



OECD Review on Risk Management Policies

Morocco

Key Findings



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BACKGROUND

This document summarises the analysis and recommendations in the *OECD review on risk management policies in Morocco*, carried out by the OECD Secretariat between December 2014 and May 2016 via the Peer Review process. It was undertaken in cooperation with three peers – international experts in risk management in OECD countries – and benefitted from the support of the Moroccan Ministry of General Affairs and Governance and the Moroccan Ministry of the Interior. In addition, it was partly financed by the Global Initiative on Disaster Risk Management (GIDRM), managed by the German international development agency, GIZ.

The analysis presented here takes a national and regional approach, and looks at the way in which policies have been implemented locally. It focuses on four risks that are regarded as high-priority, namely flooding, drought, earthquakes and tsunamis. It takes into account the entire risk management cycle (assessment, prevention and mitigation, response and management, and rehabilitation and reconstruction). The report details Morocco's exposure to critical risks, especially natural risks, and presents, in tandem with principal stakeholders, an assessment of risk-related policies, placing a particular emphasis on the issues of governance and inclusion.

The study emerged from a wide-ranging and inclusive dialogue (See inset). The results were made available to delegates at the OECD High Level Risk Forum and discussed during a final presentation to Moroccan authorities in May 2016.

A large and inclusive process in Morocco

The OECD study on risk management in Morocco examined a wide range of stakeholders, ranging from ministerial departments, institutions, public bodies, research institutes and universities, to the private sector and civil society. An event to celebrate its launch was held in Rabat on 10 April 2015, so as to present the objectives of the study and the approach adopted by the OECD Secretariat. A self-assessment questionnaire was then sent to the stakeholders in order to develop an initial vision of the risk management framework in Morocco. 89 responses were collected, 25 of which came from public central authorities, one from regional authorities, 57 from local authorities, six from economic players and one of from the civil society. Two exploratory missions – a central and regional one – sent OECD experts and peers into action. The first one was organised between 18 and 22 May 2015 and paved the way for encounters with a wide range of key players operating centrally. A second mission, which enabled an evaluation to be made of the implementation of national policies at local and territorial level, was run from 8 to 12 June 2015. In total, six territories with different risk profiles and vulnerabilities were visited: Tangier-Tétouan, subject to the risk of flooding and earthquakes, Agadir, subject to the risk of earthquakes and tsunamis, Rabat and Casablanca, containing a large part of the population and economic assets and subject to the risk of flooding and tsunamis, Haouz Province, subject to the risk of flooding and drought, and lastly, Kenitra and the plain of Gharb, also subject to the risk of flooding and drought. The preliminary results were presented for discussion during a national policy dialogue meeting, organised on 13 October 2015 in Rabat. The event attracted nearly 100 participants, representing various public bodies – from the private sector and civil society – involved in risk management in Morocco.

ASSESSMENT AND RECOMMENDATIONS

Significant exposure to critical risks

This study focuses on Morocco's most significant risks in terms of potential human and economic impact. These are flooding, drought, earthquakes and tsunamis, all of which affect numerous areas across the country.

- Different types of flooding can cause high numbers of human casualties (47 deaths in December 2014 in Guelmim Region, around 100 deaths during the Ourika floods of 1995), significant economic damage in the country's large urban centres (Tangiers, Casablanca, Agadir), a disruption of economic activity and damage to infrastructure (1bn Moroccan Dirhams' worth of damage during the Gharb floods of 2009, according to the Ministry of Agriculture).
- Drought regularly affects the country, causing major losses of agricultural GDP, which contributes up to 15% of national GDP, and severely affecting rural populations – who often have no other choice but to leave for outlying districts of large cities.
- The risk of earthquakes, although rare, affects two specific areas of the country: the north, which is currently experiencing strong economic growth, and Agadir Region, one of Morocco's main touristic centres. In 2004, the last major earthquake in the north claimed 600 victims and destroyed 12,000 homes in Al Hoceima Region.
- The risk of tsunamis has a much lower probability. Nevertheless, such disaster could have dramatic consequences for a large, densely populated and economically important area on the Moroccan coast.

Other risks (e.g. industrial, technological, or locust outbreaks) must also be considered in a national multi-hazard approach that would benefit from the sharing and pooling of methods and resources to tackle the different risks, and thus increase the effectiveness of public policies.

The Al Hoceima earthquake (2004) and Mohammedia floods (2002)



Source: Lemag.ma (2016) and Telquel (2014)

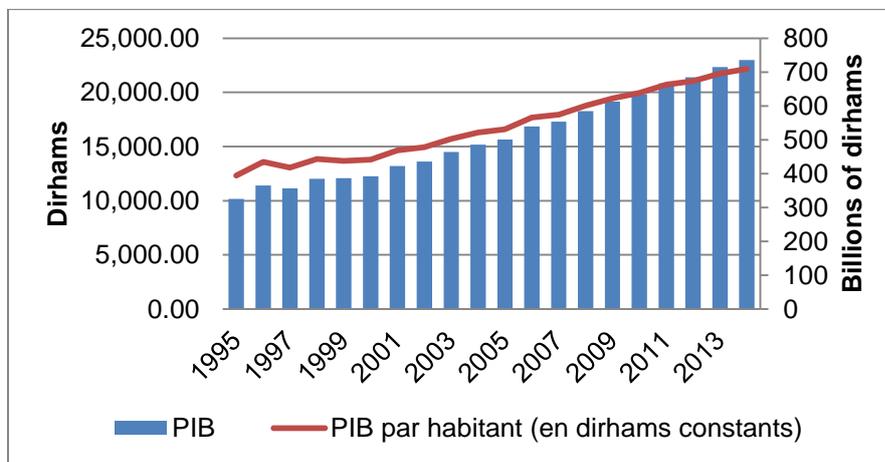


Accelerated growth accompanied by increased vulnerability...

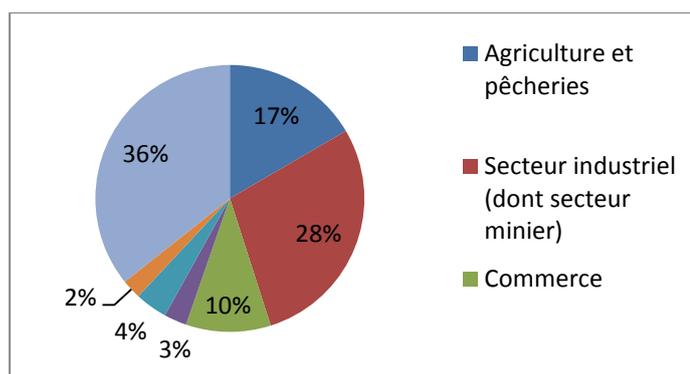
A high growth rate has been propelled, by increased domestic demand and public investment (nearly 5% increase was recorded during the 2000-2009 period). On the one hand, this growth has contributed to better Moroccans' well-being, especially through improved access to basic infrastructure (water, roads and electricity). On the other hand, the current international economic

backdrop has increased pressures on Morocco’s economic model. Indeed, its exposure to a series of shocks from 2008 onwards has contributed to increase the country’s deficit and public debt.

Changes in GDP and GDP per capita in Morocco (1995-2014)



Division of GDP by sector (2014)



Source: FMI (2015)

A greater exposure to critical risks and budgetary constraints will probably force the country to take decisions in favour of a more structured risk management policy that is also more preventive and inclusive.

