • Lack of accountability • Limited financial capacity 	<ul style="list-style-type: none"> • Corruption • Lack of accountability • Limited financial capacity 	<ul style="list-style-type: none"> • Corruption • Lack of accountability • Limited financial capacity • Non-compliance with the law

Findings

AND KEY ISSUES
BY RISK DRIVER

In Dakar, respondents identified floods as the most serious natural hazard, followed by insect infestation. Insect infestation was selected as most serious in Louga, followed closely by drought. In Mbour, respondents did not score natural hazards as being particularly serious.

Local Perceptions on Risk Driver 1

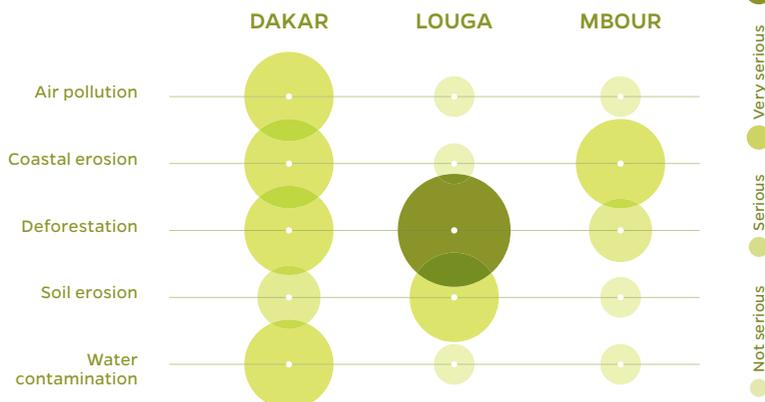
Overall, the key concerns identified under environment and natural resources

were coastal erosion, soil erosion, deforestation, water contamination and air pollution.

Coastal erosion was a pressing concern in both Dakar and Mbour, while in Louga soil erosion was identified as a serious issue. Water contamination and air pollution were key issues in the capital. In all three RTUs, deforestation was identified as a concern. In Louga, deforestation received the most serious overall score of all the RTUs in Senegal and across all risk drivers.

Environmental and Natural Resources

ENVIRONMENTAL CHALLENGES IN DAKAR, LOUGA AND MBOUR



1 AIR POLLUTION

Air pollution was only identified by respondents in Dakar, and was particularly linked to the presence of the Mbeubeuss waste dumping site and the odours/fumes it emits. Respondents perceived air pollution to be a cause of respiratory diseases.

2 COASTAL EROSION

Coastal erosion was cited as an important factor in Dakar and Mbour, where it was identified as a threat to housing and for increasing the impact of coastal flooding. Housing is often built in the coastal buffer zone, and erosion and related flooding is in some cases forcing the local population to relocate further inland. In Mbour, the potential impact from coastal erosion to the local economy was also cited in relation to its affect on hotel and tourism facilities.

The local population has been involved in the construction of physical barriers in collaboration with local and national government institutions.

Community-based organisations have also initiated awareness-raising campaigns against illegal sand extraction and, in collaboration with the PEPAM (Millennium Water and Sanitation Program), interventions that demonstrate the importance of trees for the coastal ecosystem. In order to monitor illegal sand winning, some surveillance brigades have been formed in Dakar. Reforestation with filao (*casuarina equisetifolia*) through the “*caravanes vertes*” initiative is foreseen as an activity that could protect the coastline.

At the local government level, laws have been created to prohibit the extraction of sand. However, respondents explained that the main challenge is a lack of monitoring and law enforcement mechanisms. The national government has built physical barriers (gutters, dikes, etc.) and implemented reforestation programmes to prevent coastal erosion and reduce its current impact. However, as in the case of local efforts, these activities are not considered

to be effective in the long term due to the lack of monitoring and maintenance. The Coastal Management Scheme (Dakar) and a validation workshop against erosion (*Atelier de Validation pa Contre Érosion*) were both given as examples of very effective efforts, namely because of their foundation in specialists' research.

3 DEFORESTATION

Deforestation was identified as a consequence of intense and unplanned urbanisation as well as illegal logging. The reduction of the forest cover was linked by respondents to both a decrease in fertile farming areas and the encroachment of coastal sand dunes. Deforestation was also cited as increasing the risk from drought and more severe windstorms, due to a lack of forest coverage to buffer the effects.

