

The Natural Risk Prevention Approach In Algeria Between Law And Reality: Case Of Flooding In The Town Of M'sila

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Abstract

Floods are the cause of more than 80% of natural disasters recorded in the world between 1996 and 2006, causing material and human damage. The department of M'sila which is located in Algeria has experienced, on several occasions, fatal floods including those of 2006 and 2007. The main town of the department is exposed to the risk of flooding, these risks come from the fact that these localities are at an altitude of 300 meters, while the mountains of Hodna and the Saharan Atlas which surround them peak at more than 1000 meters. The city under study is crossed by a dense hydrographic network, made up of rivers whose flow rates can be very high during the winter.

*To deal with this problem, the Algerian authorities adopted a relief planning approach entitled **OCSR** (organization of civil security response) according to Law No. 04-20 corresponding to December 25, 2004 relating to the prevention of major risks and disaster management within the framework of sustainable development. This approach remained in the drawers and was never updated according to new climatic, societal and environmental data. To understand this study we use the survey method reinforced by the research interview in order to understand the current state of affairs in the city and implement the aforementioned approach during a possible intervention in the event of a disaster.*

Keywords: *M'sila, OCSR, floods, risks, disaster, approach.*

Introduction:

The damage caused by floods and inundations has continued to increase in recent decades. The number of people affected by these disasters is growing faster than the population growth rate (SALOMON J.N., 1997), the risk of flooding in recent years has become a hot topic. Furthermore, reflections on the precautionary principle or the objective of zero risk reflect an ever-increasing sensitivity of modern societies to risks (DAUPHINÉ. A, 2013). Between 2005 and 2015, natural disasters affected 1.5 billion people, leaving 700,000 dead, 1.4 million injured and 23 million homeless, according to the Sendai Framework for Action on Disaster Risk Reduction. Disaster Risk Reduction 2015-2030 developed by the United Nations Office for Disaster Reduction (UNODR, 2015). Algeria was confronted with the effects of these floods, for example:

- Ghilizane in 1993 22 deaths and 14 injured.
- Sidi Bel Abbès) in 2000 significant material damage.
- (Bab El –Oued, Algiers) 2001 and which recorded 733 deaths and 3000 homeless people according to the ONS office in Algiers.

As in the world, they are disastrous and devastating so rapid and violent, this phenomenon is due in the first place to universal climate changes as well as heavy precipitation of rain and snow, but it is certainly that in these conditions the voluntary act of urbanization in which man is the actor has forever had a negative impact on its urban environment. In the town of M'sila the causes of this damage can be summed up in the non-existence of a system of dikes whose function is to protect the edges of the towns; The voluntary change of the direction of the pluvial flood and the construction during the dead valleys; construction on slippery terrain; the construction of sanitation networks that are not adequate for the volume of rain precipitation and the absence of cleaning of drains in summer in order to avoid their obstruction in winter. In our research we will focus on the case of significant rainfall (floods), which characterized some urban entities in the city of M'sila.

Research objective

To Know the content of this approach and define the natural risks, in particular the risks of flooding to which cities are exposed and how to deal with them using pre-established means; identify and manage the issues to be protected, namely the means and possible alternatives to mitigate the human and material damage caused by this phenomenon.

Methodology

Based on the investigation method which aims to study and understand the approach pre-established by the municipality of M'sila; this method is reinforced by the research interview technique and to involve all the actors concerned by the management of natural risk on the one hand and to speak with the relevant services of the APC and civil protection in order to know their point of view on this process.

Results

Natural risk

Natural risk involves the exposure of human populations and their infrastructure to a catastrophic event of natural origin; the meeting between a hazard of natural origin and human, economic or environmental issues. Risks are closely intertwined with that of disasters, whether natural or industrial, the definitions of risk and natural disaster are based on the existence of a “raw phenomenon”, usually of geo-climatic origin such as , earthquake, landslide, flood, drought, fire, etc., (DAVID NIGET et Al, 2019).

Flood risk

The risk of flooding depends on the natural phenomenon (hazard, for example the river overflowing), and to understand this phenomenon in the city requires integrating a multitude of aggravating factors such as urban development, climate change and all sources possible floods, but also all the people and economic activities likely to be affected (issues). This risk thus results from the intersection between the flood hazard and the issues exposed. Flood risk management presents a broad overview of the tools and methods available for local initiatives (LEDOUX .B, 2006).