According to the World Bank (2013), Morocco has a 90% chance of experiencing a disaster event causing losses of 10bn Dirhams within the next 30 years. This figure represents 1% of the country’s GDP in any given year. Such a shock would potentially have a negative impact on Morocco’s growth path and public finances, which have been weakened by the current economic situation. Failing to correctly anticipate such risk or to introduce measures to prevent it from occurring, could result in destabilising effects. The challenge for a successful risk management policy is, thus, to create the necessary conditions for increased resilience and to facilitate the smoothing of the economic and financial consequences of a major shock over time.

... which has become a key issue for public policy and governance

An effective risk management policy contributes towards maintaining confidence in institutions and building resilient development, in line with the Sustainable Development Goals (SDGs) and the OECD Recommendation on the Governance of Critical Risks, adopted by the OECD Council on 6 May 2014. In fact, this is an area of public policy where citizens’ expectations are particularly high.

While questions of inclusion, transparency and accountability have been at the heart of societal demands in Morocco in recent years, risk management constitutes a decisive issue.

The significant progress made by Morocco in economic, social, environmental and cultural fields represents an opportunity to address questions of critical risk in a more assertive manner. Human capital, financial and material resources are more readily available. However, the country is undergoing rapid transformations that are characteristic of fast-developing and emerging economies, such as urbanisation and littoralisation, and the increased geographical concentration of added economic value. If dominant trends, especially demographic ones, continue vulnerability to critical risks and the impact of adverse events will increase substantially. The issue of critical risks should therefore become a strategic priority in planning and governance efforts.

An ambitious critical risk policy: a “win-win” goal?

Incorporating risk management into public policy decisions creates opportunities:

- Risk resilience is featured in international development, well-being and competitiveness indicators.
- The country’s attractiveness as appreciated by citizens’ and investors’ partly depends on good risk management.
- The resilience of critical infrastructures and business sectors is contingent upon the quality of prevention and anticipation measures.
- Building risk management expertise can also become an exportable service (with Morocco as a regional service hub).
- A shared risk culture contributes towards societal cohesion and confidence.
- Investing in resilience has high returns: in the long term, the reduction of harmful consequences, a more equal share of risk between stakeholders, a better integration of technology, and international co-operation contribute to more sustainable economic development.

Recommendations

PRIORITISE RISK MANAGEMENT IN MOROCCO TO ACHIEVE SUSTAINABLE GROWTH IN THE SHORT, MEDIUM AND LONG TERM

The OECD Recommendation on the Governance of Critical Risks recognises that critical risks can manifest themselves quickly and unexpectedly; citizens, meanwhile, have high expectations when it comes to governments’ level of preparedness. In fact, the effective management of critical risks is a prerequisite to ensure the population’s well-being and the country’s competitiveness.

A more holistic approach to risk in Morocco would benefit from a favourable context at this unique moment in Moroccan history. The strong political will, the pursuit of economic growth, the development of major infrastructures, the ongoing decentralisation process and regulatory reforms, the strengthening of sector-based plans, as well as the organisation of the COP 22 meeting in 2016 provide unprecedented opportunities to pursue efforts to incorporate the “risk” dimension into decisions made by public authorities, the private sector and citizens.

GOVERNANCE OF CRITICAL RISKS: TOWARDS A NATIONAL STRATEGY THAT WILL UNIFY DIFFERENT EFFORTS

Over the past 20 years, Morocco has made considerable progress in understanding critical risks

Progress in institutional terms includes a legislative and regulatory body, the implementation of specific financial mechanisms, and the allocation of responsibilities to various bodies, and sector-based economic development plans that incorporate risk. This has gone hand-in-hand with numerous pilot projects that were spearheaded by the private sector, civil society and decentralised public authorities. During the OECD Peer Review in Morocco, nearly 45 examples of best practices were identified.

This move towards modern risk management has benefitted from an increased inclusion of Morocco in global value chains and from financial support and external skills. However, it stemmed mainly from the country's need to respond to a series of major adverse events. The response element, which manifests itself through the importance of emergency management, has consequently become the driving force behind this increased focus on risk management.

...but these efforts have not yet led to the adoption of an integrated response

Striking deficiencies in governance still remain, such as policies that are too sector-based, focused on a single risk, not sufficiently inclusive, using a top-down approach, or that favour an emergency response and structural approaches to risk prevention. The danger is not just general ineffectiveness and a scattered distribution of resources, but also that efforts made will not be able to properly bear fruit. An inappropriately executed or poorly understood allocation of responsibilities and resources to stakeholders prevents the emergence of a common strategy.

A gap analysis can identify vulnerabilities in the present management system with respect to the challenges involved in putting together a comprehensive risk management approach in the short, medium and long term, such as:

- A planning/anticipation timeframe that remains insufficient.
- Governance is not sufficiently cross-disciplinary, and lacks shared, clearly defined allocation of responsibilities.
- Sub-optimal multi-stakeholder co-ordination.
- Vertical integration with the regions, provinces and municipalities that require strengthening.
- Civil society organisations need to be given stakeholder status.
- A better allocation of resources between sectors, within the risk management cycle, and over different periods of time.

...or an insufficiently inclusive risk management policy

Various stakeholders have struggled to agree on the general goals of risk management. Consequently, the co-ordination and alignment of different initiatives with a common strategy remain insufficient. Despite the involvement of a large number of key stakeholders, criteria for evaluating the performance and consistency of their respective contributions have not been defined. This performance evaluation deficiency increases the difficulty of allocating risk management-related responsibilities and resources in an optimal manner to the various initiatives. There has been, however, a continuous improvement in the consultation process and the consistency of the legislative framework at the national level.

A significant legislative and regulatory body

Year	Legislation	Topic				
		Strategic coordination	Assessment	Prevention	Emergency management	Rebuilding / Recovery
1955	Dahir (King's decree) of 30 April 1955 on civil protection	•			•	
1995	Law n° 10-95 on water			•		
1997	Decree n° 2-97-176 of 15 December 1997 on the remit and organisation of the Ministry of the Interior			•	•	
2003	Law n° 11-03 on the protection and improvement of the environment			•		
2003	Law n° 12-03 on environmental impact studies		•			
2004	Decree n° 2-04-267 of 10 May 2004 approving regulations related to earthquake-resistant construction (RPS 2000)			•		
2009	Financial Law n° 40-08 corresponding to the 2009 financial year, establishing the Fund to Combat the Effects of Natural Disasters			•		•
2013	Decree n° 2-12-682 of 28 May 2013 modifying Decree n° 2-02-177 of 22 February 2002 approving regulations related to earthquake-resistant construction (RPS 2000, version 2011)			•		
2013	Decree n° 2.13.253 of 20 June 2013 and Decree n° 2.13.836 of 13 November 2013 on the remit of the Ministry of General Affairs and Governance	•				
2014	Framework Law n° 99-12 on the national environmental and sustainable development charter			•		
2015	Organic Law n° 111-14 on regions			•		
2015	Organic Law n° 112-14 on <i>préfectures</i> and provinces			•		
2015	Organic Law n° 113-14 on municipalities			•	•	
2016	Law establishing the insurance scheme for consequences of catastrophic events, and modifying and completing Law n° 17-99 on insurance codes (Draft)					•

Source: OECD

It is time to prepare for the risk management of the future

Since Morocco has now reached a relatively high level of critical mass in the field of risk management policies, it is now an opportune moment to capitalise on the current situation and prepare for the governance of the future. Because many risk-related public policy issues have a long-term dimension (urbanisation, water infrastructure, transport, energy, demographics, education and risk culture), the timeframe for risk assessments must go beyond the ones of usual sector-based plans, up to 50 or even 100 years. The impact of climate change or the occurrence of tsunami can in fact only be assessed over a much longer timeframe.

