



FIG Working Week 2012
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Rome

Disaster Risk Management and Territorial Governance: Lessons from Xynthia Storm in France

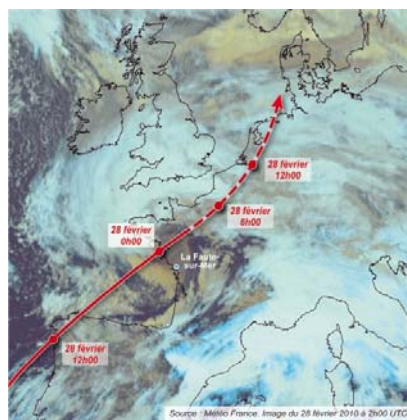
Elisabetta Genovese¹, Valentin Przyluski¹, Stéphane Hallegatte^{1,2}

¹CIREC, Paris (genovese@centre-cired.fr)

² Meteo France

Windstorm Xynthia

Xynthia was a **violent windstorm** which crossed Western Europe from February 27th to March 1st, 2010. Its transit caused the death of 59 people in Europe. Strong gusts, associated to high coefficient of tide and a very low pressure, caused a phenomenon of **storm surge** in the French coastal area.



Source : Météo France. Image du 28 février 2010 à 21h00 UTC.

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Consequences in France

France was the country hit the hardest by Xynthia: 47 people were killed, 41 of which from drowning.

Storm surge generated **8 meters waves** on Vendée and Charente-Maritime departments, flooding coastal towns, and around 10,000 people were forced to evacuate their homes on the Atlantic coast after the flood inundated their properties.

More than a million French homes were without electric power during the storm.

Roads, railways, ports and seawalls were destroyed or heavily damaged.

Oyster farming, agriculture and tourism sector have been hardly hit. Lands burned by sea salt were condemned to be infertile for several years.

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Direct losses



Direct losses amounted to more than **2.5 billion Euros**, of which **insured losses amount to 1.5 billion**.

More than the half of the total indemnities was paid to two departments: the Charente-Maritime, which accounts for 37.6% (555 million €) and the Vendée to 16.4% (245 million €).

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Emergency management

Xynthia has been recognised as one of the very **first coastal event in France**. What has been lacking was information about the flooding. No large scale evacuation was carried out since this procedure is not usual in case of windstorms.

In this particular event, an **evacuation** of a few thousand people in the area of about 500 meters from the sea would have saved most of the lost lives.

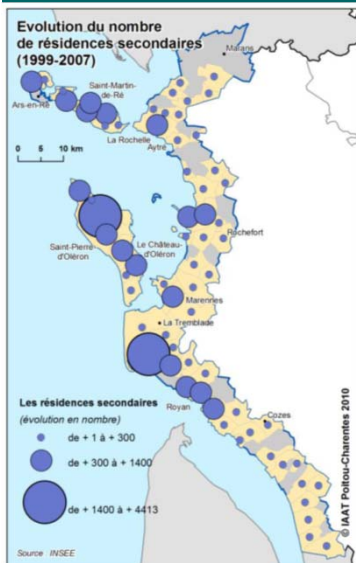
Local emergency system faced several difficulties, especially at the early stages of the intervention.

The intervention was slowed down by the absence of knowledge of people in the area at the time of the event since the most affected neighbourhoods involved mainly **secondary houses** with episodic presence of the residents during the winter.

The crucial stages took place in the middle of the night. The absence of electricity and phone networks made the rescue operation quite blind until rescue information system was put in place.

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Vulnerability factors



Evolution of secondary residences (1999-2007)

Sea walls, originally built to defend agricultural land and lacking of maintenance, were not able to protect houses. They may have been one of the mortality factors.

Essentially, a restrictive **construction policy** is supposed to be applied to these areas. Actually, since 1999, about 100,000 houses have been built in flood prone areas all over France.

Houses do not have a second floor or an exit on the roof, and they are often equipped with roller shutters.

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Black zones policy

In April 2010, the government decided that people affected and living in certain areas would have been compensated to relocate.

It decided to destroy 1510 houses in the affected areas, called **black zones**. A full compensation was promised to home-owners. Occupants did not agree with these decisions. They felt excluded from the decision making process.

At the beginning, the government confirmed its decision and was unwilling to re-examine the allocation of black zones.

Since May 2010, it started to gradually revoke the black zones policy and properties are no longer compulsorily expropriated.

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Adaptation strategies

Different types of adaptation strategies have been followed: a **defensive plan** was put in place to secure the seawalls that were affected by the storms.

A submersion **risk map** and legal classification have been enforced for coastal events. The existence of dikes and seawalls is no more considered as protective.

A new classification in the meteorological warning also concerns coastal events. Moreover, during coastal events, **evacuation** is now enforced.

The French Adaptation Plan put the first stone in considering **climate change**, in particular for location or relocation of infrastructure, with consideration of **extreme events** in combination with gradual **sea level rise**.

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Impacts of risk mitigation

Which is the best risk mitigation strategy? Protect, retreat or combined strategies?

1. Difficult to calculate their impacts:

- **More protections:** we attract people and create more exposure.
- **Force emigration:** it is expensive and complicated. Moreover, all France coastal area is densely populated and it is impossible to move everybody.

2. Cost of strategies implementation: difficult to consider them because **incentives** related to land value and competitions between territories dominates incentives of risk management.

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Role of policies

Although policies introduce important devices (i.e. PPRN), and even when they are correctly applied, in practice there are not followed. People are unable to correctly **integrate the risk into their decision-making process** and they are unable to take into account the **long term consequences** of their behaviours in a coherent way.

The economic development system, based on the valorisation of land resources, dominates the system of incentives related to risks. The **economic dynamism** is strictly related to the land market and it is one driver of urban growth.

The valorisation of the land revenue induces economic and services dynamism, increases the possibility of **investment** in infrastructure, and thus increases the amenities of the territory (e.g. tourism).

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Conclusions

Beyond the idea of the incapacity of the mayors to resist citizens or property developers pressure, it is well clear that **economic development and competition between the territories** are responsible for risky decisions.

Policies may reduce urban development in flood plains or add protections. However, it is rather the matter of **economic dynamism** that systematically interferes with careful risk policies.

It is therefore a **collective system of driving forces** that opposes another collective system that explains the magnitude of the disaster.

A way out to this impasse is a question of **democratisation of risk**, with decision arenas, negotiation, visible and explicit responsibilities, plus the integration with other decision arenas.

The **land** must be considered as a **scarce natural resource**. This could permit to find the best adaptation strategies and contemporaneously maintain the local economic dynamism.

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Book:

Przyluski and Hallegatte (eds), *Xynthia, perspectives: Gestion des risques et changement climatique, deux ans après Xynthia*, Quae publishing house

Thank you!
genovese@centre-cired.fr

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