Flood

Flooding is a hazard that is old and the subject of much research (BARROCA B., 2006), submergence of land surrounding the minor bed of a watercourse; flooding water or abnormal presence of a large quantity of water in a room, due to a leak, an incident, etc. causes flooding. As they can be defined as natural phenomena that are an integral part of the functioning of waterways where dry and wet periods alternate. They participate in shaping the geomorphology of the river bed; to the recharge of groundwater and the proper functioning of aquatic ecosystems: Alsace-Moselle Water and Sanitation Union (AWSU, 2023).

The term flooding designates the overflow of a watercourse from its minor bed, but also the filling of a topographic basin with local runoff water. This type of pluvial flooding is distinguished by the speed of the water, the volume of water flowed and the height of the water. These parameters are essential for understanding the damage and establishing effective prevention policies (YAHIAOUI, 2012). The flood corresponds to the increase in the quantity of water which flows into the river and concerns the entire main bed of the river (MERABET A., 2006). In our research we then speak of a critical flood, which can cause flooding in riparian areas. The reaction to this risk of flooding consisted for several decades of fighting against floods, which firstly meant that we sought to act on the natural phenomenon of flooding – and only on it, that is to say on a single component of risk “hazard” and not on the issues or their vulnerability.

Hazard

According to (GRELOT. F, 2009) we can distinguish two types of hazard, precipitation, or “meteorological hazard”, the natural and random meteorological event causing floods; floods, or “hydrological hazard”, the extreme hydrological event induced by precipitation, knowledge of which makes it possible to “mechanically” construct the flood as such.

Runoff flooding in the urban sector:

Runoff flooding covers different physical phenomena, depending on which ones occur in an urban environment. But these phenomena are characterized by their suddenness and their short duration, which makes them difficult to predict and difficult to control in times of crisis. (LEDOUX, 2006).

Plan content Ocsr:

After the Second World War, on 02/05/1952 the (OCSR) plan was created in France by interministerial instruction, its aim was to organize relief, this name changed to (organization of civil security response). According to Algerian law, law n° 04-20 corresponding to December 25, 2004 relating to the prevention of major risks and disaster management within the framework of sustainable development, p.13. J.O.R.A.N° 84 OF 12/29/2004. According to the article. 52. - Depending on the importance of the disaster and/or the means to be implemented, the (OCSR) plans are subdivided into:

- National OCSR plans;
- Inter-wilaya OCSR plans;
- OCSR wilaya plans;
- Municipal OCSR plans;
- OCSR plans for sensitive sites.

The OCSR Plan is a program for organizing relief at the departmental level, in the event of a disaster, allowing rapid and effective implementation of all necessary human and material resources under the authority of the prefect. "Organization of the Civil Security Response" This law stipulates in articles 2 and 26 cited below.

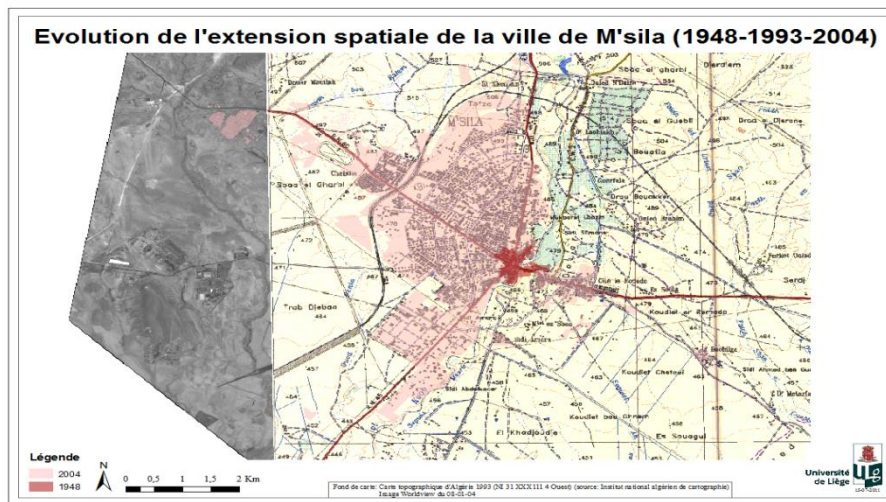
Art. 2. - A major risk, within the meaning of this law, is any probable threat to humans and their environment that may arise due to exceptional natural hazards and/or due to human activities.

Art. 26. - Constitute climatic hazards capable of generating a major risk within the meaning of the provisions of article 2 above:

Violent winds, Heavy rainfall; drought; the desertification; sandstorms and snowstorms.