Aligning risk governance with current challenges and long timeframes requires the full mobilisation of available capacities. Stakeholders consulted in Morocco and OECD expert groups and peer reviewers strongly expressed that Morocco is now ready to deliver on high ambition levels and consequently build a governance framework at the service of an integrated risk management strategy combined with a long-term vision

Recommendations

BUILD A LONG-TERM VISION AT THE SERVICE OF AN INTEGRATED CRITICAL RISK MANAGEMENT STRATEGY

According to the OECD Recommendation on the Governance of Critical Risks, a national strategy for the governance of critical risks would identify and designate society's core capabilities for preserving public safety, sustainable economic growth, market integrity and the environment in the face of the detrimental effects of critical risks. It should also clarify roles for the management of the complete array of critical risks to which the country is exposed and pinpoint who is responsible for taking action to protect citizens and assets.

A long-term vision consistent with major sector-based strategies by 2030 will set down some grand principles for risk management in Morocco.

This will require the definition of the acceptable level of national risk, the role of the State and regional authorities, and multi-stakeholder forums for dialogue. Based on a shared risk assessment, it will set and rank the principal objectives with their follow-up and assessment indicators combined with a roadmap of actions. The definition of a level of protection for floods (a 100-year flood, for example), the "zero deaths" objective for earthquakes and tsunamis, and the economy's susceptibility to the risk of drought will likely constitute the main objectives of such a strategy.

Impart the status of national priority to risk policy via the assignation of a place in the institutional organisation chart that is representative, and give it a certain leadership.

To confer enough credibility on an integrated critical risk management strategy, the strategy needs to be identifiable high up – at least symbolically – in the country's institutional organisation chart. Depending on the country, this formalisation can be carried out via an Inter-ministerial Directorate, a High Commission, a dedicated ministry or even an inter-ministerial committee chairmanship.

Implement an institutional framework adapted to national governance with clear lines of responsibility, and covering the entire risk management cycle.

This will involve building on the existing situation by bolstering the two pillars of risk management in Morocco – the CVC for crisis management and the FLCN for the strategic allocation of preventative resources. The addition of a lasting and independent structure charged with risk assessment would fill an important gap. A body dedicated to assessing the implementation of the national strategy should also be designated, which will also guarantee proper accountability.

Modernise the regulatory framework in order to adapt it to current and future challenges.

The ongoing review of the legislative body and new laws must take risk management into account, such as the law on a compensation mechanism, the law on the coastline, the legislation relating to the Law on the charter for sustainable development, the revisions on the Law on water, legislation relating to critical infrastructure and the provision relating to town planning. In particular, a serious effort must be made to give a legal status to the planning prescriptions in zones that are susceptible to flooding or earthquakes, or exposed to the risk of tsunamis.

Coordinate risk management implementation with national sector-based development strategies by creating, where appropriate, links between regional and local echelons.

All development plans and sector-based strategies in Morocco will need to incorporate the concept of risk, referring to the national strategy for the governance of critical risks. Specifically, this will have to involve all territorial development plans, regional and municipal levels, and the country's various socioeconomic strategies. The implementation of the Law on sustainable development represents an ideal opportunity to incorporate this recommendation.

Establish and run a forum on which the broad lines of action as regards risk management can be debated and discussed, fostering engagement among citizens and civil society.

A neutral site will facilitate regular wide-ranging exchanges about lines of action between national organisations, elected representatives, communities, leading private-sector players and civil society. Such a forum could also be used to justify actions as regards the implementation of the strategy for the governance of critical risks. To this end, organising regular national debates and conferences focusing on risk would be an option worth exploring.

RISK ASSESSMENT: THE FOUNDATION OF A SHARED RISK MANAGEMENT POLICY

Risk assessment has developed significantly since the start of the 2000s...

Morocco has implemented single-risk assessment approaches, such as the Ministry of Water's efforts to assess flooding in 2003 and the seismic database launched by the Rabat Scientific Institute. These methods gradually developed into multi-risk approaches. The Ministry for the Environment published the first national risk atlas in 2008. This initiative was accompanied by the creation of a Geographic Information System gathering all of the data previously collected.

A large amount of scientific and technical expertise exists, but it remains fragmented. Tools (such as the risk atlas) and expert bodies (universities, institutes and research centres) need to be professionalised. This would involve ensuring that their funding can be sustained, their methodologies are standardised wherever possible, their gradation/scale and number of indicators become more detailed, and their databases are correctly archived and regularly updated.

One of the 40 VSAT stations set up by ING as part of the national seismic telemetry network



Source: ING (2015), *Principal Missions*, presentation delivered as part of an OECD study on risk management in Morocco.

Finally, a more advanced modelling attempt was recently carried out by the Moroccan Ministry for General Affairs and Governance with the support of the World Bank, and more recently the Swiss Cooperation. It enabled the creation of an integrated geographical risk assessment and modelling tool known as MnhPRA. However, its influence on practices appeared to be limited due to insufficient appropriation, communication, and training.

...But it does not allow for a comparison of different risk profiles or an arbitration of the allocation of resources...

The issues of methodology and time-horizon are crucial because various natural and associated risks have very different profiles (probability, localisations, and impacts). It appears that local levels of government (regions, provinces, and municipalities) have a heterogeneous understanding of their risks, lack analysis of potential disaster damages and have limited risk maps. As a consequence, the national risk atlas is not sufficiently consistent across the country, and it does not include damage analysis.

...and access to risk-related information should be the subject of an explicit data policy

The observed lack of coordination and data-sharing among data producers goes hand-in-hand with data-access difficulties for users. A large part of the risk information is either of scientific nature -with a research perspective - or of operational nature, in a dedicated tool owned by a public agency. This causes all or part of the risk information databases to be inaccessible to public decision-makers (such as urban planning agencies) or to private decision-makers (citizens and investors).

Therefore, Morocco's risk management needs to be formalised

The risk assessment process seems incomplete because numerous key players lack accurate risk information to make informed decisions, despite the development of efficient but under-used tools, especially at local level. It appears, therefore, that efforts made have not been replicated elsewhere, that the tools put in place have not been regularly updated, and that the appropriation of developed risk assessment tools has remained low. This points to a certain number of deficiencies in the risk assessment process in Morocco that need to be resolved; for example, the Ministry for the Environment's risk atlas does not cover vulnerabilities and potential damage.

In particular, deficiencies in risk assessment and risk mapping manifest themselves at local level, as they fail to inform policies relating to town/local planning, the development of risk scenarios for planning emergency resources, and the development of corresponding emergency response plans. Generally speaking, a risk assessment process should make all existing measures consistent and ensure that all risk information needs are met..

Tsunami risk assessment

Often absent from prevention policies in Morocco, tsunamis are nevertheless a very real threat to the country's major coastal cities, where the majority of the population and economic activity are concentrated. As part of its activities, the Royal Centre for Remote Sensing (CRTS) analysed various tsunami scenarios in Rabat, with the help of digital models generated by TIDAL software. Using that study as a starting point, the CRTS launched a pilot project on the risk of tsunami in Rabat, presenting hazard maps modelled on scenarios such as the Great Lisbon Earthquake of 1755 and a possible future land slippage in La Palma (Canary Islands). These maps incorporate the maximum height of potential waves at each point along the coast, as well as potential flood zones. Other indexes were produced as part of the study, such as the flood zone building vulnerability index, as were maps illustrating the damage levels for each flooded building. Damage levels are calculated by taking into account the height of the modelled wave and the category of building under consideration, following a methodology developed by the SCHEMA Project (www.schemaproject.org, financed by the European Commission).

