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Major risks in Île-de-France: planning for prevention

Heatwaves, storms, floods: although three in every four Île-de-France residents do not consider they are exposed to risks of natural disasters, the concentration of the population, the growth in urbanisation, and the extent of the economic stakes are making the Île-de-France Region increasingly vulnerable to major risks.

Indeed, the existence of such risks should be appraised and taken into account by the various players in planning and development, and should be incorporated upstream into all of the projects. Regulatory changes driven by the will to implement more "sustainable" development are helping to heighten awareness of the problems.

The objective of raising Île-de-France to the rank of leading European eco-region will bring this dimension to be written into the future regional master plan. All of the players must mobilise themselves to take account of major risks in all thinks, and to acquaint themselves with and act through new management tools in this field.

Issue No. 138 of Les Cahiers de l'IAURIF revealed that knowledge of both the natural and the technological risks run was essential to preventing them.

This second part, "planning for prevention", aims to illustrate how major risks can be taken into account.

I hope that it will be possible to use these examples to develop policies and actions for addressing these concerns.

Jean-Paul HUCHON
President of IAURIF
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Taking account of major risks in Île-de-France: an indissociable part of regional planning and development

Ludovic Faytre
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Although the Ile-de-France Region has for many years been spared natural or technological disasters, certain recent events, in France and elsewhere in the world, are salutary reminders of the human and economic consequences of major risks: the flooding in the Somme (2001) and in the Gard (2002), the disaster of the AZF plant in Toulouse, or, at international level, the earthquakes in Iran and Morocco, or the tsunami of December 2004 in South-East Asia.

Beyond the exceptional extent of the phenomena observed and of the ensuing damage, these events have highlighted the consequences of urbanisation in risk zones, and the need to include the eventuality of the risk in all planning and development policies, and to take its consequences on board through schemes for prevention, protection, and crisis-management…

At national level, disasters have re-opened debates on the causes of the phenomena, on the liabilities incurred, and on planning permitted in risk zones, with people asking themselves whether we should continue to build on flood zones or whether high-risk industrial sites should be re-located away from urban areas, etc.

In Île-de-France, protection work (dikes to hold back flooding, and, to a lesser extent, reservoir dams, etc.), regulatory changes (natural risk prevention plans (PPRs), regulations on listed industrial facilities, etc.), and absence of disasters over a long period have gradually erased risk from the consciousness of planning players, of Central Government and of Local Government, and also of the population… The increase in the numbers of natural disasters, and the echo they have had, in particular in the media, have rekindled demand for protection from society, in particular from populations who are increasingly aware of risks, and less and less inclined to accept them; expectations with regard to public officers and experts have been substantially modified by this upsurge in natural disasters. Citizens, who want more openness, are also becoming increasingly demanding as technical progress unveils new tools for risk management.

In addition to this population safety requirement, entrepreneurs are becoming increasingly demanding and more concerned about the costs of the losses and damage that they might suffer, and also that they might cause and

therefore might have to pay compensation for. In parallel, at local level, new pressure is being exerted on mayors who might be held criminally liable in the event of disasters if they have not taken the necessary steps as part of their policing responsibilities.
Long absent from thinks and from planning, taking account of major risks has thus today become an indissociable component of planning and development thinks. This applies even more so in Île-de-France since the concentration of the population(1), the extent of the economic stakes, and also the complexity of organizing society or the extent of passenger and goods traffic multiply the stakes considerably.

Flooding at the heart of the stakes

Flooding is the main and most serious of the natural risks with which Île-de-France is faced(2). About one third of Île-de-France municipalities are threatened to various degrees by floods caused by water overflowing directly from rivers. The consequences of a major flood, of the centennial level of the 1910 floods, would be catastrophic. Exposing the Region's eight *départements* simultaneously to such an event would have a considerable impact on the life of the Region, affecting over 2 million people to various extents. The damage to the Region's economy would be equally as extensive: the cost of the damage from a centennial flood in Île-de-France is today estimated at the very least at 10 to 12 billion euros, and the figure is twice that if we take into account damage to networks and operating losses suffered by businesses – several tens of thousands of sites: large firms, small businesses, retailers, etc. – located in flood zones who would suffer an interruption in their activity.
Beyond the direct consequences, it is the entire operation of the conurbation that would be totally disrupted, with repercussions well beyond the flood zones, and a risk of economic life coming to a standstill for an indefinite length of time. This is what stands out most clearly from the work conducted since 2001 by the Secretariat-General of the Paris Defence Zone with a view to establishing the flood zone emergency plan, that work highlighting the vulnerability of the conurbation for aspects as varied as drinking water supply, energy supply, sewage treatment and refuse treatment, travel and logistics, etc.

But other risks need to be taken into account

The most widespread risks in Île-de-France are not necessarily the most dramatic. Subsidence and heaving phenomena in certain clayey soils due to drought affect the entire Regional area. Although they do not have any victims, the consequences on buildings, and in particular on private houses lead to very high compensation costs.
Alongside such widespread phenomena, some areas can be affected more locally by other natural risks: flooding due to runoff or to rising groundwater, land movements, etc.
In addition, the presence of major industrial sites, and also of high levels of traffic carrying dangerous materials potentially exposes Île-de-France to major technological risks. Thus, numerous industrial sites implement dangerous products or present significant risks of explosion, fire, or dissemination of toxic substances; in this respect, they come under the "Seveso" European Directive of December 9, 1996. That Directive concerns keeping under control dangers related to major accidents involving dangerous substances. The number of sites subjected to the Seveso Directive is decreasing steadily in Île-de-France. In January 2005, 82 sites (41 one of which are at the upper threshold of the Directive), were listed within the Region's boundaries as against 101 (42 at the upper threshold) in June 2002. This reduction is due to the closure of certain firms, in particular hydrocarbon storage sites in the inner suburbs, and above all to the measures taken by industry to reduce the risk at source, e.g. by reducing the quantities of dangerous substances present on the site. The risk perimeters (within which there would be immediate or deferred effects) defined by the surveys of the danger around the upper-threshold Seveso sites cover several thousand hectares in Île-de-France. The extent of the stakes is directly related to the locations of the sites, and not all of the sites have the same level of sensitivity. An analysis of the land use within a radius of 500 m around upper-threshold sites reveals that, for one third of the sites, the level of urbanisation (housing, infrastructure, industry and business) is less than 10%, but that, for about ten of them, it is greater than 40% and can be as high as 70%.

(1) 90% of the Île-de-France population (10.95 million) live within a radius of 30 km from the centre of Paris, i.e. within a circle representing 23% of the surface area of the Region.
(2) The various natural and technological risks in Île-de-France are described in detail in Volume 1 of the Cahiers de l'IAURIF devoted to major risks, "awareness for better control," No; 138, 3rd Quarter of 2003.

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Finally, several million metric tons of dangerous materials pass through Île-de-France every year, by land transport modes: essentially by road but also by rail or inland waterway. A very large proportion of that transport also goes via pipelines conveying fluid under pressure. That means of transport is reputed to one of the safest for carrying oil, gas, or chemical substances over long distances. The explosion of a gas pipeline in August 2004 in Ghislenghien in Belgium, at the heart of an industrial zone (24 dead, and 160 injured) nevertheless reminds us that, in this field, as in many others, "zero risk" does not exist. In view of its energy needs, Île-de-France is particularly concerned by these networks whose routes total nearly 5,100 km.

An uneven distribution of risks

Although most of the Île-de-France municipalities are concerned by major natural or technological risks, admittedly to widely varying extents, certain areas on which multiple hazards and major stakes are superposed appear as potentially more exposed than others. In general, the urban environment is a place where natural and/or human-generated hazards can combine, with dense land use and activity levels in small areas.

