

COUR DES COMPTES

Summary of the **Public Thematic Report**

July 2012

Lessons from the 2010 floods on the Atlantic coast (Xynthia) and in the Var

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Overview

Two natural disasters that occurred in 2010 are etched into our memories because of their dramatic consequences.

Storm Xynthia reached the French coast during the night of 27-28 February 2010, causing sudden and extensive marine flooding. The human toll was very heavy: 29 deaths concentrated in La Faute-sur-Mer in the Vendée and 12 deaths in Charente-Maritime.

On 15 June 2010, the Var was hit by extraordinary floods triggered by overflowing rivers and run-off, in turn caused by exceptional rainfall. The Draguignan area and the Nartuby and Argens valleys were particularly hard hit. The death toll was 23, with nine people losing their lives in Draguignan; another two people were reported missing.

Hundreds of people also suffered both physical and psychological trauma, losing their homes and all their belongings.

As well as their tragic human cost, both these disasters resulted in considerable financial costs to local authorities. Total public expenditure (by central government, local authorities and Europe) amounted to €467 million for Xynthia and €201 million for the Var floods. Insurance payouts came to €690 million for the Xynthia floods and €615 million for the Var floods, making a total of more than €1.3 billion, €640 million of which was covered by the “natural disaster” government guarantee scheme. Public expenditure is funded by taxes paid by all taxpayers, while the cost of insurance claims is funded by insurance premiums and the natural disaster contribution paid by virtually everyone in the country.

These consequences have raised questions over the government’s response, in terms of its ability to prevent and manage these kinds of disasters.

It is for this reason that the Cour des Comptes and three Chambres Régionales des Comptes covering the Pays de Loire, Poitou-Charentes and Provence-Alpes-Côte d’Azur regions carried out a series of audits in 2011, through an interjurisdictional structure, to learn lessons from these terrible floods. ■

Cour des Comptes

1 Increased and forgotten risks

Increased risks

The disasters affected vulnerable areas in which urban development increased the level of risk to the population.

Until the mid-20th century, these areas mainly consisted of farmland where the principal threat was the risk of marine flooding along the Atlantic coast and overflowing rivers in the Var.

Since then, urban development has changed the nature of the risks. As a result of demographic pressure, which is particularly high in coastal areas and in the southernmost part of the country, as well as the considerable inflow of people during the tourist season, and in spite of limited capacity, there is a real “thirst” to build in these areas, fuelled by owners and developers and supported by local elected officials.

The southern Vendée area includes the towns of La Faute-sur-Mer, L’Aiguillon-sur-Mer and La Tranche-sur-Mer. Its population, which is boosted by 150,000 summer holidaymakers, has grown by 22% in little more than a quarter of a century.

Since 1982, the population of Charente-Maritime has grown by 21% and that of the Var by 43%. These fig-

ures almost double in the summer, with the population of Charente-Maritime rising to almost one million and that of the Var exceeding two million.

Forgotten risks, in spite of warnings

There were other disasters before 2010, but they were forgotten. And yet, some of them left clearly visible traces: for example, a marble plaque on the wall of the chemist’s shop opposite the town hall in Trans-en-Provence is a reminder of the high water line reached by the 1827 flood and the damage it caused.

Above all, warnings had been given. For example, a 2008 report emphasised a serious risk in La Faute-sur-Mer and L’Aiguillon-sur-Mer posed by “the combination of two phenomena: rising water levels in the Lay estuary and marine flooding”, and pointed out that “the Lay estuary region is the most dangerous part of the coast...”. While this report undoubtedly failed to arouse enough interest, a brochure on the Lay estuary flood prevention plan, circulated more widely in July 2007, continued to describe this alarming state in similar terms.

Increased and forgotten risks

In the final analysis, a serious lack of risk awareness led populations and public authorities not to take full measure of the threats hanging over some areas in the three *départements* in question.

Steps taken since these events

As well as generating a large amount of feedback, the two disasters have been the subject of parliamentary reports and inspections.

As a result, the government has adopted various initiatives grouped together into a “rapid submersion plan” (sometimes known as the “plan digues” or “flood defence plan”), published on 17 February 2011. The plan aims to

deliver a more effective response to marine flooding, flash floods and breached flood defences.

It points forward to the national flood risk management plan, the framework for which was laid down in the 12 July 2010 Act on the national commitment to the environment, known as “Grenelle 2”, transposing the European Directive of 23 October 2007, known as the “Floods Directive”. The purpose of the Directive is to establish a strategic view of flood risks by 2015.

Certain systems put in place, particularly in connection with forecasting and warning, proved their effectiveness when the Var once again experienced exceptional rainfall in November 2011.