Civic engagement, mainly involving youth, was noted in reforestation activities and awareness-raising efforts on the impacts of illegal logging. These activities were considered to be effective in the short term for their community and local government support (PEPAM), but ineffective in the long term due to a lack of funding, resources and continuity. Overall, respondents cited a lack of political will and failure to prioritise environmental issues on the part of the national government. Reforestation programmes are considered to be effective activities to reduce desertification processes and recover agricultural productivity. However, respondents in Louga questioned certain elements of the programme, in particular the types of species planted. While illegal logging has been banned, a lack of resources and corruption have made it difficult to enforce these laws. This, together with ongoing demand for fuel wood, means that deforestation continues apace.

4 SOIL EROSION

Respondents indicated that in their communities there is a high level of awareness of the effects of deforestation on soil erosion, reducing agricultural production and fodder availability for livestock, and accelerating desertification

processes. Respondents identified one programme in particular, entitled Assisted Natural Regeneration (RNA in French), among community interventions that are thought to be effective against soil erosion. However, it would benefit from the involvement of a larger percentage of the population, more resource allocation and more technical assistance. The national government has deployed fertilisation campaigns (phosphatisation) and an information campaign focused on Assisted Natural Regeneration practices, which are assessed as only somewhat effective, due to limited funding and scope in terms of rural population reached.

5 WATER CONTAMINATION

In selecting water contamination as a serious issue, respondents linked it to various concerns, including the lack of hygiene practices by the population and the salinisation of water and soil resulting from sea water intrusion. Furthermore, as drinking water becomes more contaminated, especially in urban areas, the population is in turn more exposed to waterborne diseases. This was particularly noted in Dakar.

Dakar municipality has put in place a platform of local actors involved in water issues in order to reduce the potential impacts of flooding and other environmental issues. Water treatment and analysis as well as awareness-raising campaigns are being deployed by organisations such as SODIS, which are considered to be effective for their solid basis in technical knowledge. At the national level there are water treatment (chlorination), disinfection and awareness-raising policies to combat pollution of water channels. These awareness-raising campaigns are valued as very effective by respondents for their ability to educate and positively affect society on a large scale. At the community level, GIEs (Groupement d'Intérêt Economique) have been created for waste collection and sanitation in neighbourhoods, especially to clean drainage systems. In collaboration with NGOs, the local population is involved in efforts towards drilling wells and purifying water.

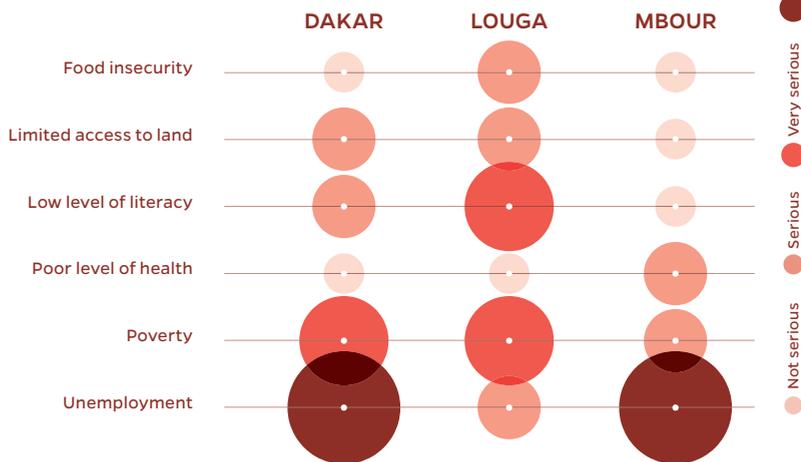
Local Perceptions on Risk Driver 2

Respondents in all three RTUs in Senegal identified the highest number of serious issues under Driver 2, perhaps unsurprisingly given the direct link between socioeconomic issues and people's daily lives and well-being.

Across all three RTUs, poverty and unemployment were the two issues under Risk Driver 2 that respondents perceived to be the most serious. For Dakar, limited access to land was also identified as a serious concern. Low levels of literacy were a moderately serious concern in Dakar, but were identified as more pressing in Louga. Food insecurity was also a principal concern in Louga, while in Mbour and Dakar respondents considered poor levels of health as a major issue.