Source: Interviews carried out by the OECD as part of a study on risk management in Morocco (May 2015)

Three approaches developed in OECD countries could inspire Morocco to move towards the establishment of a critical risk observatory.

- The creation of a loose partnership between the various scientific and technical institutions, based on the Natural Hazards Partnership model in the United Kingdom.
- The development of an independent risk observatory – like the National Risk Observatory in France – that would bring together data providers and information and users, including private companies, regional authorities and scientific institutions.
- The establishment of a dedicated technical institution within the Ministry for the Environment, the Ministry of General Affairs and Governance or the Ministry of the Interior that would provide risk assessment expertise and information, based on the CENAPRED model in Mexico.

Regardless of the selected institutional plan, the objective would be for the newly created body to be responsible for the risk assessment process in the country, collect risk-related data and information and make them available, develop methodologies and guidelines to ensure that risk assessments are carried out at different levels, and support the creation of an open and transparent national dialogue about risk, acceptable levels of risk, and the development of related standards..

Recommendations

ESTABLISH A NATIONAL RISK ASSESSMENT POLICY, SUPPORTED BY AN APPROPRIATE INSTITUTIONAL SYSTEM

Morocco's risk management strategy needs to be founded on national assessment.

This requirement is based on an OECD Recommendation on the Governance of Risks, which was strengthened by encouragement from the G20 during their meeting of 29 June 2012. The idea is to create a frame of reference in Morocco for all resulting decisions and policies (prevention, emergency management resources, rebuilding, financing, risk culture, and citizens' support).

As this recommendation is, at the same time, highly demanding, time must be given for it to be applied. The establishment of a risk observatory and the mobilisation of resources and methods would be among the top priorities.

Establish a Critical Risk Observatory, or an equivalent body.

A neutral hub should be put in place in an as yet undetermined form (observatory, national centre or institutionalised partnership), in order to provide the foundation for national and local risk assessment in a coordinated and prospective manner. As far as possible, this observatory would not just limit itself to natural risks but would also include industrial, technological and even anthropomorphic risks. This structure would steer methodological efforts, gather together the various elements, archive them and keep them up-to-date, and ensure a smoother flow of information between different stakeholders.

Combine university and technical expertise, and rally experts in the Moroccan scientific community to assess risks through a public research programme.

This programme would involve, in particular, the development of an exhaustive database of losses and damages caused by disasters, the mapping of areas in spate in Morocco for different return periods, the seismic micro-zoning of areas that are most at risk from earthquakes, the mapping of tsunami risks along the entire Moroccan coast, and the observation of trend changes or the prospects of locust infestations, as well as industrial risks and listed buildings across the country.

Develop national risk assessment standards.

The implementation of the principals (integration, territoriality, prevention) and the mechanisms of Article 8 of the Framework Law on environment N°99-12, for example, will entail hazard, risk and impact studies being harmonised at national and then territorial level. Consequently, the issues of methodology and standards cannot be ignored.

Develop risk mapping at territorial level, with up-to-date records and capacity building programmes in tandem with regional authorities.

This involves developing an incentive framework for risk assessment at local and regional level, as well as corresponding methodologies and guidelines. A capacity building programme should also be established for this purpose, for regulatory aspects and assessment methods as well as hazard/risk knowledge.

Once that the expertise and tools have been solidified, access to risk-related information should be subject to an explicit data policy.

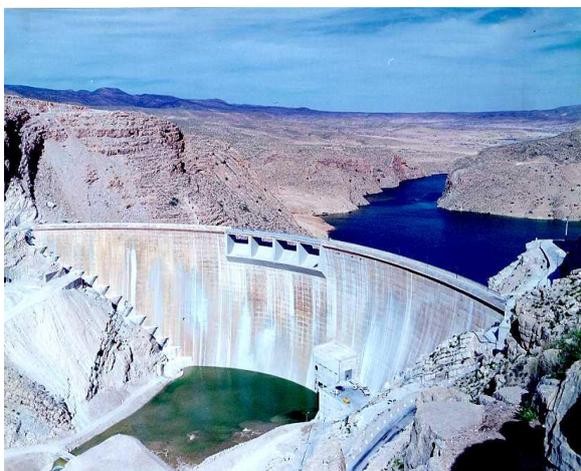
In fact, the observed lack of discussion and coordination among data producers goes hand-in-hand with user access problems. A data policy would enable indicators (and their definitions), primary collectible data, and archiving and formatting conditions to be determined. It would also clarify who has access to which data, under which conditions and for what usage.

RISK PREVENTION: ADDITIONAL EFFORTS

Risk prevention: a developing policy in Morocco that is focused on water

For many years, investments in structural prevention measures have been primarily concentrated on water infrastructure. An examination of Morocco's risk prevention expenditures across various programmes shows that the vast majority tends to finance water-related infrastructure (approximately 90% of expenditures). A large dam policy, adopted in the 1960s, was aimed at developing irrigation, as well as other water uses. Since then, several large dams have also been built following significant flooding.

Aerial photographs of the Hassan II and El Wahda dams



The Hassan II dam (left), built in 2000 for irrigation, drinking water and flood control, protects the Oued Za valley. The El Wahda dam (right) was built in 1997 for energy, irrigation and flood control. It is part of the protection system for the Gharb Valley and provides irrigation water for close to 100,000 hectares of agricultural land.

Source: Minister for Water (2006)

This policy continues to this day; the construction of seven new dams has recently been launched, while the National Water Plan's investment plan runs until 2030. The policy is also consistent with the significant investment planned for the 450 km north-south water transfer, which would feed the river basins under water stress for the Rabat, Casablanca and Marrakesh regions.

Flooding was an issue of serious concern in the 2002 National Flood Prevention Plan, which had identified 391 at-risk areas, including 50 priority locations. This programme had a significant investment plan for structural measures for both containment and embankment protection.

Today, questions are arising about the limits and the marginal returns of the dam building policy. Building dams tends to be increasingly costly as are their maintenance costs, the potential effects of climate change brings deep uncertainties regarding water resource availability in the future, and the efficiency of dam building for flood management can also at times be questioned.

Non-structural measures are diverse but limited in scope

Morocco's risk culture has long been based on the memory of past events such as the Agadir earthquake in 1960, which is enshrined in the collective memory of populations living in the area. However, this collective memory remains weak in sites that have not suffered recurrent disasters and in rapidly urbanising cities. Awareness, information and communication about risk have been neglected, despite a number of pilot programmes; opening the civil protection barracks on March, 1st

every year, distributing brochures in schools, running a seasonal forest fire campaign, raising awareness among elected officials. There is still no regulatory framework that requires local governments to inform local populations about their potential risk exposure.

A critical issue in risk prevention relates to urban planning and land development: existing urban planning documents do not include the question of risk beyond basic information. The Urban Development Master Plans are long-term references for urban planning at the local level, which were developed in absence of risk mapping in many cases. Although the Hydraulic Basin Agencies and the Urban Agencies provide mandatory notices to local government, the lack of precise and legally valid risk mapping remains a key obstacle to the implementation of non-structural preventive measures.

Making local agencies responsible is necessary for improving prevention policies...

Strengthening prevention through co-construction and responsibility sharing across stakeholders at the local level will help move beyond structural measures, which are costly and are now reaching their limits. Non-structural measures shared locally by interested parties are an essential condition to implement prevention efforts, while moving beyond current top-down approaches. If such a locally-owned approach starts to emerge through policy instruments –such as the community action plan or the requests for FLCN projects -, it will be important to formalise it further to increase and ensure better control for the effective implementation of local prevention policies.