2 Early warning and emergency response systems: further progress needed

Early warning and emergency response systems can save human lives. They also have a limited cost relative to their impact in the event of a crisis. To achieve their purpose, however, they must be comprehensive, consistent and rational.

Early warning systems

Significant improvements in weather and flood forecasting

While Météo France correctly forecast rising water levels, they underestimated the extent of this phenomenon in the La Rochelle area, with forecasts putting the flood surge at between 0.80 metres and 1 metre, compared with an actual high water line of 1.5 metres. There were known deficiencies in the forecasting system, such as a lack of automated tide gauges and observation stations belonging to the Naval Hydrographical and Oceanographic Department (SHOM) around the edge of the bay of Bourgneuf and the cove of

L'Aiguillon-sur-Mer. These shortcomings, which affected virtually all coastal areas subject to a high risk of significant flooding, are regrettable, even if correcting them would only have had an impact if substantial progress had also been made on coastal oceanographic models.

Since Xynthia, work has begun to improve tools designed to incorporate coastal developments into forecasting. However, this work will take time and in the meantime gaps still remain. Furthermore, the number of parties involved suggests a need to formally coordinate the forecasting of marine flooding.

In the Var, rain devastated a relatively small area of 40-50 km² around Draguignan – something Météo France's operational forecasting tools were not able to forecast with a sufficient degree of precision. Moreover, monitoring of the Argens and Nartuby rivers – both of which are classed as high risk – by the flood prevention service (SPC) was woefully inadequate. The SPC comes under the ministry with responsibility for the environment, which had cut its investment expenditure.

After the disaster, a substantial effort was made to improve equipment.

Early warning and emergency response systems: further progress needed

This effort needs to be strengthened and continued.

Further room for improvement in early warning mechanisms

In interpreting early warning messages in connection with Xynthia, wind-related danger outweighed the risk of flooding, with the 1999 storm acting as the benchmark in collective memory. There were, however, deficiencies that need to be highlighted: for example, Météo France's failure to include its very high wave warning procedure (ATFV) in its weather vigilance procedures, thus reducing the visibility of these warnings. This defect has since been corrected.

In the Var, Météo France discussed whether or not to increase the alert level to red; in the end, no red alert was issued, since it was deemed to be too long after the event. This policy has since been revised.

For Xynthia, a red alert was issued to local mayors via automatic telephone calls and fax messages sent by prefectures. In Charente-Maritime, representatives of the State administration contacted local mayors personally. Conversely, mayors in the southern Vendée, where towns were being flooded, did not ensure that an emergency warning was issued to the prefect, as laid down in the French General Local Authorities Code.

In the Var, the impact of warning messages sent to mayors was reduced by the fact that no red alert was issued and by communication difficulties experienced during the crisis.

Alerts to local populations fell far short of what was needed. While mayors in Charente-Maritime visited the most vulnerable individuals to warn them personally, there was no real operational warning system in place in either of the two Atlantic *départements* or the Var. Steps have since been taken: for example, the three affected towns in the Vendée are developing warning systems using sirens, telephone alerts and vehicles equipped with loudspeakers. This action would nonetheless be more effective if it was coordinated.

At the national level, Météo France and the central service for hydrometeorology and flood warning support (SCHAPI) are developing new information systems covering rainfall and river flooding. The 2008 White Paper on defence and national security provided for a new system to warn and inform local populations. Its implementation, however, is falling behind, with no concrete plans in place at present other than the cataloguing of sirens and other local warning mechanisms. Furthermore, ambiguities over the sharing of responsibility between central government and local authorities need to be clarified.

Early warning and emergency response systems: further progress needed

Organising the emergency response

Plans need to be supplemented and updated

There were shortfalls in emergency plans prior to the crisis.

Central government's "ORSEC" plans organising the civil security response had not been updated, and flood response exercises were non-existent. While the Var risk analysis and protection plan (SDACR) considered flood risk, the plans covering the two *départements* on the Atlantic coast did not really address the risk of flooding. This deficiency has since been only partly corrected.

Meanwhile, very few towns had met the requirement to draw up a local emergency action plan. Efforts made since the crisis remain to be completed: at the end of 2011, of the 55 towns in Charente-Maritime that were required to have such a plan, only 25 did; the equivalent figures were 33 out of 69 towns in the Vendée and 27 out of 47 in the Var.

Furthermore, these plans do not contain a sufficient level of operational detail, while intermunicipal plans are too scarce or even non-existent, as is the case in La Faute-sur-Mer and L'Aiguillon-sur-Mer, where there is every reason to justify the need for such plans.