Socioeconomic Conditions

SOCIAL AND ECONOMIC CHALLENGES IN DAKAR, LOUGA AND MBOUR



FOOD INSECURITY

Food insecurity (identified as a key issue only in Louga) was linked to low agricultural productivity, and higher rates of drought as a consequence of deforestation practices. The result has been an increase in rural out-migration, with the remaining population suffering from nutritional deficits and related increased vulnerability to illness.

Louga inhabitants have tried to diversify their crops, considering these practices as somewhat effective. The introduction of community shops by FAPAL (Fédération des Associations Paysannes de Louga) was viewed as an effective intervention as it prevents

families from selling their goods to address food needs during lean periods.

International organisations in collaboration with the national government have implemented a Seed Multiplication Program, which rural inhabitants viewed as quite effective for its help in warehouse acquisition and in securing agricultural production through seed production. However some drawbacks were also cited, including credit constraints and a need for capacity building. WFP carried out food distribution, which was considered somewhat effective, but criticised for not reaching all vulnerable groups. There have been some microfinance

projects with limited effectiveness due to the high interest rates.

The national government's SEMENCE project was criticised for the low quality of seeds, discrimination among beneficiaries and for its insufficient distribution as compared to GOANA. Local government interventions, such as buying produce and providing some level of food support, while acknowledged as very effective, still suffer from insufficient resources to adequately reach people in need.

2 LIMITED ACCESS TO LAND

Limited access to land was identified as a key concern in urban and urban expansion areas only, and cited as the cause of land disputes, overcrowded conditions and unplanned settlements. In Mbour people claimed that land had been appropriated by SAPCO (*Société d'Aménagement et de Promotion des Côte et Zone Touristiques du Sénégal*).

Efforts by international organisations to develop housing cooperatives were cited, and viewed as very effective because they respond to the concerns of the population. At the national level, GOANA (*Grande Offensive agricole pour la nourriture et l'abondance*, launched in 2008) was valued as an effective initiative, but one that could have been more useful if there were more resources available. Land redistribution efforts were highlighted by several respondents in Mbour as highly effective.

3 LOW LEVELS OF LITERACY

Respondents linked low levels of literacy to a poor understanding of environmental problems and associated risks, difficulty in disseminating information on prevention and preparedness actions and practices, and the lack of integration of the population in decision-making processes. It was widely

recognised that this issue increases people's vulnerability overall.

International organisations (UNESCO, UNICEF, WHO) in collaboration with the national government have carried out education programmes for vulnerable groups, which respondents valued as very effective for their efforts to empower vulnerable groups and increase their coping capacities. An important factor related to the effectiveness of these initiatives is that they have been disseminated through community radio stations (Louga). Awareness raising programs within schools have also been implemented and are valued as effective by respondents, but suffer from a lack of financing and require broader inclusiveness policies.

4 POOR LEVEL OF HEALTH

A lack of health facilities was identified as a principle cause of poor levels of health, particularly among the rural population. This is also linked to reduced coping capacity in the face of illness. A direct consequence of the poor levels of health and lack of adequate healthcare is the high rate of maternal and child mortality.

International organisations have been assessed as very effective in their efforts, especially related to reducing malaria. The national government was likewise viewed as effective in its HIV prevention programmes, although respondents criticised an imbalance in terms of targeting beneficiaries most in need. International organisations in coordination with the national government have implemented several projects to address this issue, such as vitamin supplements, children's nutrition programmes, cooking demonstrations, nutrition training, free healthcare provision, and nutritionist assessments. They have been valued as very effective in most cases, but in need of funding over the long term.

Local Perceptions on Risk Driver 2

Socioeconomic Conditions

5 POVERTY

After unemployment, poverty was the most serious issue selected by respondents and was linked to increased vulnerability to illness, environmental problems, and unplanned settlements in flood-prone areas, as well as limited access to existing social services. While respondents in all RTUs selected poverty as a major concern, the admittedly broad nature of this issue did not lend itself to more detailed explanations on the part of respondents. International organisations were mentioned, and their programs to tackle poverty were viewed as effective and well targeted to the specific concerns of the population.

are targeted. The National Agency Return to Agriculture programme (Plan REVA), aimed at creating modern farms that would encourage people to return to agricultural work, was criticised for a lack of information and transparency. Promotion of the industrial sector was identified as a potential solution to rebalance the economy and provide alternative livelihoods to vulnerable populations exposed to natural hazards.