Study corpus

The town of M'sila is located 60 km south of Bordj Bou-Arréridj and 250 km south east of Algiers, due to its position on two important roads, the RN 45 (Bordj Bou-Arréridj – Boussaâda) and the RN40 (Rocade – Magra – Tiaret); it also forms a crossroads for trade on the one hand, between the North and the South (Coastline – Hautes Pleins – South Wilaya) In 1974, the town of M'sila was maintained as the capital of the wilaya, currently it is spread over an area of more than 1792.6 hectares (T. S, 2020) or 7.72% of the total area of the municipality for a population of more than 161,103 inhabitants (DPUD, 2022) in 2010. Currently the number the city's population is estimated at more than 270,000 inhabitants (C.O, 2022).



Map 01: the town of M'sila

Source: Established by the authors at the University of Liege: 2019

Multi-temporal diachronic analysis by remote sensing allowed us to understand the process of proliferation of different types of habitat over a period of 37 years, and which has never stopped increasing. The geographical position of the agglomeration of the capital (M'sila) can be summarized by:

- Altitude: 460m.
- Longitude: 4° 33 East.
- Latitude: 35° 42.
- Slope between 0% and 3%

The capital city of M'sila is located in the North-West of the department, it extends over an area of 232 km² for a population estimated in 2010 at more than 160080 inhabitants, with a density of more than 690 inhabitants/km² (according to the national statistical office, 2010).



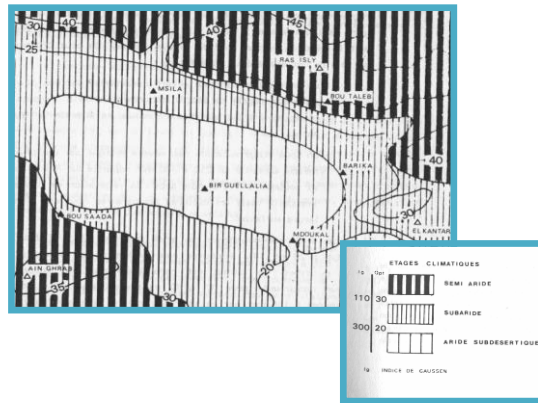
Map 02: National and regional situation of the Department of M'sila

Source: M'sila Meteorology Center 2021

Discussions of the research topic

The climate

Msila Department has a Mediterranean climate which is characterized by irregular rainfall, as well as heat and drought in summer, moderate and rainy in winter. It is noted that the climate in the town of M'sila is generally hot; it is exposed in summer to very high degrees of heat with relatively low temperatures in winter, the thermal difference of which can sometimes reach up to 27.8 degrees according to station services.



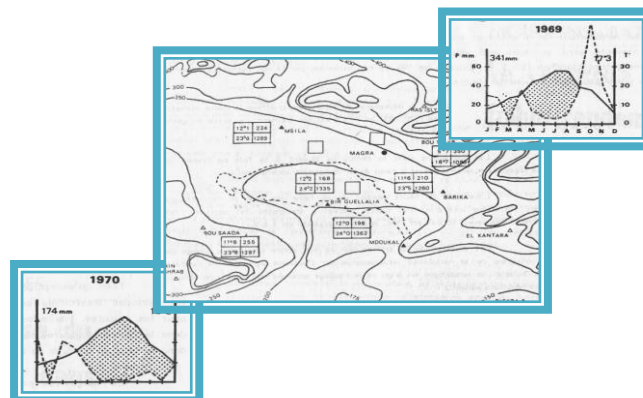
Map 03: The bioclimatic environment of the department of M'sila
Source: M'sila Meteorology Center2019

The rain:

The climate of M'sila's city is marked by mediocre rainfall which receives a slice of water less than 250mm per year.

Station	Altitude/ m	Annual precipitation	Nber of days	Rain/day
M'sila	496 m	226 mm	41 days	55 mm

Table 01: The rain in department of M'sila
Source: Climate map of M'sila(hodna)