Emergency services: room for improvement in both their use and their coordination

Feedback has underscored the efficiency and dedication of emergency services, and steps have been taken to further improve their capability. However, some questions still remain unanswered.

Air assets – which are especially important during crises of this kind – were used inconsistently from *département* to *département*. For example, significant use was made of helicopters as soon as emergency operations began in the Var and in Charente-Maritime, while they were used less and later in the Vendée. Similarly, the degree of coordination was variable; in the Var, the ability to coordinate air assets was simplified by the fact that the *département* is home to military schools. Finally, there were gaps in air-to-ground communications.

A national air asset plan, to be implemented locally through defence and security zones, has yet to be drawn up.

Unsuitable facilities

Several fire stations were flooded when the disasters struck: three emergency services centres in Charente-Maritime; the L'Aiguillon-sur-Mer fire station in the southern Vendée; and in the Var, as well as the emergency service-

Early warning and emergency response systems: further progress needed

es centre in Les Arcs-sur-Argens, the local fire and emergency services department (DDIS), the main emergency services centre and the *département's* storage facility in Draguignan. The local operational fire and emergency response centre (CODIS) was thus taken out of service, and 87 vehi-

cles were lost out of a total of 160 that were damaged by the disaster in the Var.

Emergency services facilities located in flood-prone areas need to be closed or relocated.

3 Prevention: persistent deficiencies in urban planning

Building authorisations with serious consequences

Of particular note in this regard is the “Les Voiliers” housing development in La Faute-sur-Mer. Conversely, after much hesitation by the State’s representative, the planned property development in the Valescure area of Fréjus was refused planning permission. These examples illustrate promoters’ and local authorities’ desire to develop sites, ignoring natural risks, as well as the weakness of the State’s representative in the face of this desire. Neither verifications of legality nor the Water Act appear to have been applied sufficiently rigorously in such cases.

Beyond having tragic consequences for human life, the granting of planning permission in high-risk areas can end up costing central government dearly, as shown by the example of the “solidarity zone” in Aytré, Charente-Maritime.

Failure in communicating risk information

The French Environmental Code affirms citizens’ right to be informed about major risks. Before the crises, however, there were numerous shortcomings in this type of information, not all of which have been remedied.

Risk information documents

The *département*’s major risk document (DDRM) is drawn up by the prefect. The documents for the three *départements* in question were too general in nature and had not been updated within the maximum time allowed by regulations (five years). Actions initiated since 2010 to update these documents and ensure that they address more specific risks have yet to be completed.

The municipal major risk information document (DICRIM) is drawn up by the mayor. Before the disasters, only a tiny minority of towns had such documents, and those that did exist were

Prevention: persistent deficiencies in urban planning

barely operational. Since the crises, prefectures have made help available to towns to draw up these documents. However, efforts have been hampered by staff shortages on the ground. In the Var, two years on from the disaster, only 32 municipal major risk information documents have been submitted to the prefecture; virtually all of the *département's* 153 towns should have submitted such a document.

Flood hazard atlases (AZI), produced by the State administration, map out the risks. In the absence of other more specific or binding documents, they can also be used to prevent construction in dangerous areas. However, they first have to be known about and distributed. While they had been satisfactorily distributed in the two Atlantic *départements*, the same was not true of the Var, where the prefect failed to send out the new generation atlases to mayors before the disaster struck. It turns out that these atlases could have been used to predict the impact of the disaster quite effectively.

Conversely, the risks mapped out in atlases distributed on the Atlantic coast fell well short of the marine flooding that took place in February 2010. In any event, local councils had received the atlases without enthusiasm and they had hardly been used in reviewing applications for building permits.

Since 2010, the relevant ministers have asked prefects to ensure that risk mapping documents are fully distributed. Under the European “Floods

Directive” of 2007, risk mapping activities will have to be stepped up. Such activities will need to be carefully coordinated by government ministries.

Information for buyers and tenants

Information for buyers and tenants (IAL) on the risks affecting a property, required under the 30 July 2003 Act and applicable since June 2006, is subject to serious shortcomings: not all at-risk areas are covered; information is generally incomplete and does not take into account the full extent of risks; prefectural orders and information on government websites dedicated to informing buyers and tenants is not updated; and there is a lack of precision in the “statement of risks”, which is required by ministerial order and is appended by notaries to agreements to sell and deeds of sale.

While information for buyers and tenants in the Var was updated by the central authorities in 2011 following the audit by the Cour des Comptes, the same is far from true for the country as a whole. A specific review of the existing situation should be drawn up and the information scheme should be relaunched.