In this respect, the Paris conurbation is particularly exposed. In addition to flooding by river overflow there are risks of flooding by runoff which is worsened in urban environments because the ground is covered with impermeable surfaces and because the drainage networks become saturated, and there are also underground risks related to the presence of disused workings for extracting quarry materials.

Industrial activities being historically located on certain areas such as La Plaine de France, Seine-Amont (Seine-side upstream from Paris) or the Gennevilliers Meander, close to the river, even today results in many risk sites, in particular oil depots, being concentrated there, such sites also generating major levels of dangerous substance traffic, via pipelines for stocking up the sites, and often via the road networks for distributing the products.

These risk zones being superposed should also, in a multi-risk approach, make it possible to assess possible domino effects related, e.g. in the event of accidents, to the concentration of risk industrial sites in certain sectors (Port of Gennevilliers, Industrial Estate of Mitry-Mory….) or, in the event of major flooding, their being located in flood zones (one third of Seveso sites are located in part or entirely in flood zones).

The increasing vulnerability of the Paris conurbation

The increasing urbanization that Île-de-France is experiencing is resulting in the Region becoming increasingly vulnerable to major risks. Human activities that are increasingly numerous and diversified, and, above all, that interact increasingly with one another at local area level are making it increasingly complex to analyse this vulnerability. The rise in living standards, the development of urbanization, infrastructures and networks having high added value (telecommunications, electronics, etc.), and the technical progresses have also increased in significant proportions the overall value of property and the fragility of the activities exposed.

The change in urban forms is also a vulnerability factor. Thus, for housing and for populations, a major flood would have multiple direct and indirect consequences. Systematically burying the cables of the various energy and communications networks, the systematic use of cellars and basements for installing back-up electricity generator sets and vulnerable installations (electrical substations, boiler rooms, lift mechanisms, etc.), and the development of underground car parks, etc. constitute factors worsening and accentuating the vulnerability of housing, even for buildings in which only the lower levels are liable actually to be flooded. And even though certain sectors are spared direct overflow, the rise in groundwater levels that accompanies major flooding enlarge the exposed zones with risks of major damage too for cellars or underground car parks, etc.

Although the extent of urbanisation in risk zones can be considered as a vulnerability indicator, we should not forget the increase in the stakes through renewal of the urban fabric, through the increase in the capital invested, and through the development of infrastructures… Thus although nearly 1,550 hectares were urbanised in flood zones in Île-de-France from 1982 to 1999, 4,600 hectares of zones that were already urbanised were converted (from industry to housing, from urban open spaces to facilities and infrastructure, etc.) over the same period; renewal "like-for-like," although doubtless very considerable, is much more difficult to assess.

The catastrophic nature of an event is related directly to land use and to the potential risks that it represents with respect to human activity. Keeping urbanisation under control in potentially dangerous zones appears as one of the most effective means of reducing the seriousness of a loss.

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Planning and risks: the stakes of the Region's Master Plan (SDRIF)

Reconciling the objective of urban development with taking account of major risks

The various inventories and assessments made by Central Government and by the Region prior to undertaking the review of the Master Plan converge to consider that the 1994 Master Plan for the Île-de-France Region (SDRIF) does not address the issues of major risks sufficiently enough. Only floods – by river overflow and by runoff – are mentioned and are the subject of a special chapter in the detailed orientations. The "land movement" risk, in spite of the stakes, in particular in the inner suburbs, is not mentioned. The same goes for technological risks, be they related to industrial manufacturing or storage sites, or to transporting dangerous goods, in spite of the extent of the internal and external traffic that passes through Île-de-France.

The regulatory change in the field of risk prevention, with the implementation of risk prevention plans (PPRs) that constitute encumbrances of public utility that are opposable to planning documents, the concerns of sustainable development and the avowed desire to make Île-de-France the leading eco-region of Europe, the highlighting of the vulnerability of the Paris conurbation and the assessment of the direct and induced costs of a major flood, the heightening of awareness in councillors and the expectations of the population… are all elements that contribute to the issues and the stakes of major risks being taken into account to a larger extent in the future Master Plan.

The Regional Master Plan, which is reviewed and drafted in association with Central Government on the initiative of the Regional Council of Île-de-France, should constitute one of the vectors of the policy for risk prevention and for reducing the vulnerability of the Île-de-France area. The regional level appears the most suitable for playing the essential role co-ordinator in this field. The distribution of responsibilities between Central Government and the municipalities does not always make it possible to assess correctly all of the constraints to be taken into consideration, in particular in the context of region-wide consistency.

In view of the desires expressed by numerous Île-de-France players for boosting building programmes as a response to the current shortage of housing, it is important today to take account of risks in the planning and development projects. This requires assessment of the compatibility and of the consistency of future planning and development within the framework of cross-wise and inter-sector vision, and also study of the disruption that might affect the area, its infrastructures, and daily life in it.

Necessary overall consistency…

If flood prevention naturally calls for a think at catchment area or basin level which, for the Seine, exceeds to a large extent the administrative boundaries of the Île-de-France Region, other hazards (industrial risks, land movements, etc.) are problems that are essentially local or widely scattered (transport of dangerous substances).

Natural and technological risks should be addressed under a common preventive policy developed at Regional level, in liaison with Central Government and with the other municipalities. In view of the multiplicity of the players involved at widely differing levels, such a policy requires a common regional vision of the stakes and issues, with the aim of achieving an overall reduction in vulnerability.

As regards flooding, the Regional Master Plan (SDRIF) should be an opportunity to assert the principle of upstream/downstream solidarity at regional level between the densely urbanised zones of the central conurbation and the rural zones of the outer suburbs, and also at interregional level through thinks and actions that are common at the overall level of the catchment areas. This is the direction followed by the thinks and surveys undertaken in Île-de-France on the area of La Bassée, upstream from the Paris conurbation, on the project to lay out hydraulic subdivisions or "*casiers*" serving to reduce the consequences of a major flood by deferring the flood waves of the Seine and of the Yonne; or by the thinks and surveys conducted on the entire Oise and Aisne basin (6 *départements*, 3 regions) by the Entente Oise-Aisne association. But it is also necessary, in the context of solidarity between local areas, to assess the hydraulic consequences downstream from the reinforcement of the linear flood protection constructions in dense urban areas.

Also as regards flooding by rivers bursting their banks, the principle of preserving and enhancing flood expansion zones should be asserted firmly. Implementing a flooding risk prevention plan (PPR) in the more rural areas on the boundary of the

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Region (Bassée, Marne Valley upstream from Meaux, etc.) should make it possible to contribute to such preservation. In peri-urban areas in which the pressure for urbanisation is the strongest, non-urbanised areas in flood zones should be considered in the light of all of the potential uses: natural value or recreational value, and also flood expansion, etc. Such multi-functionality should be taken into account during planning thinks in particular since certain forms of urban use (parks and gardens, playing fields, etc.) remain compatible with flood risks, from the point of view of safety of property and of people. It might be necessary to examine the possibilities of making departmental public land policies [*espaces naturels sensibles* (sensitive natural areas)] or regional public land policies (Agence des Espaces Verts) consistent in order to preserve such zones.