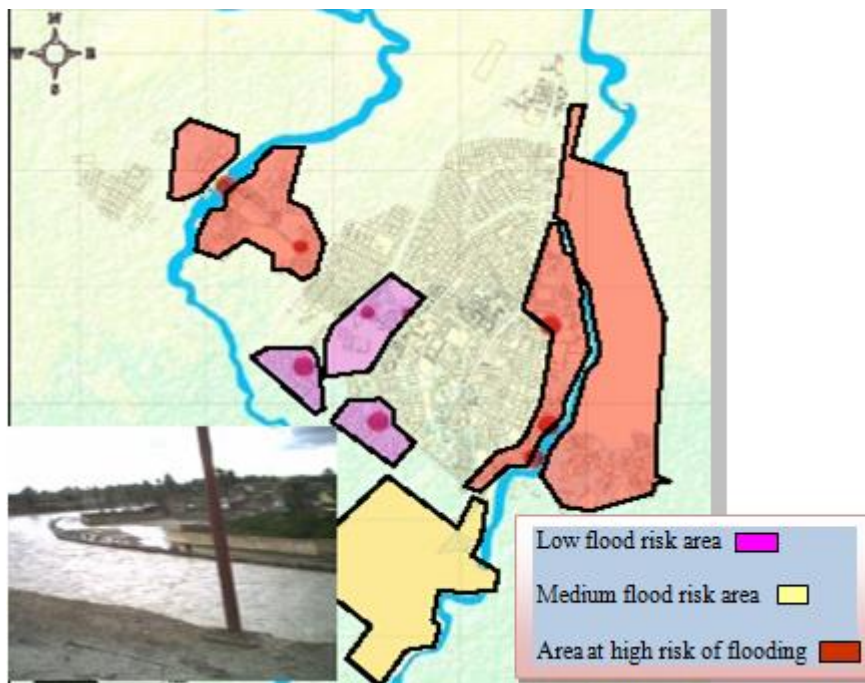


Map 04: Climate map of M'sila(hodna)
Source: M'sila Meteorology Center.2019

Flood areas in the town of M'sila

According to the (MPDP, 2023) and the technical services of the hydraulics department of the commune, capital of the department, there are two areas which are exposed to the major risk of flooding and which are:

- The left bank of the Oued Ksob which constitutes both the western limit of the Elkouche district and the bed of the Oued whose easement is not respected by a linear chain of illicit constructions. A project to protect this bank was carried out, consisting of a dry stone gabion with a height of (03) meters
- The mouilha area currently constitutes the new city which spreads towards the North-West and on land low compared to sea level and which is declared according to the directives of (MPDP, 2023) as wadis or dead valleys. The so-called Mouilha West zone which begins from the western limit of the 1200 lots subdivision to the end of the collective neighborhoods which are limited from the south by the RN40 and the 05July district. Here are two longitudinal sections in the so-called mouilha zone, made by the author and which have such a steep slope from East to West and which is exposed in the middle to floods from the hazards of heavy precipitation.



Map 04: Types of risks in the town of M'sila

Source: Archive APC with modification of the authors.2019.



Photo 01: Flood rain Mouilha area in M'sila .2015.
Source: Archive APC 2015



Photo 02: Flood rain Mouilha area in M'sila .2015.
Source: Archive APC 2015



Photo 03: Flood rain Mouilha area in M'sila .2015.
Source: Archive APC 2015

The redundancies of the points of view of the different actors regarding the OCSR plan

Summarized as follows:

- The OCSR plan aims to bring together with the same approach and in the same documentary set all the OCSR doctrine and all the regulatory or methodological elements necessary for planning, thus facilitating the development, implementation and updating of OCSR devices.
- This plan is not updated or harmonized with a document tracking system.
- The OCSR guide is not accessible on a website whose updating gives this repository a permanent character.
- In this plan, the different authorities are not clearly called to the command or coordination centers.
- The term OCSR which has been used until now will now be trivialized by the city managers themselves.
- State services prepare daily and are on permanent standby.
- This document of OCSR is not readable and is not accessible to all stakeholders.

Conclusion

The management of natural risks is today moving towards a global, transversal, even systemic approach, following the diffusion of tools formalized by thermodynamics and quantum physics (BRAVARD. J.P, 1991). As such, civil security and developments in society and the expectations of the population must be taken into account by legislation which aims to modernize the security of civil society, in fact, local authorities are responsible for integrating the risk of flooding into their territorial planning policy which is based primarily on a new policy for managing waterways in general and the risk of flooding in particular, is a risk which constitutes a real public concern, for this reason any approach to combating against risks must be part of a global and coherent approach to raising public awareness of the risk of flooding while giving ample room for negotiation between decision-makers, field workers, scientists and public opinion. The OCSR plan must be negotiated by the different authorities, updated periodically and enforceable against third parties.

It is fundamental that planning work must allow the creation of a network of partners to bring together skills and resources, develop and maintain an operational culture through a technical system validated by the authorities concerned and enforceable against third parties; have information up to date in order to access it at any time; strengthen and broaden contact beyond the restricted circle by bringing together potential players, namely network operators, associations and companies depending on the situations envisaged.

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