The current process of regional reform and decentralisation offers new opportunities for an improved integration of risk management into urban planning documents..

...as is increased awareness and clearly articulated responsibilities for individuals and businesses

Strengthening the risk culture by raising awareness, running campaigns targeting populations, businesses and local agencies, is a key way to foster a locally-owned risk prevention approach. These programmes could be developed within a national campaign to train public officials and to ensure that risk policies are well understood nationwide. Further training opportunities within the education system, the media and existing associations should also be part of an ambitious awareness policy.

Business resilience does not only involve large systems and infrastructures. The location of industrial districts within high-risk areas in Casablanca resulted in losses for almost 200 industrial companies of all sizes in 2009. Since relocation is a very costly proposition, a prevention policy would be more effective, most importantly for small and medium enterprises. Some initiatives led by professional organisations, such as conferences on risk management organised by the General Confederation of Businesses in Morocco, should be strengthened. However, economic development initiatives led by public authorities (e.g. the promotion of industrial districts in the Industrial Development Plan) have largely ignored the question of risk.

The significant impact of flooding on critical infrastructure

In November 2014, almost all the cities of Sidi Ifni province became disconnected from the national road network following floods. This complicated significantly rescue efforts and forced authorities to organise supply through the sea. The risk of drought can also have consequences on the water supply. This was the case during the 1995 drought, when the city of Tangiers had to be supplied by tanker ships. Despite considerable efforts by the Ministry of Public Works, Transportation and Logistics, an increase in the levels of prevention and infrastructure network coordination is still needed to strengthen resilience and prepare for critical risks.

Beyond critical infrastructure, a specific policy should be dedicated to the resilience for registered industrial installations, where accidents could lead to large disasters. The regulatory framework for these installations is determined by a practically unchanged 1914 Dahir regulating unhealthy, impractical or dangerous establishments (Official Bulletin n°97 of 7 September 1914). This is causing

Morocco's risk studies, certification procedures, and inspections and monitoring of installations to be highly inadequate. Examples of policies supporting critical infrastructure resilience in Finland, France, the United States and the United Kingdom could serve as models for Morocco on this subject.*

The risk of tsunamis is still not sufficiently accounted for

A tsunami could have significant consequences for Morocco and cause long-term negative effects on its economy and society. Tsunamis are rare, but previous tsunami had major impacts on Portugal, Spain, and Morocco (1755). Today, given the importance of coastal activity, a tsunami would be the worst-case scenario for Morocco. Smaller-scale events, such as strong sea swells, should also not be overlooked, as their consequences could be significant for ports and marinas. A discussion on this risk raises the question of the ocean's role in Morocco's future developments. At what point and under which conditions should the country's economic development being based on the ocean economy? And what is an acceptable level of risk?

In the medium and long term, prevention financing remains vulnerable until it is made permanent

The total amount of prevention expenditure in Morocco is difficult to estimate because financing sources are diverse: sector-based plans, infrastructure, and funds specific to ministries all provide prevention funding. A short-term extension of resources will be made possible by a loan from the World Bank for 2016-2021. At the same time, strengthening non-structural prevention measures also depends on decisions that are weighed against structural measures. In the longer term, balancing resources with prevention needs could prove difficult, and more permanent financing should be sought, specifically for the Fund to Combat the Effects of Natural Disasters (FLCN).

Estimates of primary means of financing for risk prevention in Morocco

Name	Managed by	Targeted Risks	Examples of Prevention Measures Financed	Programme Total	Amounts Allocated to Prevention
Green Morocco Plan	Ministry of Agriculture and Maritime Fishing	Drought	Support for grain production conversion National irrigation water conservation programme	20 billion Dirhams 37 billion Dirhams	30 billion Dirhams 37 billion Dirhams
		Climate Risk	Crop insurance Incentives from agricultural development funds	250 million Dirhams annually Not communicated (NC)	250 million Dirhams annually NC
		Extreme temperatures and hail			
PNPI	Minister for Water	Floods	Flood protection projects	25 billion Dirhams	7.6 billion Dirhams
Fund to Combat the Effects of Natural Disasters	Ministry of the Interior	All	Flood protection projects in 6 high-risk provinces, Western Casablanca Super-Collector Project (SCO)	200 million Dirhams annually	NC
Liquid Sanitation and Wastewater Treatment Funds	Ministry of the Interior	Floods	Improvement of overall coordination, development of water removal systems	714 billion Dirhams (2016)	NC
Housing and Urban Development Funds	Ministry of Housing and Urban Policy	Earthquakes, Floods	Removal of unsanitary housing, at-risk housing, preventive housing activities	2 billion Dirhams (2016)	146 165 Dirhams
City Without Shantytowns Program	Ministry of Housing and Urban Policy	All	Eradication of shantytowns	32 billion Dirhams	NC
Special funds for the promotion and support of civil defence	Ministry of the Interior	All	Prevention programmes	200 million Dirhams annually	75 558 Dirhams
Rural Development Funds	Ministry of Urban Affairs and Planning	Earthquake, Floods	Preparing urban planning documents and structural plans Prevention programmes	1.3 billion Dirhams annually 200 million Dirhams annually	NC
National Forestry Funds (FNF)	HCEFLCD	Management of catchment basins, anti-desertification activities			NC

Source: OECD

Recommendations

ESTABLISH A PERMANENT PREVENTION POLICY TO IMPROVE THE CURRENT STATE OF AFFAIRS AND STRENGTHEN LOCAL PROGRAMMES

OECD's recommendation on the management of critical risks insists on the need to make all parties involved aware of critical risks, giving them incentives to invest in risk prevention and mitigation. To do that, a societal approach to communicating risk must be encouraged, including a dialogue between the public sector and interested parties to manage targeted communications, incentives and tools to help those involved work better together.

Preserve and reinforce prevention financing via the FLCN, prioritise funding and activities and emphasise the dissemination of best practices.

Developing a dashboard that compiles all risk prevention expenditures will help ensure the best prioritisation for funding based on risks and regions, as well as a more detailed evaluation of each agency's contributions and their effectiveness. The incentive approach of FLCN's call for plans should be reinforced with an ongoing financing mechanism and progressive integration of selection criteria based on cost-benefit analysis.

Improve the way in which priorities are balanced between structural and non-structural activities to optimise investment and use of public funding.

Updating the Junior Minister for Water's national flood prevention programme must highlight the evolution of priorities for flood risk and integrate the perspective of climate change. It is important to better combine structural approaches – which have been the priority until now – with non-structural approaches related to specific vulnerabilities that have come to light and to catchment basins.

Initiate a national risk communication campaign focused on local responsibility.

A communication strategy on multidirectional risks should be built on the basis of improved understanding of risks. It should target local decision makers and provide them with specific information about the risks their regions are subject to and measures to be taken to inform local residents.

Strengthen private sector preparation.

This strategy also encourages improved awareness by businesses, specifically small businesses, about the issues involved in continuing operations. There are many possible approaches to this strategy: sharing experience, information sharing in clubs, self-assessment using a guide, the promotion of "contingency plan" insurance policies, financial incentives from the public sector, or just simple preventive measures (elevating the electrical system, removing motors, machines and computer systems, drills, adding an escape hatch in the roof for tsunamis, etc.)

Improve integration of resilience into regional and urban development through transparent and opposable zoning policies.

The creation of maps of urbanisation capacity and the inclusion of those maps into urban and regional planning documents will highlight the issue of risk in community action plans (CAPs). Developing resilience models will allow innovative solutions to be tested and provide examples for the entire country. Strengthening regional communities' prevention capacity will be a cornerstone of this strategy. Empowering and training the construction sector in improving urban resilience should be considered.