The SDRIF (Île-de-France Regional Master Plan) could also encourage greater consistency for the PPRs (in particular the flood risk prevention plans) drafted at Regional level. The differences observed in the zoning, in the regulatory expression… between the numerous documents already approved – even if such differences can be explained – fuel criticism from their opponents: local councillors, or residents' associations. Although the very heterogeneous nature of the regional territory justifies differences in the regulations and in the zoning, and adaptation of the regulations and of the zoning to the urban and geographic characteristics and context, the SDRIF could encourage PPRs to be made more homogeneous (during review of them) in areas presenting similar characteristics (dense urban zone of the inner suburbs, peri-urban zone, and rural zone, main hydrographic network and small valleys, etc.).

The stakes related to flooding are considerable but controllable in a context of moderate growth, provided that the regulatory measurements (flood risk prevention plan (PPRI), etc.) are complied with, and provided that public decision-takers and citizens can be made more responsible so that they become co-managers of the risk.

But alongside such flooding phenomena which require thinks and actions at the level of large areas, the question arises of intervention and of planning responses to very localised or scattered risks. For risks characterized by more local stakes, how is it possible to assess the reduction in vulnerability at the level of the SDRIF? What actions should be implemented?

…and particular stakes

The issue of further urban development in exposed zones

Keeping urbanization under control in flood zones, and more generally in major hazard zones (industrial risks, under-mined zones…) constitutes a major issue in not increasing the vulnerability of people and of property, but the thinks should also relate to urban renewal in risk zones.

Recomposing the dense zones or "re-building the city on the city" constitutes one of the responses to the will to keep the development of the conurbation under control. Faced with the high demand for housing, with the rarity of available areas, with pressure on land… converting numerous areas involves transforming former industrial sites in a context of gradual de-industrialisation, and building housing and infrastructure zones on them. Several hundred hectares are concerned in Île-de-France, but a large portion of that land supply, in particular in the inner suburbs, lies along riverbanks and canal banks which were historically sites on which industrial development took place. Numerous operations and projects might be mentioned: the consulted planning zone (ZAC) of Le Trapèze on the former Renault factories in Boulogne-Billancourt, the Seine-Arche ZAC in Nanterre, the Avenir Gambetta projects in Ivry-sur-Seine, Les Vœux or Les Gondoles ZACs in Choisy-le-Roi, etc. Transforming these brownfield sites into housing zones is leading to an increase in the densities of populations in the risk zones, and can also lead to an increase in the value of the exposed property that might appear contradictory to the objectives of reducing vulnerability. The projects developed on the future ZACs in flood zones should give priority to developing architectural and urban planning responses that, within the framework of the regulatory constraints imposed by the PPRs when such PPRs exist, make it possible to steer urbanisation towards systems that are less risk-generating, and to reduce the vulnerability of the infrastructures and of the housing.

Hydrocarbon storage in the inner suburbs

The accident at the AZF plant in Toulouse in 2001 highlighted the issue of locating industrial sites having major risks in dense urban environments; in Île-de-France, it is, in particular, on hydrocarbon depots that the stakes are concentrated. Eight of the nine Seveso upper limit sites listed in inner suburbs are oil depots, located a

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long time ago, and dependent on pipeline networks for being stocked up. They keep industrial sites and petrol stations, and also airports supplied with fuel.
Today, numerous local authorities and local councillors, in particular in the Seine-Amont (Seine-side upstream from Paris) sector want the depots that are still in activity to be closed, in view of the potential human and environmental risks that weigh on their areas. However, although the issue of the risks of having a hydrocarbon depot located in a densely populated zone arises in terms of very local stakes, of the order of a few hundred metres around the site, relocating it involves stakes beyond the site alone, with, in particular questions on organising and distributing hydrocarbons and safety of supply, and also on the increase in the dangerous substance transport risks.
During the decade from 1990-2000, the Region recorded a significant reduction in its gross storage capacities, with the closure of 7 sites (347,000 m^3). More recently, decommissioning the Shell depot in Choisy-le-Roi (63,000 m^3) and the Total depots in Saint-Ouen-Cliché (70,000 metric tons) and Ivry-sur-Seine has been started. These closures result from a multitude of factors:

- from the reduction in the commercial stocks of oil companies (just-in-time procurement management);
- from re-organization following the numerous mergers that have taken place in recent years;
- from environment and safety regulation changes requiring costly investment for upgrading into compliance with standards; and
- from major urban constraints, in particular in the inner suburbs and from the high pressure from local authorities.

As regards technological risks related to major industrial sites, relocation proposals comply with the need to protect populations while the space surrounding the risk sites is becoming increasingly densely populated. However, only the risks that are immediately perceptible (those directly related to the site) are taken into account. But that is only one aspect of the major technological risks that are present at all stages of the industrial chain: manufacture, storage, and also transport. Beyond the difficulty of locating a new depot, which depends on the pipeline route, moving a site away from urban zones often leads to moving it further away from the supply sources and from its customers. For hydrocarbons, which constitute the majority of the products transported, concentrating the loading zones will inevitably lead to an increase in the distances travelled for distributing the products to Île-de-France users, and therefore to an increase in the dangerous substance transport risk.
Since, in the coming years, maintaining the existing storage capacities is a priority in order to guarantee secure and safe supply for the Paris conurbation and its Region, it is thus necessary to take an overall approach to the problem of dangers related to hydrocarbon depots, taking into account not only the dangers related to the fixed facilities, but also the dangers related to the transport of dangerous substances, in supply and distribution.

Accompanying actions

Alongside the regulatory action, it is thus necessary, as part of an overall prevention policy, to set objectives that must be relayed at local level as partner actions, in particular in the field of information, awareness-heightening, and assistance with diagnosis.

Improved knowledge and improved assessment of risks: a must

Taking risks into account in planning thinks presupposes prior knowledge of hazards. Such knowledge remains essential in order to assess the degree of risk to which populations, property, and socio-economic activities are subjected, and in order to organise or arbitrate as well as possible the co-existence between the various land uses by reconciling the development stakes with the safety of Île-de-France residents.
Certain hazards are today well identified, monitored, and mapped in Île-de-France. This applies to flooding by rivers bursting their banks, with the Regional Atlas of Highest Known Flood Marks (PHECs) and to the zoning of hazards for the flood risk prevention plans (PPRs), and also to disused underground quarries – for most of the area of the Region – or indeed to major technological risk (Seveso) sites whose activity is strictly regulated…
In contrast, other phenomena or hazards do not yet enjoy the same level of knowledge. Thus, the risks of flooding by the groundwater rising or by runoff are not the subject of any specific survey at regional level, and remain difficult to quantify. Knowledge of underground risks remains in its embryo stages in Seine-et-Marne, even though that *département* has nearly one third of the municipalities potentially concerned, and even though it also has one of the highest urbanisation rates in Île-de-France, in particular in the small towns and villages on the outskirts of the central conurba-

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tion and in the rural outer suburbs; surveys have now begun, but fine knowledge, equivalent to the knowledge of the other *départements* will, in view of current means, undoubtedly require several decades.

For the technological risks, sites other than the Seveso sites can have risks, and should therefore be given particular attention (farm silos and fertiliser depots, logistics warehouses, etc.). Finally, in view of the tonnages involved in transporting dangerous substances by road, rail, or inland waterway, it would be worth analysing the extent of that traffic in the built-up areas, the routes taken, or the parking conditions, etc. Assessment of the risks and of the stakes along the routes on which dangerous substance transport is concentrated, in a radius close to the main dangerous substance traffic generating sites (oil depots, chemicals industry, etc., and also sorting stations), could be a first step, the very scattered nature of the dangerous substance transport risk making it difficult to establish regional mapping.