Efforts on the part of international organisations were criticised for their high interest rates. These organisations have also implemented training programmes that were considered to be somewhat effective, but constrained by the lack of long-term funding and the low technical capacity of the population.

6 UNEMPLOYMENT

Respondents cited high unemployment, especially among youth, as a key concern and linked it to violence, crime, lack of opportunities, social imbalances, and out-migration. Lack of good employment policies were identified as a principal source of the problem.

The national government has undertaken initiatives to combat unemployment, including establishing Funds for Youth Employment and a national program for youth training. These are considered as minimally effective for various reasons, including insufficient funding and inadequate technical capacities. Furthermore, several respondents considered the Funds to be ineffective due to the arbitrary manner in which potential beneficiaries



Local Perceptions on Risk Driver 3

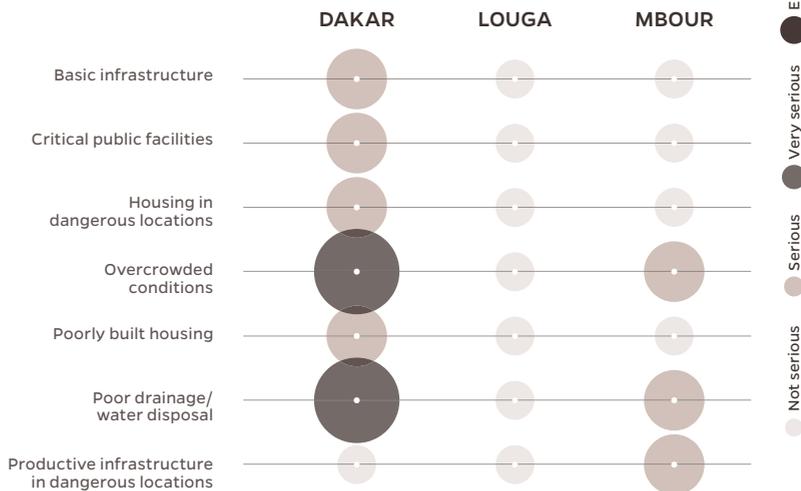
There was a marked distinction among the RTUs related to Risk Driver 3, and specifically

along a rural versus urban divide.

While Louga respondents were not able to identify serious problems in their region under this category, Mbour respondents noted three issues of concern and respondents in Dakar indicated up to six issues that they considered to be somewhat or very serious. Issues identified were overcrowded conditions, poorly built housing, housing in dangerous locations, poor drainage/water disposal systems, basic infrastructure, and critical public facilities. This points clearly to the city's need to address a lack of quality infrastructure and housing in the face of rising demographic pressures. Overcrowded conditions and poor drainage systems were also considered serious in Mbour, as was productive infrastructure in

Land Use and Built Environment

LAND USE CHALLENGES IN DAKAR, LOUGA AND MBOUR



dangerous locations.

It should be noted that respondents in Louga had difficulties understanding Risk Driver 3 of the questionnaire. Respondents were not always clear

whether their region was urban or rural, perceptions often being based on their area of employment. This led to challenges in accurately analysing the data for Risk Driver 3 responses in Louga.

BASIC INFRASTRUCTURE AND CRITICAL PUBLIC FACILITIES IN DANGEROUS LOCATIONS

Public facilities and basic infrastructure were identified by respondents in Dakar as serious issues and related to risks including electric shock, high risk of fires and flooding and lack of available electricity. School flooding was highlighted as a serious concern, particularly for exposing children to waterborne diseases. The extremely poor condition of roads was also cited.

People have organised themselves to advocate to the local and national authorities to attract attention to these issues. The national government has developed a code of construction that is viewed as minimally effective, namely due to limited funding available to implement it. The expansion of the electrical network is deemed to be extremely effective, but there is concern that it could be jeopardised by low political will. An intervention for the rehabilitation of electrical facilities was valued as minimally effective, due to a lack of preliminary studies. The national government's

Extremely serious
Very serious
Serious
Not serious

efforts to control new building permits, in contrast, were viewed as very effective. The national government's efforts to maintain public facilities was considered only somewhat effective, namely due to insufficient financial and technical resources.