Flood risk prevention plans

The flood risk prevention plan (PPRI) is ordered and adopted by the

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prefect following a public inquiry and, in particular, opinions from the relevant local councils. In particular, the plan defines at-risk areas and is binding in nature, thus serving to control urban development.

Some situations, however, raise questions: the way in which the Saint-Hermentaire area, where the town's main emergency services centre was flooded without warning, was covered in the Draguignan flood risk prevention plan; the excessively long and arduous progress of the Lay estuary flood risk prevention plan in the Vendée, which only entered into the pre-implementation phase some six years after it had been ordered and, in the end, had not been adopted by the time storm Xynthia struck; and the content of the provisions in this plan, which raises questions in connection with the area located behind the eastern flood defences in La Faute-sur-Mer, where the level of risk appears to have been reduced.

The examples analysed show that before the crises:

- flood risk prevention plans had not been ordered for all at-risk areas;
- where such plans had been ordered, the procedure was often interrupted, as in the Var, or became bogged down in interminable discussions;
- the vast majority of mayors opposed the adoption of such plans or delayed it as long as possible, feeling that it would hinder their desire to continue urban development in their towns;

- the State administration – through its representatives, the prefects – did not always stand up to pressure from local elected officials and often acquiesced to an excessive lengthening of procedures.

In the meantime, the content of such plans was subject to consultation, and even negotiation, to ensure that it would not place too many restrictions upon the potential for urban development, at the expense of the safety of people and property. Local elected officials sought to reduce restrictions as far as possible, and State representatives often agreed to compromise solutions.

Steps taken since 2010 point to a renewed desire on the part of central government to improve the coverage of at-risk areas – some of which have been designated as high priority – within a short timescale. However, local opposition from both inhabitants and elected officials has not disappeared altogether. If the objectives are to be achieved, prefects must adopt a firmer stance in support of government.

A new policy taking into account climate change has been laid down for coastal risk prevention plans. Furthermore, the European “Floods Directive” is set to introduce substantial changes to France's preventive arrangements. This transitional phase must not be allowed to result in a slowdown in the efforts made to map risks and put in place risk prevention plans.

Prevention: persistent deficiencies in urban planning

Urban planning documents

Many of the areas affected by the 2010 floods were covered by obsolete urban planning documents that did little to constrain extended urban development. For example, 12 of the 13 affected towns in the Var had land use plans that dated back to before 1995, and seven of these were drawn up earlier than 1990.

Since the disasters struck, local authorities have not made any real effort to replace these plans with new generation documents aimed at ensuring balanced and sustainable land development.

Meanwhile, the relevant ministries have not taken action to require local authorities to begin drawing up “territorial consistency plans” or produce local urban development plans to replace obsolete land use plans. It would be advisable for central government to enact legislation or regulations requiring local councils to update their urban planning documents.

Verification of legality

Prior to 2010, national guidelines issued to prefects clearly pointed out the need to ensure that the verification of legality included, as a priority, checking urban planning documents and decisions in at-risk areas. At an operational

level, however, checks conducted on urban planning activities proved very lax.

Prefectures often blame this state of affairs on administrative jurisprudence or staff shortages. While these arguments partly reflect reality, an examination of sensitive cases reveals that laxity in checking documents is mainly explained by a lack of determination at prefectural level.

Following the disaster, the prefects of the affected *départements* showed initiative in working towards more rigorous verifications, and were issued with guidelines containing a greater level of operational detail. However, if there is to be a lasting improvement in the effectiveness of verifications of legality, the necessary qualified staff will be needed, as will, in particular, a clear willingness at prefectural level. Prefectural authority in this area will be reinforced by backing from central government.

4 Protecting built-up areas: a lack of consistency

Unsuitable public facilities located on the sea front or riverside

Various examples point to the cost to taxpayers of establishing public facilities in areas subject to flood risk – a risk which, though well known, was not taken into account.

In all three *départements*, numerous camp sites were affected by the disasters; some were in grave danger, like the “Côte de Lumière” municipal camp site at La Faute-sur-Mer in the Vendée, which was also in contravention of the law, and the three camps sites at Aytré in Charente-Maritime. In this *département*, 32 camp sites were flooded, with ten of these submerged to a depth of at least one metre. In the Var, nine camp sites had to be closed in summer 2010.

Although the crises forced the authorities to face up to the need to strictly apply camping regulations, the results to date still leave room for improvement.

High-risk areas: buying up built property

In areas exposed to a particularly high risk, decisions to carry out amicable purchases of homes by the government, as practised in “solidarity zones”, could have formed part of a policy of “strategic withdrawal” – i.e. a policy of not trying to protect areas where it was not realistically possible to provide adequate protection. However, a lack of consistency in the application of this approach limited its effectiveness.