Flooding: reducing the vulnerability of the existing urban areas

At Île-de-France level, 35% of the flood zones are already urbanised, but that figure is over 90% in the inner suburbs. Surveys conducted by the Inter-*Département* Institution for Dam Reservoirs of the Seine Basin (IIBRBS) highlighted, in the early nineteen nineties, the extent of the socio-economic consequences of a major flood in Île-de-France. More recently, the work by the Secretariat-General of the Defence Zone has helped to raise awareness of the vulnerability of the Paris conurbation, and in particular of its functional organization (energy, health, transport, communications, etc.); the specialised flood emergency plan (PSSI), in the process of being drafted, aims to reduce this vulnerability by encouraging the relevant network managers and operators to develop crisis scenarios, to draft emergency plans protecting their own installations, and also to prepare for the post-crisis period so as to start up their activities again as quickly as possible.

As regards planning and in a futures watch perspective, the stakes and the vulnerability of property and of people in the potentially exposed areas should be limited. This is the object of the regulatory approach that is expressed by implementing the natural risk prevention plans and the future technological risk prevention plans. But although the PPRs (risk prevention plans) make it possible to prevent an increase in the density of urbanisation in the sectors exposed to the worst risks, they do not act to a very large extent on the situations inherited from the past. They cannot constitute the only tool for reducing the vulnerability of property.

Today, actions need to be relayed to and new actions need to be devised for the local authorities and their departments, businesses, and residents… Several hundreds of thousands of dwellings (individual and collective housing, sometimes having basements over several levels and underground car parks), tens of thousands of firms (administrative departments and also production units or storage and logistics centres) of all sizes, municipal public facilities and infrastructures (schools, cultural amenities, etc.) today lie within flood zones and would be directly or indirectly affected by a major flood. It is on such property that the direct cost of major flooding would fall…, and also the indirect economic costs for firms, related to breaks in the logistics supply line, operating losses, etc.

The flood zone emergency plan should be extended to the most local level, i.e. to each municipality, through prevention and protection work in order to minimize the consequences of a major flood. It is necessary to increase the number of actions aimed at local players, land operators, collective or social housing managers, and the small business fabric, etc. in order to reduce the damage in the event of flooding and in order to make the residents exposed to the risk more responsible. The Paris Chamber of Commerce and of Industry (CCIP) thus recommends improving information to firms, promoting establishment of individual vulnerability diagnoses, and implementing prevention measures that are appropriate and in proportion. Firms who have short-term or medium-term main concerns do not incorporate or do not incorporate to a very large extent the consequences of natural disasters, in particular when they occur once per century; information campaigns need to be developed for them in order to cause genuine heightening of awareness without unnecessary alarmism, and in order to prepare for a possible crisis situation.

Regardless of the natural or industrial risk, the individual protections (protection from water, use of waterproof materials, confinement, etc.) make it possible to limit the effects of certain events. Although they can be recommended or even required by regulations, questions arise as to the financial levers to be implemented, to checking of effectiveness and to complying with instructions for obligatory measures.

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The essential sharing of a risk culture

Reducing the stakes in flood zones, implementing actions to reduce the vulnerability of the existing property, and preparing for possible crisis situations involve heightening awareness and sharing of a risk culture by all of the local players (local councillors, decision-takers, technicians, economic players, etc.), and by the population.

As risk producers in the sense that their action might worsen or reduce vulnerability, planners – local councillors, technicians, users, etc. – must be aware of their own role in order to avoid worsening situations that involve numerous responsibilities. Location of housing, of economic activities, of facilities, and of infrastructures… should also be examined from the safety and risk angles.

The difficulty of having local players accept the constraints related in particular to implementing risk prevention plans can be explained in part by their poor perception of the risk. Without any mechanism for conserving memory, events are quickly forgotten. Thus, paradoxically, the constructions developed for protection from natural risks, and the technical or regulatory changes in the industrial field, by very significantly reducing the probability of disasters occurring, have strongly attenuated risk awareness. For flooding, for example, the major constructions (reservoir dams) and the protections (flood walls, dikes, etc.) have limited the consequences of small floods and have considerably reduced the frequency of flooding, thereby causing the feeling that a risk exists to disappear. Today, floods that could cause major damage in Paris and in its inner suburbs are half-centennial or centennial occurrences; floods thus appear even more hypothetical to players and to local populations.

Today, we need to have hazards accepted while reducing the anxiety that they arouse. In this respect, the dimension of informing and of involving local players is a fully fledged part of prevention policy.

Information documents at the service of prevention

The Law of July 22, 1987, by making it mandatory to inform citizens on the risks to which they are exposed, generated a series of regulatory documents going from Central Government to Local Government, and then from Local Government to citizens. This preventive information is embodied by various documents:

- The DDRM (*Département* dossier on major risks) is an awareness-heightening document that lists major risks, both natural and technological risks, in the *Département*, and the foreseeable consequences for people and property, and the environment, as well as the measures taken to limit their effects: technical measures (existence of flood walls, regulatory measures PPRIs (flood risk prevention plans), PLUs (local town-planning plans), surveillance and warning measures).
- The DCS (summary municipal dossier) is established on the basis of the DDRM, in consultation with the municipal departments. The DCS is a regulatory document notified to the Mayor by Prefecture Order. Consultable by the public at the Town Hall, it makes it possible to specify the risks existing in each municipality.
- The DICRIM (municipal information dossier on major risks) is produced by the Mayor on the basis of the information contained in the DDRM and in the DCS. It specifies the prevention measures taken at municipal level, in the context of the town-planning documents and of the policing powers of the Mayor.

In Île-de-France, the DDRMs are established in all of the *Départements*. Conversely, not all of the DCSs have yet been approved, and very few DICRIMs have been produced. Since the level of the latter document is the level at which information operations take place for private individuals and firms, it is important for the DICRIMs to be compiled rapidly. In addition, the possibility for the Mayor of requesting a Prefecture Order stipulating that the DCS is equivalent to the DICRIM reduces the scope of the document; in the absence of a location map, and of a hazard map, it would seem difficult to heighten the awareness of a resident or of a local player…

Although, naturally, dissemination of these tools should be encouraged in order to enable private individuals and firms to keep themselves informed about the warning schemes and about the safeguard measures that are planned, it is to be feared that their impact will remain too small. Those documents are consultable, either at the Prefecture for the DDRM, or at the Town Hall for the DCSs and DICRIMs. However, making the documents available in this way would not appear to be conducive to proper dissemination of information. Given the opening hours of the administrations, and the

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lifestyles of Île-de-France residents, and apart from a small circle of players who might use the documents, access to the information, for a resident who is concerned, would appear to be difficult.

Other approaches are also suitable for facilitating information and knowledge sharing:

- Appending natural risk prevention plans to town planning documents should contribute to improving taking risks into account in the urban development of the municipality.
- The Law of July 30, 2003 confirms the right to preventive information by instigating obligations for sustaining risk memory: two-yearly information of populations by Mayors, setting up and maintaining flood marks, mandatory specification of risk during a property transaction (sale or let).
- In the field of major technological risks, in order to develop a risk culture and in order to encourage good behaviour from residents in the event of an accident, that Law instigates local information and consultation committees (CLICs) for any industrial area having one or more "Seveso AS" sites. Those committees make it possible for consultation by and for participation from the various parties involved – in particular local residents – in preventing the risks of accident throughout the lives of the sites.