2 HOUSING IN DANGEROUS LOCATIONS

The issue of housing in dangerous locations was linked by respondents to the risk of building collapse, floods, landslide risk, unsanitary conditions and insecurity.

A surveyor was employed by the local government, which was viewed as very effective for its role in making the population aware of the risks related to inhabiting these areas. The national government's *Plan Jaxaay* (see above), for relocating people from flooded areas, was well accepted and judged to be very effective for its success in reducing people's exposure to contaminated waters, but criticised for failing to adequately involve the affected population.

3 OVERCROWDED CONDITIONS

The issue of overcrowding in Dakar and Mbour was linked to security problems, unhygienic practices caused by the lack of appropriate sanitation systems, and access problems in case of fire.

The Plan REVA (see above) was viewed as ineffective for the lack of appropriate resource allocation and political will. The national government has created resettlement areas for inhabitants of flooded areas, which has been valued as very effective by respondents, particularly as a measure to reduce exposure to contaminated water and related illnesses.

4 POORLY BUILT HOUSING

Poorly built housing was identified as a serious issue in particular as related to unplanned

settlements in urban areas, the result of increasing urbanisation. These settlements suffer from poor quality building materials and structures highly exposed to flooding and collapse. The inhabitants of these areas have resorted to infilling (*remblaiement*) and sand bagging to protect their homes in case of floods.

The national government is implementing a "habitability policy", considered by respondents as very effective for its water provision through wastewater treatment plants. A cooperative housing program has also been implemented and is viewed as very effective for its consistency in the allocation of resources.

5 POOR DRAINAGE / WATER DISPOSAL SYSTEMS

Respondents cited the lack of adequate drainage and water disposal systems as a key concern, and have in particular linked the issue with health risks from contaminated water and environmental problems. Residents have complained to local government authorities asking for pumps to drain overflowing water, and have organised themselves to advocate for improved management and remediation of hazardous areas. In the interim, residents have established archaic drainage systems in order to evacuate rainwater.

International institutions have undertaken some pipeline construction, acknowledged to be effective for consistency and adequate technologies, which are also inclusive and look at the big picture. Respondents have highlighted the need to address the infrastructure situation in the capital and to allocate resources accordingly.

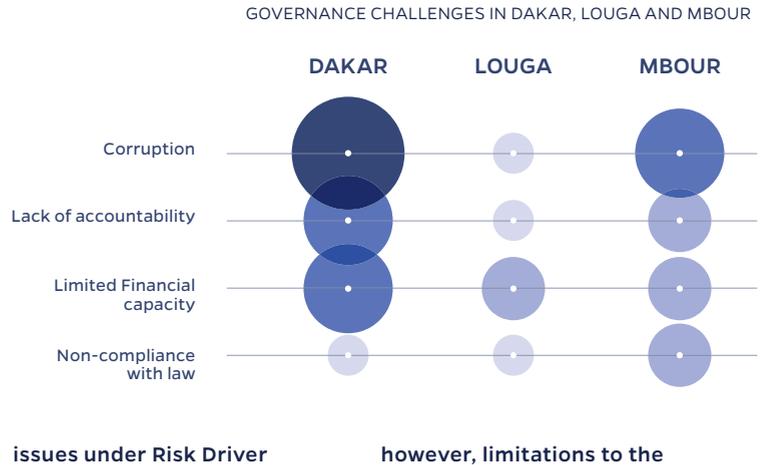
Local Perceptions on Risk Driver 4

Governance

Similar to Risk Driver 2, respondents across the three RTUs identified the same key issues under governance.

Corruption was a major concern in both Dakar and Mbour, as was lack of accountability. Limited financial capacity was a key issue across all three RTUs, and in fact in Louga it was the only issue identified in Risk Driver 4. Non-compliance with the law was specifically cited in Mbour as being a key concern, although no specific legislation was mentioned in this context. Governance issues were presented in the survey in general terms, and not necessarily linked to DRR-related concerns.

Respondents in Louga did not identify many governance



issues under Risk Driver 4, perhaps pointing to a disconnect between the federal government and more distant municipalities. As previously mentioned,

however, limitations to the data collected in Louga should be noted in terms of a lower number of respondents and less complete questionnaire responses.