Different methods followed post-Xynthia and in the Var

After Xynthia, it is reasonable to say that central government rushed to define “solidarity zones” without adequate consultation, leading to large numbers of protests.

Following further work by expert assessors and a more in-depth consultation, it subsequently defined compulsory

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purchase areas (involving expropriation of property owners). These compulsory purchase areas were often smaller than the previously defined solidarity zones.

Central government's decision to purchase homes on an amicable basis was based on twin objectives of protection and national solidarity, giving rise to a high degree of ambiguity. The high cost of buying homes located outside compulsory purchase areas (totalling almost €50 million in the Vendée and €34 million in Charente-Maritime) illustrates the hurried nature of the decisions that were made.

If the aim was to protect the population living in high-risk areas, amicable purchases should have been completed in the more tightly defined compulsory purchase areas. If, on the other hand, the principle to be applied was that of showing national solidarity for victims, including in cases where compulsory purchase was not justified in the absence of a very high level of risk or where less expensive protection solutions were available, other methods would have been more economical.

The example of the Boucholeurs district (Châtelaillon, Yves) is revealing of a chaotic process and contradictory decisions that were unnecessarily costly for the public purse.

A radically different method was followed in the Var – rather than immediately defining amicable purchase areas, the problem was approached in two phases: the first phase covered 20 homes that had been designated as dan-

gerous structures; the second phase will include a survey of the most exposed areas, with properties to be purchased only in these areas, in consultation with local elected officials. More than a year after the events in question, no reliable estimate of the number of homes concerned was available, though an initial diagnosis had identified a further 18 homes. Although this procedure avoids unnecessary purchases, it leads to long delays to allow for rulings on dangerous structures, and can make it more difficult for owners to agree to a sale when the time comes.

While a slower process has disadvantages, the legitimate need for speedy action does not justify hasty government action in the immediate aftermath of Xynthia.

Funding of property purchases

Expenditure on buying homes, which totalled €316 million at end June 2012 in the two Atlantic *départements*, is funded by the major natural risk prevention fund, commonly referred to as the “Barnier fund”. This amount accounts for almost all fund expenditure in the four-year period from 2006 to 2009 (€331 million). To ensure that the fund was adequately financed in 2011, the government had to allocate in advance the dividend from the Caisse Centrale de Réassurance (the French state-owned reinsurance company), as well as agreeing another advance to bolster the

Protecting built-up areas: a lack of consistency

fund's cash reserves, which had been more or less used up by the end of 2010.

The need to define a policy for properties exposed to serious danger

There is a risk that the need to prohibit future construction in all or part of the affected areas might be gradually forgotten; to avoid this risk, the ultimate status of properties purchased by government remains to be determined. It is also essential that dangerous areas elsewhere on the coast be identified and that appropriate action be taken, either by purchasing relevant properties or by making them less vulnerable.

Finally, it would be advisable that local authorities, who share some responsibility for existing urban development, contribute to the cost of purchasing properties at extreme risk, as this would give them an incentive to take more care when issuing building permits.

Ultimately, a consistent, overarching policy covering all at-risk situations still remains to be defined.

Flood defences and protection works

People rely on sea flood defences to be effective and on their local elected representatives to effectively manage the

risks associated with rivers. However, the 2010 disasters highlighted the inadequacy of existing arrangements.

Difficulties in identifying responsible parties

Before the disaster, central government took action to identify and classify sea flood defences in the two Atlantic departments. This work encountered serious limitations.

Identifying the parties responsible for flood defences turned out to be a very complicated task. In many cases, it is not known who owns each flood defence. Where this information is known, the owners are often found to be incapable of maintaining flood defences due to a lack of resources and willingness. It is also difficult to identify who is responsible for managing flood defences. For example, it has not been possible to identify the parties responsible for 95% of the total length of sea flood defences in Charente-Maritime.

Finally, the large number of potential operators linked to a given stretch of flood defences creates confusion, making it difficult if not impossible to properly maintain defences.

In the Var, all four of the rivers that gave rise to the floods are non-government owned; this means that the riverbed belongs to the owners of the riverbanks, who are, in principle, responsible for regular maintenance of the river. Local authorities and groups of local authorities have the option, but

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not the obligation, of acting in place of riverside landowners where a declaration of public interest (DIG) is issued following a public inquiry.

In reality, the rivers were not maintained by riverside landowners, and intervention by local authorities proved greatly lacking.