Deployment of new information and communications technologies should make it possible to open new prospects as regards informing the public. An increasing number of Île-de-France municipalities are developing their own information sites on the Internet – 30% of municipalities are today on line, covering over 80% of the Region's population. But while numerous Web Sites offer dossiers on the economy, on the environment (parks and gardens, waste, etc.), town planning, local life, etc., it is striking to see, in particular for the municipalities concerned by the presence in their areas of Seveso sites, flood risks, or underground risks, there is an almost total absence of any information relating to major natural or technological risks be it in the environment section or in the town-planning section…

This absence of information on the municipal Internet sites expresses to a certain extent the difficulty that local councillors have in informing in a context that does not present immediate danger: what information should be passed on (risk maps, hazard maps, regulatory zoning, regulations) and in which form? How is it possible to communicate positively on a subject that is, in principle, negative? How can reactive movements from residents be pre-empted? What explanations should be developed to avoid populations succumbing to disaster fixation?

Today, development of computer tools with geographic information systems (GISs) that make it possible to locate the phenomena and to cross the multiplicity of information, and development of Internet tools with, in particular, generalisation of broadband, should make it possible to offer, in the relatively short term, the possibility for anyone to access such preventive information and to identify the risk zones. In view of the extent of the stakes in Île-de-France, producing such a tool could be justified.

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Regulations that serve planning

The Natural Risk Prevention Plans (PPRs) are intended as a priority for areas having major stakes and subjected to high hazard levels. They lay down the conditions for new building work and define prevention, protection, and safeguard measures, as well as planning measures.

Drawn up by central government, they are recognised regulatory tools that cover most of the municipalities exposed to high risks.

Many of Île-de-France's municipalities are concerned by major risks, be they natural or technological, but certain areas stand out as being potentially more exposed than others.

The objectives of the PPRs are shared widely, but the methods of drawing them up and their contents are arousing certain criticisms from the local councillors, private individuals, and firms to whom they apply.

In Île-de-France, the Flooding Risk Prevention Plans (PPRIs) are the most common.

In Val-d'Oise, after ten years in existence, the PPRI is gradually establishing itself; in Val-de-Marne, whose identity is marked by the presence of water, the PPRI is the first plan to be drafted in the inner suburbs.

But Île-de-France is also threatened by land movement risks related to disused quarry workings. The Inspectorate-General for Quarries acts as technical expert and assessor for the Departmental Directorates for Infrastructure (DDEs).

In the Département of Seine-Saint-Denis, the DDE has developed a multi-risk approach in response to the human and economic stakes in an undermined area that is also faced with the risk of subsidence and heaving.

The PPRs' roles in prevention, in limiting the consequences of natural disasters, and in consultation at the service of planning projects is thus demonstrated through these examples.

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Les plans de prévention des risques naturels : des résultats encourageants, des simplifications nécessaires pour plus d'efficacité

Thierry Hubert(1)
DDE du Val-d'Oise

The Natural Risk Prevention Plans: encouraging results, but simplifications are needed to make them more effective

The Natural Risk Prevention Plan (PPR) set up by the Law of February 2, 1995 – Article L. 562-1 of the Environment Code – is today one of the preferred instruments for State action as regards preventing natural risks. Ten years after being set up, it has gradually established itself as the essential tool in natural risk prevention. At June 15, 2004, 4,640 municipalities in France were covered by an approved document.

Le plan de prévention des risques naturels (PPR) créé par la loi du 2 février 1995 (article L. 562-1 du code de l'environnement) constitue aujourd'hui l'un des instruments privilégiés de l'action de l'État en matière de prévention des risques naturels. Dix ans après sa création, il s'est progressivement imposé comme l'outil essentiel de la prévention des risques naturels. Au 15 juin 2004, 4 640 communes étaient couvertes en France par un document approuvé.

(1) Chef du service de l'urbanisme et de l'aménagement. Ancien chef du service de l'urbanisme et de l'aménagement, direction de la prévention des pollutions et des risques, sous-direction de la prévention des risques majeurs.

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Les PPR et l'action réglementaire en Île-de-France

Ludovic Faytre
IAURIF

La prise en compte des risques dans les réflexions d'aménagement en Île-de-France se traduit d'abord dans le domaine réglementaire par la mise en œuvre progressive des procédures de PPR, instaurées par la loi Barnier de 1995. Les PPR réglementent les projets d'installations nouvelles, avec un champ très important et des moyens d'actions très souples. Aujourd'hui, près de la moitié des communes franciliennes sont dotées d'un PPR approuvé et 80 % d'entre eux concernent le risque inondation.

The PPRs and regulatory action in Île-de-France

*Risks being taken into account in planning thinks in Île-de-France is evidenced firstly in the regulatory field by the gradual implementation of PPR procedures instigated by the "*Loi Barnier*" Law of 1995. The PPRs regulate new location projects with a very wide scope and very flexible means of action. Today, nearly one half of all Île-de-France municipalities have approved PPRs and 80% of those plans concern the risk of flooding.*

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Le PPRI de l'Oise dans le Val-d'Oise : une situation évolutive depuis 10 ans

Charles Thiébaut[1]
DDE du Val-d'Oise

The Flooding PPR (PPRI) for the River Oise in the département *of Val-d'Oise: a changing situation over the last ten years*

The consequences of the Oise floods in vulnerable sectors in which urbanisation development had been poorly controlled have acutely heightened awareness in the populations living along the river. The need to lay down strict rules for planning in flood zones led to the launch of a Flooding Risk Prevention Plan. Admittedly, the existence of the PPRI has had its ups and downs over the last ten years, but the spirit of consultation that pervades it means that it is gradually making its mark in the planning of the Oise Valley and in the consciousness of local councillors and residents.

Les conséquences des crues de l'Oise dans des secteurs vulnérables où le développement de l'urbanisation avait été mal maîtrisé ont développé une grande sensibilité des populations riveraines. La nécessité d'encadrer strictement les aménagements en zone inondable a conduit au lancement d'un plan de prévention des risques d'inondation. Certes, l'existence du PPRI est mouvementée depuis dix ans, mais la concertation qui préside fait que celui-ci impose progressivement sa marque dans l'aménagement de la vallée de l'Oise comme dans la conscience des élus et des habitants.

(1) Bureau des protections et des risques.

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La mise en œuvre d'un PPRI : l'exemple du Val-de-Marne

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Floriane Tremey
Jean-Pierre Mélé
DDE du Val-de-Marne

Implementing a Flooding Risk Prevention Plan (PPRI): the example of the Val-de-Marne Department

The identity of the Val-de-Marne département *is profoundly marked by the presence of the Rivers Seine and Marne. This area, which is highly urbanised, has, throughout its history, regularly been confronted with the risk of flooding, and it lives under the threat of another major flood that could have consequences on the lives of residents, on the economic activities, and on operation of the public services. The PPRI was developed with broad consultation before being approved in July 2000. Its revision in 2003 should make it possible to adjust the recommendations in certain zones and to make it consistent with other PPRIs of the Paris Ile-de-France Region.*

L'identité du Val-de-Marne est profondément marquée par la présence de la Seine et de la Marne. Ce territoire, fortement urbanisé, a été régulièrement confronté au risque d'inondation au cours de son histoire et vit sous la menace d'une nouvelle crue majeure qui pourrait avoir des conséquences sur la vie des habitants, sur les activités économiques et sur le fonctionnement des services publics.

L'élaboration du PPR Inondation a fait l'objet d'une large concertation avant son approbation en juillet 2000. Sa mise en révision en 2003 devrait permettre d'ajuster les prescriptions sur certaines zones et de le mettre en cohérence avec d'autres PPRI de la région Île-de-France.

(1) Ingénieur des TPE chargé du Pôle environnement et prévention des risques.