Establishing a partnership with crucial infrastructure operators will include them in managing critical risk.

Strengthening the resilience of crucial infrastructure when faced with critical risks will require the development of a dedicated partnership between operators and government agencies. Public-private partnership agreements or regulations of critical infrastructure sectors must include specific clauses for continuity of operations in critical or vitally important industries.

Reflect more actively on prevention related to the risk for tsunamis.

Faced with this low-probability risk that can result in very significant damage to the country, a national programme for tsunami risk prevention should be initiated based on a deeper reflection about the country's coastal development.

EMERGENCY MANAGEMENT: SHIFT INTO OVERDRIVE

A system that is developed progressively and adapted to local emergency management needs

Increased attention has been given to emergency management since 2000, as disasters demonstrated the inadequacy of funding, limited capabilities and too long time for intervention with respect to emergency needs on the ground. Civil Protection has seen its funding and level of professionalism strengthened. The creation of the Monitoring and Coordination Centre (CVC) in 2008 under the Ministry of the Interior strengthened the existing framework by providing a mechanism for crisis management and decision-making in real time.

This system is based on subsidiarity and a centrally coordinated chain of command with regional representatives. The Civil Defence Administration prepares the Master Plan for Risk Analysis and Coverage (SDACR), which plans emergency resources and capabilities for the national and regional levels, based on its risk analysis. Emergency response is based on a generic multi-actor Emergency Response Plan that also includes regional specificities with specific plans for specific risks. Warning, communication and information sharing systems are gradually improving thanks to better coordination. The capacity to scale-up response, inter-agency coordination and cooperation is being strengthened with high-level national centres (e.g. INSARAG certified) to support vulnerable sites on a more regional basis.

A Civil Defence Unit Receives INSARAG Certification



In October 2014, Morocco became the first African country to have one of its Civil Defence units fulfil the criteria established by the International Search and Rescue Advisory Group (INSARAG) and be certified as an Urban Search and Rescue team in the “heavy” classification. This certification means that the unit will be a part of international activities of civil defence forces under the guidance of the United Nations. It , but will also facilitate foreign assistance in the event of a large-scale disaster on Moroccan soil.

A Moroccan Civil Defence detachment from Salé, including close to 120 people, successfully participated in a mock earthquake exercise in October 2014 in Epeisses, near Geneva. This specialised unit is comprised of a search and rescue operations management team, four rubble rescue teams, four technical search teams, four canine teams, four medical teams and an operational logistics technical team. “Heavy” classification USAR teams have an operational ability that allows them to conduct complex search and rescue operations, especially in urban environments with collapsed or weakened structures. They must provide the equipment and personnel necessary to intervene continuously in two distinct locations for 10 days, domestically or internationally. This certification is the crowning represents an achievement of Morocco’s efforts to strengthen Morocco’s Civil Defence capacity, which have been ongoing efforts since 2008 to strengthen its Civil Defence capacity, including with the support of Swiss Cooperation since 2008. This has involved included 206 training sessions on varied subjects, including crisis management, search, rescue, logistics and medicine.

Source: Interviews conducted by OECD for the Study on Risk Management in Morocco (May 2015); INSARAG (2012), INSARAG External Classification/Reclassification Handbook, 2012 Edition; MAP (20114), “Disaster Management – Morocco Becomes First African Country to Meet UN Standards,” Le Matin, October 29, 2014, <http://www.lematin.ma/express/2014/gestion-des-catastrophes-le-maroc-premier-pays-africain-a-se-mettre-aux-standards-de-l-onu/211358.html>, reviewed November 2, 2105

In the meantime, response resources still seem too limited for large or very large-scale crises

Civil Defence human resources (approximately 8,000 people, or 0.25 per 1,000 individuals) are still relatively limited and it is often necessary to call on the Royal Armed Forces and other security forces for assistance in critical risk situations. The Ministry of Public Works plans for and uses its own means of intervention to ensure the continuity of infrastructure services for which it is responsible. The health sector, despite contingency plans, seems largely under-prepared if a critical risk were to occur. In this context, coordination between organisations is essential to ensure that areas that are under-prepared do not weaken the response overall effectiveness.

Multi-Agency Crisis Management Approaches of the Ministry of Public Works, Transportation and Logistics

The Ministry of Public Works, Transportation and Logistics (METL), tasked with government policy in the areas of roads, ports, maritime, air and rail, implemented a dedicated crisis management structure in 2010 known as : the “High-Risk Situation Management” Division. This agency is tasked with leading and coordinating the response among the Ministry’s various operational agencies, as well as with the various different organisations for which it provides under its leadership, such as the National Railways Authority (ONCF), the National Airports Authority (ONDA), the National Ports Authority (ANP), and the Moroccan National Highway Corporation.

The “High-Risk Situation Management” Division provides regular follow-up on warnings related to weather, informs central government services about the state of infrastructure on a real-time basis, and provides communication on power cuts to various agencies. If infrastructure is impacted, it can become involved efficiently in become involved in notifying and organising contingencies if infrastructure is impacted, and then carry out temporary work to restore that infrastructure. For flood risk to the highway network, the Division uses an early warning system called “Inforoute,” that which allows it to gather information in real time on possible incidents, and disseminate information share it among within the Ministry and its related organisations so that an intervention can take place.

The Division is also part of the larger coordination approach organised by the CVC: it is a member of this structure, where it represents the Ministry in the CVC crisis group for emergencies.

Source: Ministry of Public Works, Transportation and Logistics (2015), Prevention and Management of Flood Risk within the METL, presentation for the OECD Review on risk management in Morocco, June 6, 2015, Rabat; KPMG (2013) Report on Definitions, Current State of Affairs and Diagnosis, study for improvement of the current crisis management system for the Ministry of Public Works, Transportation and Logistics, KPMG.

Some critical risks remain insufficiently addressed

Just as a longer time horizon must be sought for risk assessment, emergency planning efforts should consider scenario of lower probabilities and higher potential damages.. It seems that there is not yet an emergency plan for the risk of a tsunami, for a significant earthquake affecting a large portion of northern Morocco or for two simultaneous large floods in two widely separated areas of the country. These more extreme risks regularly occur in other countries, and Morocco cannot afford not to plan for them.

Warning systems have been strengthened but coverage remains insufficient...

For example, for floods, only 60% of catchment basins are equipped with a telemetry system to measure water depths and flow rates for meteorological flood warnings. The system of tidal gauges and buoys for surges and tsunamis is not sufficient, nor is the integration of real-time satellite images for monitoring and warnings.

A unified information and telecommunication system for emergency response agencies with a dedicated channel and the use of social media to inform individuals are additional ways to improve

crisis communication. Social media is widely used in Morocco, which creates a strong potential for further improvements in this area.

Early Warning System for Floods in the Ourika Valle



A major tourist site, the Ourika Valley was hit by violent flooding on August 17, 1995, resulting in 242 deaths, affecting 35,000 people and causing over \$9 million in damage. These floods significantly slowed the development plans for the area in 1999. To limit potential human and economic losses when flooding occurs again, local authorities have decided to install a flood warning system in the Ourika Valley.

With the assistance of the Japanese International Cooperation Agency (JICA), the Ourika Valley was provided with a Flood Prevention and Warning System (FPWS) in 2001, consisting of 5 observation stations, 2 data transmission stations, 4 monitoring posts and a warning post located at Ighref. Since 2007, the Hydraulic Basin Agency (ABH) in Tensift has also taken part in this project by financing the extension of the telemetry network to 16 sites, including 3 pluviometric and 13 pluviometric and limnometric sites. The Ourika Valley FPWS played a successful part in the detection and warning for ten floods between 2003 and 2012. During the 2014 floods, which affected Al Haouz Province, no loss of life occurred despite some property damage. In addition to providing an efficient early warning system, this project has connected local populations with emergency procedures. Now, when flooding occurs, many local volunteers are tasked with warning tourists, keeping them informed and helping them evacuate.