CORRUPTION

Respondents indicated a crisis of confidence between the general population and government authorities, which they viewed as a hindrance to local development. Communities have organised themselves in local panels to raise awareness among local authorities and the population at large on citizens' rights and responsibilities. International organisations have facilitated the organisation of intercommunity dialogues, which are recognised as very effective and have played a role in raising awareness among the population related to the failures of current decision-making processes. Auditing and sanction processes that have been implemented by the national

government are considered to be somewhat effective, but a lack of transparency has limited the further involvement of the population. There is a national programme to reinforce capacities to fight against corruption, and since it has been framed under international norms, it is viewed as somewhat effective. Respondents cited corruption as a key reason as to why vulnerable communities have not received adequate attention.

2 LACK OF ACCOUNTABILITY

Respondents linked lack of accountability with a lack of transparency, evident in the local councils in particular with regard to account management. Overall, respondents explained that the population is not well informed. Some civil society organisations (FORUM CIVIL) are currently involved in the management and oversight of local accounts. The national government has developed a transparency and communications policy, assessed by respondents as very effective, but only for providing people with access to further information regarding roles and responsibilities in case of disaster.

The national government has undertaken several financial interventions, such as the creation of a line of credit (which was criticised for having little coordination mechanisms) and the control of financial/ credit institutions. Some income generation activities have been developed as well and are thought to be very effective. However, these fail to include most vulnerable groups.

International organisations have developed partnerships with local authorities. The Millennium Villages Project (PVM in French) was cited and considered very effective for its inclusion of people in the decision-making process. Other training initiatives have also been carried out, such as a training program on the importance of the rural tax. Overall, capacity building activities were valued very positively as a tool for empowering communities and community-based organisations.

3 LIMITED FINANCIAL CAPACITY

Respondents specifically cited limited financial capacity as a concern at the local level and stated that the local authorities do not have the capacity to assume the responsibilities required under the decentralisation framework, nor the financial resources to do so.

Communities in Louga have created banking cooperatives, which are considered to be effective and help to address the difficulties communities face in accessing credit, but need further capacity building. Partnerships between donors and local governments were viewed as very effective, but suffered from a lack of human resources in local government to manage funds and failed to reach a wide range of the population. In Louga the local government has put in place a local development plan, which respondents considered to be effective, although lacking sufficient knowledge of DRR.

Recommendations from

DAKAR

1

INCREASING KNOWLEDGE AND AWARENESS ON ENVIRONMENT AND NATURAL RESOURCES

- Increase and improve **KNOWLEDGE** specifically **RELATED TO FLOOD RISK**
- Promote a **CULTURE OF RISK AWARENESS AND PREVENTION** by implementing more awareness raising campaigns
- Strengthen **TECHNICAL CAPACITIES AROUND RISK MANAGEMENT**, including improved knowledge and usage of meteorological data, and putting in place a well defined and functional early warning system

2

BUILDING SOCIOECONOMIC RESILIENCE

- Strengthen **SOCIAL PROTECTION AT THE LOCAL LEVEL**, including **REVENUE GENERATING MICRO PROJECTS** for **YOUTH AND WOMEN**
- Identify **POTENTIAL EMPLOYMENT AREAS** and opportunities and provide related **SKILLS TRAINING** for **YOUTH AND WOMEN**

3

IMPROVING LAND USE AND THE BUILT ENVIRONMENT

- **RATIONAL USE OF LAND** and **REGULATE BUILDING IN RISK-PRONE AREAS**, including more diagnostic studies of these zones to better understand limitations due to risk
- **ADVOCATE FOR MORE ADEQUATE BUILDING AND PLANNING**, through workshops and studies

4

IMPROVING GOVERNANCE

- **FIGHT AGAINST** all forms of **POOR GOVERNANCE**, including more training for relevant persons on good practices in governance and risk management
- Create an **OBSERVATORY WATCH FOR GOOD GOVERNANCE** at the local level
- Increase **SUPPORT FOR ACCOUNTABILITY, SPECIFICALLY** at the local level
- Improve **LAWS RELATED TO DRR**, as well as **SUPPORT TO CIVIL SOCIETY AND MEDIA** for them to be more engaged and participate in constructive dialogues with decision makers, in order to improve the public's access to information

the RTUs

LOUGA

- **DISSEMINATE INFORMATION** through workshops and studies, and related **TRAININGS AND CAPACITY-BUILDING EFFORTS**
- Increase **KNOWLEDGE AND AWARENESS** around key serious issues
- Strengthen **CAPACITIES** around **PREVENTION, PREPAREDNESS AND RESPONSE**