Poorly maintained flood defences and rivers

In spite of a limited effort following the 1999 storm, funding for the maintenance of flood defences on the Atlantic coast was far from sufficient before the disaster.

Between 2001 and 2009, average annual expenditure on flood defences in the three affected towns in the southern Vendée was €0.54 million; in reality, three to four times this amount was needed. Between 2000 and 2009, central government allocated €8.7 million to sea flood defence works in Charente-Maritime; after Xynthia, it committed €19.5 million – 2.2 times more in one year than the total for the previous ten years.

Over and above the issue of funding, the examples of the flood defences in La Faute-sur-Mer (Vendée) and Charron (Charente-Maritime) highlight the difficulty of successfully investing in flood defences when no one is really responsible for them. They illustrate the “vagueness of collective irresponsibility”, which government failed to remedy.

In the Var, while the Nartuby was covered by a river contract, the intermunicipal union for the development of the Nartuby (SIAN), which was responsible for implementing the contract, had completed very few of the planned flood protection actions.

Action undertaken since the disasters

Government-instigated flood defence works undertaken post-Xynthia – including both phase 1 emergency works and phase 2 upgrading and reinforcement works – bore no relation in financial terms to what had gone before. Under the “rapid submersion plan”, this financial effort is set to increase substantially over the next few years.

Furthermore, a draft “flood defences” decree is being drawn up. In particular, this decree will be accompanied by an order defining key principles for the design, construction, maintenance and monitoring of flood defences. The process of defining these technical standards appears to be somewhat belated, and should be completed without delay.

Under the “rapid submersion plan”, prefects are tasked with identifying priority high-risk diked areas and seeking out project owners for the relevant flood defences.

The prefects of the two *départements* on the Atlantic coast have been actively involved, alongside local authorities, in drawing up flood prevention action pro-

Protecting built-up areas: a lack of consistency

grammes (PAPI). However, this process, while seeking to be rigorous in identifying those responsible for managing flood defences, is taking time, while there is a high level of demand for effective protective measures in exposed areas. Government authorities must work with their partners to manage this difficulty, avoiding protective measures that would only serve to encourage further dangerous urban development.

In the Var, a new desire to ensure that rivers are properly managed is reflected in the production of a flood prevention action programme. Here again, this process, while positive, will require time, and interim solutions will need to be found. Moreover, government should initiate discussions on the subject of legislation and regulations governing non-government owned rivers to identify which authority can genuinely take responsibility for their maintenance.

The unresolved issue of flood defence governance

In their feedback, government inspectors considered “three scenarios to meet the challenge of managing flood defences”: adjustments to the status quo; the transfer of responsibility to local authorities, intermunicipal bodies or *départements*; and the creation of a national managing body.

The “rapid submersion plan” relies on prefects taking action to identify a responsible authority, encouraging local

stakeholders to take on the management of flood defences not owned by them. While this approach is pragmatic, it is uncertain whether the funding available under the plan will be sufficient to convince local authorities to assume a responsibility that will prove very significant.

A review of action taken by prefects should therefore be drawn up, within a reasonable time frame, so that this action can be taken into account when making the (probably legislative) decisions needed to settle the issue of governance. The current legal framework is still governed by the provisions of the 16 September 1807 Act on “drying out marshland”. The Act, under which residents are asked to protect themselves against flooding, bears little resemblance to the current environment, which is characterised by increased urban development. The focus is no longer on individuals protecting their property; it has shifted to the need for a genuine public service at local or inter-municipal level.

The fundamental issue of governance thus remains to be resolved.

Furthermore, the role played by the natural disaster insurance scheme in encouraging protective and preventive action should be affirmed.

5 Compensation: very comprehensive, but with some inconsistencies

Aid and compensation

Insurance payouts

Although insurers worked hard to quickly pay compensation to private individuals, they made little in the way of specific effort for businesses, while central government made aid available to help businesses get through this difficult period.

While the average cost per claim in the Var was slightly lower than that arising from the Xynthia floods (€16,788 versus €20,909), the cost of compensation paid to businesses and local authorities was higher in the Var (€266.3 million versus €208.9 million).

Donations and aid for private individuals

Total donations received amounted to €5.65 million for Xynthia and €1.14 million for the Var. Taking into account 66% tax relief, this represented a cost to government of €4.4 million.

Local authority procedures for channelling aid directly to victims, and

the speed with which aid payments were made, were highly variable, with significant differences even between neighbouring towns like La Faute-sur-Mer and L'Aiguillon-sur-Mer. While not unusual, differences in the methods used to redistribute donations can give rise to misunderstandings, and even feelings of unfair treatment. It would be worthwhile for central government to put together a guide recommending rules for local authorities to follow when channelling aid directly to the victims of these types of disasters.