Source: Interviews conducted by OECD for the Study on Risk Management in Morocco (May 2015); Tensift Hydraulic Basin Agency (2015), “Management of Risks Associated with Floods – Early Warning System for Floods in Tensift Basins – Al Haouz Area Case,” presentation during meetings conducted by the OECD Secretariat during the Peer Review, Tahannaout, 2015

...justifying increased involvement of civil society and communities

Crisis simulation exercises are driven by strategic, tactical or operational plans, particularly with international partners. However, they are infrequent and not sufficiently inclusive. Morocco has a high volunteer capacity for emergency services due to a strong associative culture. Mobilising this volunteer spirit and adopting a positive attitude to emergency services would help improve the country’s risk management culture. This capacity should be cultivated and strengthened, including through the clarification of volunteers’ status, training and certification. International partners have already shown their readiness to support these efforts.

On a qualitative level, vulnerable groups are likely to become more diverse in the coming years. These groups, including the elderly, chronically ill, handicapped, tourists, and in-transit immigrants, will require special assistance and specific responses.

Recommendations

MOVE INTO OVERDRIVE AND RAISE THE LEVEL OF PREPARATION FOR MAJOR CRISES

In its recommendation on critical risk management, OECD states that crisis management capacity must be developed through coordination of resources at the level of the national government and its agencies; strategic crisis management capacity must be implemented to confront crises caused by unusual and unpredictable risks; necessary skills and means must be mobilised to strengthen emergency response capacities; volunteer groups must be supported on the local level.

Strengthen the Monitoring and Coordination Centre (CVC) by coordinating with warning systems and critical infrastructure.

Activation of the CVC can increase in efficiency as warning systems become more widespread and professional. Similarly, when critical infrastructure operators become part of a network, it will be easier to mobilise them both as potential victims to be protected and as resource centres. To do that, CVC's structure must be strengthened in connection with the current programme of territorial reform.

Pursue the coordination of means and strengthen emergency response capacity in accordance with national risk assessment.

A holistic evaluation of all available means for emergency response in Morocco must include making them a part of national risk assessment so that high-priority gaps that need to be filled can be identified. At first, it is possible to target priority areas such as high-density population areas or areas that become vulnerable at certain peak tourist periods, as well as less well-covered risks.

Continue to strengthen the country's early-warning system, specifically for floods and tsunamis.

The meteorological early-warning system must be connected to the development of more precise warning messages for communities and wider dissemination of these messages to interested parties. The coverage of at-risk catchment basins by automated flood warning systems could be a part of this process, as could the completion of a tsunami warning system, associated with education about actions to take in case of a warning.

Develop inter-agency emergency plans based on principal risk scenarios at the national and regional levels.

To do this, the various regional emergency plans must be reviewed based on identified best practices and regularly updated and tested using multi-agency exercises. This also requires the development of an emergency plan for tsunamis, for a major earthquake in northern Morocco and in Agadir, and for two simultaneous significant floods in northern and southern Morocco. The creation of a coordination manual for crisis management specifying the roles of the various parties involved will allow a review of coordination structures to be implemented at the local level and to define leadership roles below the Wali level.

Develop an active strategy for crisis information and communication using new technologies, particularly social media.

The development of an information and communication system that is shared by all agencies involved in crisis management is one of the essential non-structural measures to be taken. The use of social media by agencies to communicate with individuals and disseminate local information will significantly strengthen Morocco's crisis communications.

Encourage the development of volunteer groups for crisis management by developing the status of volunteers.

The role of volunteer groups in crisis response must be strengthened in Morocco as an adjunct to government agencies at the local level in the event of a major crisis. Their closer proximity and in-depth knowledge of the area will enhance emergency response. A statute specifying their legal form, involvement and responsibilities along with a training programme will ensure this sector's development.

Strengthen international cooperation activities in emergency response

International cooperation between emergency response organisations must be pursued to strengthen the coordination abilities of international and regional partners in the event of a crisis. Reflection on methods to receive international support must lead to the establishment of appropriate procedures.

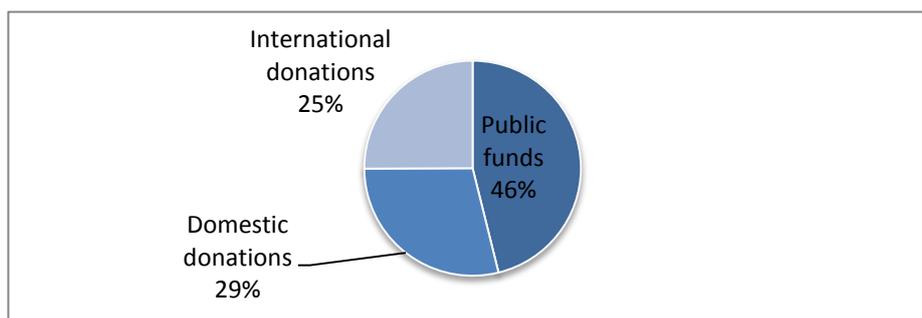
RECOVERY AND RECONSTRUCTION: SHOULD FINANCING BE CONSOLIDATED?

How can the traumatising consequences of major events be limited?

Minimising individuals' and businesses' impacts in economic, social and psychological terms largely depends on how quickly services can be restored. Medium and long-term traumatic consequences for individuals, families and businesses will be minimised based on the response's speed and adaptation. However, speed should not be synonymous with improvisation. . Important decisions must be made in real time and must therefore be adequately anticipated. The risk of inadequate planning is that those affected (individuals, businesses, municipalities) rebuild in the same way and in the same location in the midst of a flood or seismic zone. Since 1960, Morocco has demonstrated in Agadir that it is taking this particular issue into account. It is also one of the major challenges that prompted the promotion of the "Build Back Better" concept by the OECD and the United Nations. In addition, this is one of the potentially "positive" aspects of destruction/reconstruction, as it can lead to better, more sustainable and less vulnerable buildings.

Governments are often at the forefront of the reconstruction process, including rebuilding public infrastructures. Gradually, Morocco has been able to move from a reactive response (budget amendments, requests for international aid) to the creation of dedicated mechanisms and insurance solutions with or without the market.

Recovery and reconstruction financing sources for the Al Hoceima earthquake in millions of Dirhams



Source: Sehimi, M. (2014), Construction Sites for a Billion, Maroc Hebdo, May 8, 2014, <http://www.maghress.com/fr/marochebdo/118431>, reviewed February 19, 2016.

...By taking the first steps toward the implementation of financing mechanisms...

The establishment of the Fund to Combat the Effects of Natural Disasters (FLCN) in 2009 allowed the government to provide funding for emergency response, recovery and reconstruction. The government contributes 200 million Dirhams annually to the fund, which is also used for prevention efforts. The flexible rules regulating the use of this fund provide financing based on the type of emergency, reconstruction and prevention needs.