- **IMPROVE FOOD SECURITY**, including support for the development of **QUALITY SEEDS**, improving **SOIL FERTILITY** and promoting **RURAL ENTREPRENEURSHIP** and self-sufficiency
- **REDUCE THE VULNERABILITY TO THREAT OF LOCUST INVASIONS** by making agricultural production systems resilient to locust risk

- Improve **LAND USE** and **NEW APPROACHES TO BUILDING, RAISE AWARENESS** and **IMPROVE PLANNING**
- **PROMOTE THE POAS** (*plans d'occupation et d'aménagement des sols*) in rural communities

- Address **GOVERNANCE ISSUES** specifically in terms of **RISK MANAGEMENT**
- **REINFORCE CAPACITIES AT THE LOCAL LEVEL** in the matter of risk management and climate change adaptation with studies, information dissemination, and training sessions
- Promote the **INTEGRATION OF DRR AND CCA INTO LOCAL LEVEL PLANNING**

MBOUR

- **INCREASE AWARENESS** and communication efforts with **TRAINING SESSIONS** and **ENVIRONMENTAL IMPACT STUDIES**

- Strengthen **PROTECTION OF LIVELIHOODS**, including promoting alternative livelihoods for vulnerable populations
- Increase access to **POTABLE WATER**, improve **HEALTH** and **HYGIENE**
- **FOCUS ON POPULATIONS MOST EXPOSED** to risk due to coastal erosion

- Increase access to **DRAINAGE AND WATER DISPOSAL SYSTEMS**
- Improve systems for disposing of **HOUSEHOLD WASTE**

- Increase **PUBLIC PARTICIPATION IN PREVENTION AND RISK MANAGEMENT**
- **REINFORCE LOCAL LEVEL CAPACITY**, focusing on training sessions, awareness-raising, and improved information channels



Key

CHALLENGES

The RRI research, while based on evidence gathered at the local level in the three RTUs, does point to certain patterns in terms of general findings and key challenges across Senegal. These include:

- Floods, insect infestation and drought are cited as the principle hazards across the country.
- Changes in rainfall patterns are the primary climate -related issue selected in all 3 RTUs– this is especially the case in Louga and Mbour, agricultural zones heavily dependent on rainfall.
- The highest number of issues selected across all three RTUs was under Risk Driver 2- Socioeconomic conditions, with a special emphasis on unemployment and poverty.
- Similarities between Dakar and Mbour (urban and urban expansion RTUs) in terms of number of issues selected, versus Louga (rural RTU), where a fewer number of issues were identified as serious overall, potentially indicate an increased level of awareness among residents in and near the capital.
- Similarities between Dakar and Mbour in terms of which key issues were selected (coastal erosion, limited access to land, overcrowded conditions, poor drainage systems, corruption, lack of accountability) highlight an increasing urbanisation trend and point to the particular challenges facing urban and urban expansion areas in West Africa.



DARA / Ana Rodríguez

- In Dakar there is a need to address Risk Driver 3 (land use and built environment), where a high number of issues were selected, indicating serious problems of infrastructure in the capital (poor drainage/water disposal, basic infrastructure, critical public facilities), as well as urbanisation-related concerns (overcrowded conditions, poorly built housing, housing in dangerous locations).

While Senegal has certainly made progress in integrating DRR and CCA into its national policies and plans, as evidenced by the creation of the DPC, the National DRR Platform, and other legislations and strategic documents, key challenges do remain, in particular in the area of mainstreaming DRR programming into development planning. In both the key issues identified

as being of concern in their communities, as well as in the recommendations drafted in the workshops, respondents in the three RTUs have indicated important areas where local, national, and international actors should target their efforts. In summary, these can be categorised as follows:

- 1** Challenges related to leadership, coordination and enforcement of laws and regulations, especially at the national government level.
- 2** Lack of human and financial capacity, particularly related to adequate funding and budget allocations at both the national and local levels.
- 3** Need for more knowledge sharing, awareness-raising, and dedicated studies and trainings related to disaster risk reduction at all levels.