Furthermore, donations were not managed in a consistent way. The problems that occurred – potential for the duplication of aid, insufficient coordination, failure to allocate amounts for their intended purpose and the scattering of aid – need to be corrected.

Tax deductions and exemptions

The cost of tax deductions granted to private individuals was four and a half times higher in the Var than in the Vendée, while the cost of compensation for homes under the natural disasters scheme was only slightly higher in the

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Var than in the Vendée. Furthermore, it is surprising that the number of requests was so high, and that all such requests were accepted. The total direct cost of tax measures was €1.73 million for Xynthia and €4.09 million for the Var.

Property purchase expenditure

Properties affected

“Solidarity zones” covered 840 properties in the Vendée (including 11 businesses) and 788 properties in Charente-Maritime (including 70 businesses).

In the Vendée, 701 homes, situated in La Faute-sur-Mer and L’Aiguillon-sur-Mer, were covered by sale agreements; at end 2011, 699 purchases had been completed for a total value of €151.5 million. Thirty-three homes, situated in La Faute-sur-Mer, 17 of which were secondary residences, had an assessed market value in excess of €500,000, representing a total cost to central government of €19.3 million. The highest single purchase cost was €831,000 for a secondary residence.

In Charente-Maritime, 458 properties in 13 towns were covered by sale agreements at end 2011, for a total value of €141.8 million. Eleven homes, eight of which were main residences, had an assessed market value in excess of €1 million, representing a total purchase cost of €16.65 million.

Problems encountered

Two different procedures were used for amicable purchases, each of which had similar aims and terms, thus complicating the task of managers for no genuinely convincing reason.

Tax exemption was granted for capital gains on secondary residences in the two Atlantic *départements*, leading to questions being raised in some cases. For example, a property situated in La Faute-sur-Mer was bought for €602,776 after deducting insurance payouts of €173,224, while it had been bought in December 2007 at a reported price of €300,000. Work had since been completed on the property costing around €90,000. In contrast to what would have happened in a normal sale, the purchase of the property by government enabled the owner to secure a completely tax-free capital gain of more than €300,000.

Most amicable purchases by government were based on an article in the French Environmental Code, which authorises such transactions provided that the price “proves less expensive than the cost of safeguarding and protecting the population”. While a comparison with the cost of other safeguarding measures was carried out in the Var, no such comparison was made for the Xynthia disaster. No analysis was undertaken of the situation of each individual home and, in particular, no case-by-case checks were carried out to

Compensation: very comprehensive, but with some inconsistencies

establish whether other safeguarding measures would have been less costly.

For those properties that were purchased, checks were not systematically carried out to establish whether a building permit had been issued (or whether retrospective planning permission had subsequently been granted), depriving government of a means of dissuading illegal construction, particularly in areas at serious risk.

Two properties purchased under amicable purchase agreements in the Vendée and one in the Var appeared to be uninsured. Another property purchased in the Var was only insured after the event. These were dangerous precedents and were unfair to other homeowners whose properties were not purchased on the grounds that they were uninsured.

Insufficient checks were carried out on insurance payouts, while a basic plausibility check could quite easily have been conducted. This is all the more regrettable since the amount of such payouts is deducted from the amount paid out by government.

Aid for economic agents

This type of aid related to farms and businesses. It is worth highlighting the effectiveness of aid provided through part-time working arrangements.

Government purchases of business premises, while few in number, raised difficulties. Blockages and confusion led to the use of ad hoc solutions based on procedures that varied from case to case, thus giving rise to unfair treatment.

The purchase of two restaurants in L'Aiguillon-sur-Mer, which has been reviewed in detail, provides an example of the difficulties and questions raised.

It is advisable that, in the future, the rules to be applied in this type of situation be clear and consistent.

Conclusion

Storm Xynthia and the 2010 Var floods were disasters.

Faced with shortcomings in vigilance, early warning and emergency response procedures, the progress made since these crises remains to be completed, in particular to create an effective early warning network. As regards the emergency services, unsatisfactory situations remain, such as fire stations located in flood-prone areas and a lack of planning covering air assets. Compensation arrangements, although comprehensive, sometimes proved inconsistent or poorly coordinated.

The post-Xynthia government purchase of many homes in the most dangerous areas gives rise to numerous comments. The hastiness with which the first decisions were made had serious consequences, based as they were on approximations, compromises, and even regulatory transgressions, and ultimately led to redundant or unnecessary expenditure. Moreover, the scale of the expenditure incurred highlighted the cost of negligence and irregularities observed in relation to urban planning.