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Les PPR mouvements de terrain : les interventions de l'IGC

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Inspection générale des carrières

La région parisienne est particulièrement exposée aux risques de mouvements de terrain liés à d'anciennes exploitations souterraines. La loi Barnier de 1995 a instauré un outil de prévention des risques naturels, le plan de prévention des risques naturels prévisibles. En appui technique aux directions départementales de l'Équipement, l'Inspection générale des carrières peut intervenir pour élaborer la carte des aléas mouvements de terrain liés aux cavités souterraines et pour proposer des dispositions réglementaires. Pour l'IGC, des missions multiples où connaissance des phénomènes, collecte et diffusion de l'information sont étroitement liées.

Land movements PPR : the actions of the IGC

The Paris Region is particularly exposed to risks of land movements due to disused underground workings. The "Loi Barnier" Law of 1995 instigated a natural risk prevention tool: the Foreseeable Natural Risk Prevention Plan. Offering technical support to the Departmental Directorates for Infrastructure, the Inspectorate-General for Quarries can act to make a map of the land movement hazards related to underground cavities, and to propose regulatory provisions. The IGC has multiple missions in which knowledge of the phenomena, collecting disseminating information are closely related.

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PPR mouvements de terrain : pour une approche multirisque en Seine-Saint-Denis

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DDE de Seine-Saint-Denis

Une grande majorité des communes de Seine-Saint-Denis est concernée par la présence de cavités souterraines, et toutes sont exposées au risque de retrait-gonflement des sols argileux. Les enjeux humains et économiques sont importants sur ce territoire sensible aux risques naturels, en particulier aux mouvements de terrain. Afin de mieux les maîtriser, la direction départementale de l'équipement a reçu mission d'élaborer des plans de prévention des risques, dans une approche multirisque permettant d'appréhender de manière cohérente et en étroite concertation avec les collectivités, les réglementations et les enjeux urbains, économiques et paysagers.

(1) GEP Mission environnement.

Land movements PPR: for a multi-risk approach in Seine-Saint-Denis

A large majority of the municipalities of Seine-Saint-Denis are concerned by the presence of underground cavities, and they are all exposed to the risk of subsidence and heaving suffered by clayey soils. The human and economic stakes are high in this area that is sensitive to natural risks, in particular to land movements. In order to keep them better under control, the Departmental Directorate for Infrastructure has been entrusted with the mission of drawing up risk prevention plans, under a multi-risk approach making it possible; consistently and in close consultation with the local authorities, to grasp the urban, economic, and landscape issues and regulatory approaches.

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Thinks for action

The Île-de-France Region, the Mulhouse Conurbation and the Marseille Region are, like other areas, faced with major risks, be they natural or technological.
Thinking about the ways and means of achieving better understanding and awareness of the risks, and about an overall prevention / planning / protection / development / conservation approach constitutes a common base for all three conurbations.
In Île-de-France, a major flood would have a major impact on the Region's economy and for over 3 million people.
The Specialised Flood Rescue Plan (PSSI) drawn up by the Secretariat-General of the Paris Defence Zone organises the emergency and rescue services and operation of the other services in the event of a major flood in Île-de-France. It pools the means of each player in order to meet more fully the requirements of major crisis management.
The Mulhouse Region has all of the natural and technological risks concentrated in it, in particular the risk of earthquakes.
Applied surveys show that, in spite of the mobilisation of the local authorities, of the prevention actions implemented and of the documents specially drawn up, citizens are unconcerned about these phenomena.
In the area of the Greater Urban Community of the Marseille Provence Metropolis, the Marseille Conurbation Town Planning Agency (AGAM) is implementing an approach to identify the risks and harmful phenomena that fits into a process of shared information management and of pooled experience.
The level of awareness of risks is satisfactory, but the sources of knowledge and the skills levels are disparate, and the players are manifold, as are the responsibility levels and the geographical scales.
Experience sharing, within legal reference frames, is becoming a necessity in order to develop common regional visions of the stakes, so as to reduce the vulnerability of the local areas.

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Plan de secours contre le risque inondation en Île-de-France : anticiper pour réduire l'impact des crues

Secrétariat général
de la zone de défense de Paris

Mars 2001, la Seine monte et atteint 5,21 m au pont d'Austerlitz. Le niveau d'eau est loin d'être catastrophique, mais déjà des répercussions se font sentir dans certains départements franciliens. Des habitants sont évacués et de nombreuses voies sont coupées ; à Paris, les voies sur berges sont partiellement ou totalement fermées pendant 54 jours. L'histoire pourrait s'arrêter là, mais tous les spécialistes s'accordent à dire que l'Île-de-France revivra une crue centennale comme celle de 1910 qui a atteint 8,62 m à Austerlitz(1). La date de la prochaine grande crue reste une inconnue, mais l'ampleur et le nombre de dysfonctionnements qui en découleront seront majeurs pour la région.

Prévention, coordination, communication et planification restent aujourd'hui les parades les plus efficaces pour limiter les effets d'une crue majeure.

(1) En complément de cet article, se reporter au *Cahier de l'IAURIF* n° 138, troisième trimestre 2003 : «Le risque d'inondation par débordement de rivière», Anne GUILLON.

Emergency Plan for the risk of flooding in Ile-de-France: anticipating to reduce the impact of flooding

In March 2001, the Seine rose to a height of 5.21 metres at the Pont d'Austerlitz in Paris. The water level was far from being catastrophic, but repercussions were already being felt in certain départements of Ile-de-France. Residents were evacuated and numerous streets and roads were cut off. In Paris, the riverbank expressways were partially or totally closed for 54 days. That could be the end of the story, but all of the specialists agree that Ile-de-France will experience again a centennial flood like the 1910 flood which reached 8.62 metres at the Pont d'Austerlitz. The date of the next major flood remains unknown, but the extent of the ensuing upsets and malfunctioning will be considerable for the Region. Prevention, co-ordination, communication, and planning remain today the most effective ways of limiting the effects of a major flood.

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Prévention des risques majeurs dans l'agglomération mulhousienne : quelles perceptions et quels points de vue des actions ?

Sandrine Glatron[1] et Elise Beck[2]
Laboratoire image et ville
CNRS–Université Louis Pasteur, Strasbourg

Les risques majeurs, naturels ou technologiques, constituent une préoccupation majeure pour les pouvoirs publics comme pour les citoyens. Mais la perception de chacun est différente selon les groupes d'acteurs.

À Mulhouse et dans son agglomération, des études appliquées ou universitaires réalisées par des chercheuses du Laboratoire image et ville sur la perception des risques par les Mulhousiens montrent un décalage important entre la faible préoccupation affichée par les citoyens et la connaissance locale des phénomènes dangereux et de leurs conséquences. Ce constat est effectué en dépit des actions ponctuelles ou régulières visant à améliorer la connaissance citoyenne des risques.

(1) Chargée de recherche CNRS.
(2) Doctorante en géographie. Thèse en cours : Risque sismique et risques technologiques en milieu urbain – application à l'agglomération de Mulhouse. Direction : C. Weber (Laboratoire image et ville, Strasbourg) et M. Granet (Institut de physique du globe de Strasbourg).

Preventing major risks in the Mulhouse conurbation: how are the actions perceived and viewed?

Major natural or technological risks constitute a major concern for the authorities, and for citizens. But perceptions differ depending on the group of players in question. In Mulhouse and in its conurbation, applied or university research conducted by researchers from the Image and City Laboratory on Mulhouse's residents' perceptions of the risks show a considerable disparity between the low concern shown by citizens and the local knowledge of dangerous phenomena and their consequences. This disparity is observed in spite of the occasional or regular actions aimed at improving the citizen's knowledge of the risks.