FLCN Financing (2009-2016)

Employment programme for 2009-2012	
Grants from Saudi Arabia	861 MDH
Hassan II Fund for Economic and Social Development	280 MDH
General Government Budget	800 MDH (200 MDH annually between 2009 and 2012)
Financing for the period 2013-2016	
General Government Budget	800 MDH (200 MDH annually between 2013 and 2016)
Hassan II Fund for Economic and Social Development	20 MDH (in 2013)

Source: Ministry of Economy and Finance, Report on Special Treasury Accounts, Ministry of Economy and Finance, 2012, 2013, 2014, 2015

A more streamlined approach to available financial instruments for reconstruction or compensation has also been established, along with the development of insurance schemes. Mostly consisting of government subsidies for the agricultural sector, these insurance mechanisms provided Morocco with experience in building tools that combine both principles of mutual insurance for those who can access them, and aid for those who are unable to access insurance.

Agricultural Land Irrigation in Morocco



Source: Afrique7 (2015)

...By implementing innovative approaches with the assistance of insurance mechanisms...

This combination of insurance and aid principles can now be extended (Law 110-14) to individuals and their property. This Law also extends the compulsory insurance spectrum. As it is the case in other countries, the long-term benefits of such a policy will occur when they encourage behavioural changes, while avoiding the moral hazards that can be caused by providing too much assistance.

...And taking into account continuity in business activity...

Similarly to other countries, Morocco's informal sector, including craftspeople, merchants, transportation companies, small industries or subcontractors, and small service companies are often poorly prepared and insured for natural or industrial disasters. This issue has already been examined by the Central Guarantee Fund and a section of the Fund to Combat the Effects of Natural Disasters.

Concerning the financial contingencies borne by the government and its various ministries, particularly pertaining public infrastructure damage, an integrated risk management strategy could also include dedicated financing tools and the possible transfer of such risks. Ultimately, this would settle the question of establishing a system dedicated to the risk of significant losses for the government's budgetary resources in the event of a major disaster.

Better define the financial responsibilities of public financing in advance.

What amount of compensation should be included in a budget amendment compared to a fund to be annualised to allow absorption of prevention and reconstruction costs?

Part of the answer lies in the amount of spending that the Moroccan government channelled to finance recent disasters, and the jolts that these costs have triggered. The use of the MnhPRA model for assessing damage to public infrastructure could allow different hypotheses to be tested to evaluate the suitability of various mechanisms for covering damage.

Recommendations

CONSOLIDATE AND STREAMLINE NATURAL DISASTER FINANCING SYSTEMS TO PROMOTE RESILIENCE

OECD's recommendation on critical risk management advocates for the development of government's ability to define plans for recovery and reconstruction by taking advantage of economic opportunities, reducing vulnerabilities to future events, and strengthening long-term resilience. As far as financing, the budgetary impacts of crises should be planned for using clearly established public finance mechanisms, strengthening efforts for reducing the impact of critical risks on public finance and developing compensation rules for damage and loss.

Based on finance mechanisms already established in Morocco for recovery and reconstruction (as well as prevention), consolidating existing tools and fine-tuning financial strategies can adjust resources to needs over the medium and long term.

Establish permanent public financing for critical risks.

There is a close relationship between a country's acceptable level of protection in the medium and long terms (number of deaths avoided, benchmark flood, seismic scale, etc.) and the need for investment in prevention, crisis management and reconstruction. For that reason, an optimal outcome can be achieved by appropriate preparation and decisions made at the highest levels, following simulation of needs and possible financing means.

Use evaluation to better estimate future financial needs.

Improved advance understanding of risks, damage and their geographic distribution, as recommended for evaluation and prevention (in addition to the risk atlas and based on Desinventar), is a preliminary condition for the estimation of financial need and for the optimal division between various budgetary and other resources. The MnhPRA model, or its equivalent, may provide significant assistance in assessing damage and testing various financing hypotheses. To do that, such models must be powered, calibrated and updated with pertinent data and comparisons. That is why the issue of data is important.

Pool budgetary mechanisms for compensation, using clear rules established in advance concerning the use of public funds.

The creation of FLCN in 2009 must be followed by including the necessary flexibility in emergency priorities, with transparent prioritisation rules based on cost-benefit analysis for bid requests. FLCN has proved its success and its worth. The more it is known and appreciated, the more its services will be requested. Beyond the question of its means, the way in which competing projects are negotiated must be explained and justified. Below a certain amount, it may be possible to decentralise these negotiations to the local level. That is why the rules, specifications and evaluation methods must be coordinated and understood.

Consolidate and extend the insurance system for the agricultural sector and accelerate the implementation of coverage mechanisms for individuals.

Given the quality and efficiency of the agricultural insurance system, proposals to extend the system's coverage (geographically, expanding lists of covered industries and risks) and improving its financing using a transfer of risk, are welcome. The establishment of insurance and aid mechanisms for individuals, already underway, must be acknowledged and pursued with determination, while avoiding the effects of moral hazards, if possible. The low penetration rate of insurance for individuals is not favourable for quickly accomplishing housing repairs or reconstruction. An insurance mechanism such as that outlined in Law 110-14 could help achieve this objective while alleviating strain on public finance.

Promote "Build Back Better"

It is crucial that the remarkable initiatives for relocation or refusing to rebuild on-site, are amplified by an approach such as "Build Back Better" to reduce the future risk of recurrence and to take advantage of the opportunity to rebuild in a more resilient and sustainable manner. Higher costs for construction are balanced by improved resilience and building longevity as well as by a reduction in operational costs. Investment in vulnerability by hasty emergency construction or rebuilding in at-risk areas should be avoided at all costs.

SELECTED BEST PRACTICES

The table below presents a selection from among the 45 best practices identified in Morocco for risk management by the team of international experts and OECD:

List of best risk management practices in Morocco	
Crisis management coordination	CVC
Integrated approach to forest fire management	HCEFLCD
Simulation of tsunami impacts	CRTS
Flood risk atlas of Haouz Province	ABH Tensift
Prospective approach to risk evaluation	IRES
Community guide to prevention against natural risks in Tétouan	Tétouan Municipality
Making children aware of earthquake risk by the Agadir life sciences association	Souss Life and Earth Sciences Association
Reduction in exposure of vulnerable populations through a relocation programme	Idmaj Sakane
Maintenance of “no-build” zones in Agadir due to seismic risk since the 1960s	Agadir Municipality
Use of satellite imagery for urban management by CRTS contract – Urban Agencies	CRTS/Urban Agencies
Public-private partnership work for the development of paraseismic code RPS 2011	Ministry of Housing
Public-private participative prevention financing for the Super Collector west of Casablanca	Casa Development
Call for prevention projects by the Fund to Combat the Effects of Natural Disasters	Ministry of the Interior
Business continuity plan	Bank-Al-Maghrib
Network redundancy systems	Maroc Telecom
Multi-agency crisis management coordination	Ministry of Public Works
Early warning system for floods in the Ourika Valley and connection with populations	ABH Tensift/Japanese Cooperation
Direct transmission of weather warnings to critical infrastructure operators	DMN
Emergency response plan for water agencies	LYDEC and ONEE
INSARAG Certification for Civil Defence	DGPC
Development of volunteer emergency services in the Fez and Meknes areas	DGPC/Swiss Cooperation
Reconstruction standards for rail lines	ONCF
Parametric insurance in the agricultural sector	MAPM

The OECD review of risk management policies in Morocco analyses policies implemented by a wide range of policymakers, from central government, local authorities, research institutes, representatives of the private sector and of civil society. It particularly focuses on governance, coordination and inclusion issues. The review takes into account the entire risk management cycle (risk assessment, prevention and mitigation, response and emergency management, recovery and reconstruction), and identifies the challenges to be address to strenghten the resilience of the Moroccan economy and society against critical risks.

Public Governance and Territorial Development

www.oecd.org/gov/risk



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BETTER POLICIES FOR BETTER LIVES