The wisest approach to protecting human life – and the least costly – is to prevent construction in undeveloped high-risk areas. In the face of local populations' desire to build – a desire that is supported and even encouraged by local elected officials and property developers – State representatives have often proven weak in their preventive response. The burgeoning new determination in this area needs to be supported by a nationally managed approach to ensure that it is strengthened and sustained over time.

A strategy for existing built property remains to be defined. Emergency efforts have been made to repair and consolidate sea flood defences in coastal areas, and the "rapid submersion plan" will lead to new and more ambitious work in this area. However, priorities need to be made consistent, with the emphasis on the most dangerous coastal areas and selecting the most effective methods. The maintenance and reliability of flood defences will only be guaranteed if clearly identified parties take responsibility for them. However, the issue of their governance is yet to be resolved.

In the Var, there are also glaring shortcomings in governance in relation to rivers; according to legislation, these rivers, being non-government owned, belong to riverside landowners who have neither the financial nor the physical means to maintain them. While it is critical that an overarching strategy be implemented via a flood prevention action programme, this does not obviate the need for more urgent action in the interim.

In line with the 2007 European framework directive, a national flood risk strategy needs to be defined, particularly in high-risk areas. The way forward is to map out a consistent strategy, with measures, an organisational structure and resources appropriate to each at-risk area.

Recommendations

Early warning

Central government should:

- bring overall consistency to steps taken by towns in relation to early warning procedures, in coordination with the future information and early warning system (SAIP);

- ensure that the forecasting of marine flooding is formally coordinated;

- immediately update risk protection plans (SDACR) and emergency response plans (ORSEC) in the most high-risk *départements*;

- put in place an in principle plan covering the use of national air assets.

Departmental councils and departmental fire and emergency services in affected areas should:

- close or relocate emergency services centres situated in flood-prone areas as quickly as possible.

Towns in affected areas should:

- refine and regularly update their local emergency action plans;

- strengthen their early warning procedures, on an intermunicipal basis where necessary.

Prevention in relation to urban planning

Central government should:

- lay down a national flood risk strategy as required by the “Grenelle 2” Act and implement the European directive on floods, within the stipulated timescales;

- ensure, in implementing the European directive, that the need to make changes to existing instruments does not delay the urgent implementation of mechanisms agreed upon following the 2010 disasters;

- ensure that risk maps are fully distributed and relaunch the “information for buyers and tenants” scheme;

- ensure that priority risk prevention plans are implemented within the stipulated timescales;

- ensure that towns have up-to-date urban planning documents, if necessary by passing legislation to require them to do so;

- support the prefectural administration in carrying out effective verifications of legality on urban planning decisions made by local authorities;

- introduce national management, including targets and regular feedback from prefects, for the most sensitive procedures, such as the drawing up and distribution of risk maps, the implementation of prevention plans and the updating of the “information for buyers and tenants” scheme.

Recommendations

Towns and intermunicipal bodies should:

- produce municipal major risk information documents (DICRIM) and properly inform the local population of risks, in accordance with legislation;

- work proactively with the prefectoral authority to ensure that prevention plans are rapidly adopted;

- replace obsolete land use plans (POS), particularly in at-risk areas, with new generation urban planning documents and implement “territorial consistency plans” (SCOT).

Protecting built-up areas:

Local authorities and central government should:

- move public service premises located in flood-prone areas or, where possible, adapt such premises as appropriate;

- ensure that camping regulations are strictly enforced.

Central government should:

- accurately identify all dangerous coastal areas and quickly address them;

- ensure that local authorities contribute to the cost of purchasing properties at extreme risk;

- after reviewing prefectoral

action in relation to the governance of flood defences and rivers, initiate the required legislative changes. Ensure that funding is made available and that efforts are sustained;

- ensure that the reform of the “Cat-Nat” natural disaster scheme is completed as soon as possible, particularly in relation to premium adjustments for businesses and the exclusion of properties constructed in breach of regulations.

The compensation system:

Central government should:

- put together a guide defining procedures for channelling aid directly to victims;

- determine in advance how compensation is to be managed and paid, including the identification of a coordinating local authority;

- merge the two existing procedures governing amicable purchases of properties at extreme risk, clarifying their terms and ensuring that they are strictly enforced, particularly in relation to building permits;

- ensure that central government aid allocated to towns after this type of crisis is more closely aligned with actual local budgetary reality.

Recommendations

Local authorities and central government should:

↳ organise a joint discussion process on increasing insurance cover for properties owned by local authorities;

↳ improve the clarity and efficiency of the help scheme for farmers by reducing the number of different procedures and access points used.