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Marseille : de l'identification à la gestion des risques et des nuisances

Hélène Balu
AGAM(1)

Le développement des phénomènes extrêmes, l'augmentation du coût des dommages, l'inquiétude croissante de la population et sa demande d'information, la responsabilité des élus locaux parfois mise en cause…, autant d'éléments contextuels qui ont incité l'Agence d'urbanisme de l'agglomération marseillaise à optimiser son implication dans la thématique relative aux risques et nuisances.

Les inondations subies par la commune de Marseille en 2001 et 2003, la canicule de l'été 2003, l'importance et la récurrence des incendies de forêts dans le sud de la France… ont eu de nombreux impacts : sanitaires, économiques, sociaux, environnementaux… Il convient aujourd'hui de s'organiser face à ces situations à risques.

C'est dans la perspective de mieux comprendre les phénomènes, de cerner les interactions de l'ensemble des acteurs impliqués et d'élaborer un outil fédérateur des connaissances que l'AGAM mène depuis plusieurs mois une démarche d'identification des risques et nuisances s'inscrivant dans un processus de gestion partagée des informations et de mutualisation des expériences.

(1) Agence d'urbanisme de l'agglomération marseillaise. Cet article a été rédigé en juillet 2004.

Marseille: from identifying to managing risks and harmful phenomena

Development of extreme phenomena, increase in the cost of damage, growing concern of the population and demand from the population for information, liability of local councillors sometimes being sought… It is this backdrop that lies behind the Marseille Conurbation Planning Agency's efforts to optimise its involvement in the themes related to risks and harmful phenomena. The flooding suffered by the municipality of Marseille in 2001 and 2003, the heatwave of the summer of 2003, and the extent and the recurrence of the forest fires in the South of France have had many impacts: health, economic, social, environmental… Today we need to organise ourselves to cope with our risk situations. It is with a view to understanding the phenomena better, to determining the interactions between all of the players involved, and to developing a tool that pools knowledge that the AGAM has been conducting for several months now, an approach to identify risks and harmful phenomena, as part of a process of shared management of information and of pooling of experience.

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Taking account of the risks: diversity of the scales of action

In the Seine Basin, the vulnerability to major flooding at the level of the catchment area of the River Oise is the subject of thinks and actions which are being implemented by the Entente Oise-Aisne flood protection association and for which six départements and three regions have joined forces.
The IIBRBS has undertaken studies for measuring the risks run, for assessing the potential damage, and for assessing the feasibility of projects making it possible to reinforce the fight against flooding. Thus, the project to lay out hydraulic ponding subdivisions or "casiers" on the site of La Bassée for reducing the consequences of major flooding, will give further protection.
Aware of the permanent risk of flooding due to rainwater, the Seine-Saint-Denis Département Council is committed to reinforcing its hydrographic network with major storage capacities and with automated and computerised management of the facilities.
In the Strasbourg Conurbation the flood risk has been incorporated into a planning strategy by creating synergy within the SCOTERS covering 139 municipalities.
But other natural risks can affect certain areas more locally: land movements, and subsidence and heaving. And the presence of major industrial sites, and also transport of dangerous substances expose them to technological risks.
The underground risk, due to the presence of former quarry workings can give rise to serious problems in the urban fabric.
In Haute-Normandie, local councillors, industry and central government have adopted a charter for industrial risk management that is sending out a strong message on the difficult issue of keeping urbanisation under control.
In Feyzin, the permanent presence of technological risk has led the municipality to develop a prevention policy for industry and for residents. Today, it is more a question of reinforcing partnerships and cross-boundary approaches.
The multiplicity of the players that are involved at various levels requires a common regional vision of the stakes to be shared, with the aim of achieving an overall reduction in vulnerability.

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L'Entente Oise-Aisne : la lutte contre les inondations sur le bassin versant de l'Oise

Daniel Berthery(1)
Jean-Michel Cornet(2)
Entente Oise-Aisne

The Entente Oise-Aisne*: combating flooding in the Oise catchment area*

*An institution for inter-département co-operation, set up by the département councils of Aisne, Ardennes, Marne, Meuse, Oise, and Val-d'Oise which are its members, the inter-département entente (association) for protection from flooding of the Oise, the Aisne, the Aire, and their tributaries, known as the "*Entente Oise-Aisne*", is today implementing, at the scale of the Oise catchment area, the strategy of flood-risk-reducing actions that was recommended in 1996 after t he catastrophic flooding of 1993 and 1995 that caused human tragedy, and considerable damage and economic loss.*

L'Entente interdépartementale pour la protection contre les inondations de l'Oise, de l'Aisne, de l'Aire et de leurs affluents, est une institution créée par les 6 conseils généraux qui en sont membres (l'Aisne, les Ardennes, la Marne, la Meuse, l'Oise et le Val-d'Oise.

Appelée couramment Entente Oise-Aisne, cette institution de coopération interdépartementale met en œuvre à l'échelle du bassin versant de l'Oise une stratégie d'actions pour réduire le risque inondation. Elle suit ainsi les recommandations prônées après les crues catastrophiques de 1993 et 1995 qui avaient provoqué des drames humains, des dommages et des pertes économiques considérables.

(1) Directeur des services jusqu'au 28/02/2005.
(2) Directeur des services depuis le 1/03/2005.

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Un nouvel aménagement pour lutter contre les crues dans le bassin de la Seine

Jean-Louis Rizzoli
Pierre-Yves Durand
IIBRBS(1)

Le bassin de la Seine est vulnérable aux grandes crues, aussi l'IIBRBS a-t-il engagé des études pour mesurer les risques encourus, évaluer les dommages potentiels et la faisabilité de projets permettant notamment de renforcer la lutte contre les inondations. L'aménagement hydraulique du site de la Bassée aval permettra d'écréter indirectement les crues de l'Yonne par surstockage de la Seine et valorisera les enjeux multiples de cette zone. Depuis le lancement de l'étude globale en 2001, trois années de travaux préparatoires ont débouché sur une première vue d'ensemble du projet, sa faisabilité technique et son utilité. L'ouvrage de la Bassée constituerait à terme un complément indispensable aux dispositifs existants.

(1) Institution interdépartementale des barrages-réservoirs du bassin de la Seine.

New facilities for combating flooding in the Seine Basin

The Seine Basin is vulnerable to major flooding. Therefore, the IIBRBS (Inter-Département Institution for Dams-Reservoirs of the Seine Basin) has undertaken studies for measuring the risks run, for assessing the potential damage, and for assessing the feasibility of projects making it possible in particular to reinforce the fight against flooding.
The hydraulic facilities of the site of La Bassée Aval make it possible to envisage over-storage facilities in the Yonne Basin, and to extract added value from the numerous stakes of that zone.
Since the launch of the overall study in 2001, three years of preparatory work have led to an initial overview of the project, of its technical feasibility and of its utility. The La Bassée project would ultimately constitute an essential addition to the existing schemes.

Cerema Île-de-France

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L'aménagement face au ruissellement pluvial : l'exemple de la Seine-Saint-Denis

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Conseil général de Seine-Saint-Denis

Le développement urbain a souvent eu un impact négatif sur le système des réseaux hydrographiques. La Seine-Saint-Denis n'a pas échappé à cette caractéristique avec des inondations naturelles liées à la présence de zones d'expansion de rivières mais aussi de zones marécageuses. Le Conseil général s'est préoccupé de ces phénomènes par le renforcement de son réseau à travers d'importants stockages, par la gestion automatisée et informatisée des ouvrages et par une plus grande maîtrise des rejets engendrés par les aménagements urbains.

Planning with respect to rain runoff: the example of Seine-Saint-Denis

Urban development often has a negative impact on the system of hydrographic networks. Seine-Saint-Denis is no exception, with natural flooding due to the presence of river expansion zones and also marshland zones. The Département Council has addressed these phenomena by reinforcing its networks through major storage, through automated and computerized management of civil engineering works and by greater control over discharges generated by urban planning.

(1) Direction de l'eau et de l'assainissement.

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La prévention des risques liés aux carrières souterraines : conséquences pour l'aménagement en Île-de-France

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La présence de carrières souterraines en Île-de-France pose de nombreux problèmes d'aménagement. Néanmoins la diversité des réponses face au risque souterrain traduit essentiellement des enjeux d'ordre économique, représentatifs de la pression foncière et immobilière au sein des communes. Par ailleurs, une meilleure connaissance et valorisation du patrimoine souterrain reste indispensable pour une meilleure prévention des risques liés aux carrières souterraines.

Prevention of risks related to underground quarries: consequences for planning in Ile-de-France

The presence of underground quarries in Ile-de-France raises numerous planning problems. The diversity of the responses to underground risks essentially expresses stakes of an economic nature, representative of the pressure of demand for land and real estate within the municipalities. In addition, improved knowledge and enhancement of the underground heritage remains essential in order to provide better prevention of the risks related to underground quarries.

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Les zones inondables dans le SCOT de Strasbourg : valoriser le potentiel pour gérer les risques

Géraldine Mastelli
ADEUS(1)

Le territoire du futur SCOTERS se compose de 139 communes, dont la Communauté urbaine de Strasbourg. 600 000 habitants sont concernés. Document de planification issu de la loi Solidarité et renouvellement urbains, le SCOTERS définit le cadre du développement de la région de Strasbourg en prenant en compte les particularités naturelles locales, notamment les risques. Arrêté le 21 mars 2005 et en phase d'enquête publique, il remplacera le schéma directeur de l'agglomération strasbourgeoise de 1973 devenu obsolète.

L'ADEUS, maître d'œuvre du SCOTERS, a réalisé une analyse approfondie des risques d'inondation à l'échelle des 139 communes, dans le cadre du programme national du MEDD pour la prise en compte des risques naturels par les collectivités, et en lien avec le bureau d'études naturaliste ECOSCOP. L'objectif de cette étude pilote est de faire émerger une stratégie globale d'aménagement du territoire pour le SCOTERS, un projet permettant de : protéger les habitants et les biens contre les risques d'inondation, jusqu'au risque centennal ; valoriser des zones inondables à l'échelle du SCOTERS en les intégrant dans l'aménagement.

(1) Agence de développement et d'urbanisme de l'agglomération strasbourgeoise.

The flood zones in the Plan for Consistency between Local Areas for Strasbourg: making better use of potential for risk management

The area of the future SCOTERS is made up of 139 municipalities, including the Urban Community of Strasbourg. 600,000 residents are concerned. The SCOTERS defines the framework for development of the Strasbourg Region while taking account of the local natural specificities, in particular the risks. The ADEUS has conducted in-depth analysis of the flood risks at the scale of the 139 municipalities under the national programme of the French Ministry of Ecology and Sustainable Development for encouraging municipalities to take account of natural risks, and in collaboration with the nature studies bureau ECOSCOP. The object of that pilot study is to enable an overall local planning and development strategy to emerge for the SCOTERS, a project making it possible to: protect people and property from the risks of flooding even up to centennial flooding risks; and to extract added value from the flood zones at the scale of the SCOTERS by integrating them into planning.

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Une charte pour la gestion des risques industriels en Haute-Normandie

Hélène Le Du(1)
Philippe Gressent(2)
DRIRE

Débouché naturel du Bassin parisien vers la Manche, la Haute-Normandie est une région de forte tradition industrialo-portuaire. Parmi les nombreux secteurs d'activités présents, les filières chimiques et pétrochimiques occupent une place importante au sein d'un tissu industriel diversifié, implanté principalement le long de la Seine dans les agglomérations qui regroupent près d'un million d'habitants. Il en résulte une forte imbrication entre secteurs habités et activités industrielles potentiellement dangereuses qui a conduit la DRIRE à promouvoir une stratégie de réduction des risques à la source. Il en découle souvent une diminution des périmètres de protection qui pose la question de la vocation des zones libérées des contraintes d'urbanisme. Réunis au sein du secrétariat permanent pour la prévention des pollutions industrielles en Basse-Seine (SPPPI), élus, industriels et services de l'État ont souhaité se doter d'une charte régionale pour la gestion des risques industriels. Adoptée en juillet 2003, elle propose un guide de bonne conduite aux acteurs concernés.

(1) Chef du service régional de l'environnement industriel en Haute-Normandie.
(2) Chargé de communication de la DRIRE de Haute–Normandie.

A charter for managing industrial risks in Upper Normandy

The natural outlet for the Paris Basin into the Channel, Upper Normandy is a region with a strong tradition of industrial and port activities. Among the numerous sectors of activity present, chemical and petrochemicals occupy an important place within a diversified industrial fabric located mainly along the Seine in conurbations with populations of about one million. As a result, residential areas interwoven with industrial sectors that are potentially dangerous, have led the DRIRE to promote a strategy of reducing risks at source. This often results in reducing the safety buffer zones around the sites, which raises the problem of what use should be made of the zones that are freed from the former planning constraints. At a meeting at the Standing Secretariat for Prevention of Industrial Pollution in the Lower Seine (SPPPI), councillors, captains of industry, and State departments wished to draw up a regional charter for managing industrial risks. Adopted in July 2003, it proposes a good behaviour guide for the players involved.

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Feyzin, une ville référence dans la maîtrise du risque technologique

Entretien avec Danielle Sauge-Gadoud et Clément Jacquier
Unité tranquillité–sécurité
Ville de Feyzin

Feyzin, a reference town in keeping technological risks under control

Town and Industry often find it difficult to get on together. In the French "Chemicals Valley", Feyzin has enabled major industry to boom by supplying it with labour, and it has also developed thanks to the chemicals industry. The permanent presence of technological risks has led the municipality to take an overall approach to risk management. Actions have been implemented at local level, in consultation with central government, with industry, and with residents. However, difficulties remain for relaying the technical risk issue to any other local level. The need for cross-boundary approaches and the need for reinforced partnerships are challenges for the development of "Chemicals Valley." A pilot site for experimenting new measures on technological risks, Feyzin is to become one of the first municipalities to have a PPRT (Plan for Prevention of Technological Risks). Danielle Sauge-Gadoud gives us her reflections on the approach used by the municipality.

La ville et l'industrie entretiennent souvent des relations difficiles. Dans la vallée de la chimie, Feyzin a permis l'essor de la grande industrie en lui fournissant de la main d'œuvre mais s'est aussi développé grâce à l'industrie chimique. La présence permanente du risque technologique a conduit la municipalité à s'engager dans une approche globale de la gestion des risques. Des actions ont été mises en œuvre au niveau local, en concertation avec l'État, les industriels et les habitants. Cependant, des difficultés persistent pour relayer la problématique du risque technologique à une autre échelle territoriale. La nécessité d'approches transversales, de renforcer les partenariats constituent autant d'enjeux pour le développement de la vallée de la chimie. Site pilote en matière d'expérimentation des nouvelles mesures sur les risques technologiques, Feyzin va devenir l'une des premières communes dotées d'un PPRT.

Danielle Sauge-Gadoud nous livre ses réflexions sur la démarche de la municipalité.

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