

**REPORT OF THE INTERNATIONAL CONFERENCE
"RISKS AND LEISURE ALONG MAJOR EUROPEAN RIVERS"**

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ETABLISSEMENT PUBLIC LOIRE

**RISKS AND LEISURE
ALONG MAJOR EUROPEAN RIVERS**

**Document prepared by *Les Études Ligériennes*
(Loire Studies Association)**

RISKS AND LEISURE ALONG MAJOR EUROPEAN RIVERS

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PREFACE

River land

No matter across which continent it runs, a large river is always an obstacle and a danger, but also a source of richness. And always an attraction for man. In Europe, the map of population densities confirms this attraction: most cities and large towns are located on the largest waterways, and even between these towns rural riverside densities are high.

Is there not a contradiction between this concentration of riverside residency and the potential dangers of the waterways, the most serious being flooding? To a large degree, yes. Yet the danger only appears on occasions, resulting in emergency situations randomly spaced in time. On the other hand, the resources offered by the river are permanent: an appreciated enrichment of lifestyle, an abundance of water and fauna, rich alluvial farmland, and the possibility of transporting people and merchandise by navigation. These advantages tend to occult the perspective of danger; dwellings appear, sometimes in precarious locations, alongside the water.

Since Antiquity rivers have been determinant in the location of most of Europe's large towns; the most favourable sites are those where the crossing is least perilous or the navigation is easiest. The coat of arms of Paris showing a vessel navigating the Seine attests the city's close relationship with its river, and its motto *Fluctuat nec mergitur* (beaten by the waves but does not sink) reflects defiance in the face of the danger.

River floods

Until the 14th century riverside residents had to live with swollen rivers and flooding; it was part of their lives. Housing was limited to the least exposed land. Then towns started to expand immoderately, invading zones of higher risks and land formerly left empty so that inundations could spread without serious danger. Building was imprudently allowed on flood plains. Concrete and asphalt replaced natural zones where water could infiltrate and help to relieve the flooding.

Yet all residents demand the absolute right to safety of people and property, not hesitating to incriminate the State, elected authorities and decision-makers and to claim insurance when disaster occurs. This lack of individual and collective responsibility tends to occult natural constraints, which are moreover no longer admitted. Refusing these constraints or, even worse, pretending they don't exist is a delusion; one day or another a disaster is inevitable. For centuries the protection works were regularly maintained and improved, yet this did not prevent events more serious than what was thought possible. Of course, this reality must not make us abandon hope and throw in the towel. On the contrary, the time has come review this challenge, to share experience and envisage new measures. The aim is not to find a universal crisis management model, but to develop consultation between the bodies that

carry this responsibility. At European scale, coordination is starting to take shape, which is a step towards sustainable development of our rivers and their valleys.

Crises, as we have said, must be expected, prepared for, announced and managed.

- *Forecasting* involves determining precise parameters (hydrometeorology, ground water levels, flood plain delimitation, etc.) then analysing them together to recognise sufficiently in advance the probability of a flood situation and its seriousness. Available land should be left empty of human occupation whenever possible to allow the propagation of floodwaters. In the absence of such land other measures must be envisaged. In all cases, intervention plans must be defined and submitted to the competent authorities so that the managers know precisely who is in charge of what. Exercises must be organised to ensure that interventions are rapid and efficient.
- *Preparation* for crises includes informing the population of the risks and defining intervention plans.
- *Announcement* of crises raises a fundamental question: can we settle for simple broadcasting of information, however precise it might be, or should coercive means be employed to evacuate the threatened zones?
- *Management* of crises means executing the actions defined in the intervention plans. The assignment of tasks and the coordination of operations obviously extends beyond the stricken zone, in order to provide emergency accommodation, first-aid for victims, security, etc.

Outside crisis periods other questions must be addressed. These concern first of all the use of flood plains. Can we allow land shortage to force construction on these as freely as on other land? Should we envisage, in extreme cases, interdiction of private building, or is it sufficient to impose strict rules, building regulations in particular?

Sports and leisure

Sport and leisure activities are developing rapidly along waterways for two main reasons. First, growing riverside populations who appreciate such activities and therefore demand suitable installations. The second reason is the appeal of river landscapes and the limited vulnerability of much sport and leisure equipment.

This observation about landscapes opens perspectives that merit closer study. The first concerns the river valley landscape quality which must be preserved, but without excessively restricting the freedom of residents and visitors, increasingly numerous as national and international tourism develops. The second perspective is closely linked to the previous one: rivers have a cultural dimension that must be taken into account. This is reflected in our literature, from Du Bellay to Genevoix for the Loire, in paintings (Turner and the Impressionists, among others) and music such as Smetana's symphonic work "La Moldau". This cultural dimension must be supported and developed in its diversity, an approach that will rekindle the feelings of our ancestors who granted to their rivers the status of Gods.

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On 22nd and 23rd September 2005, as part of the second Loire Festival in Orléans, a conference entitled "Risks and leisure along major European rivers" was organised by the Etablissement Public Loire (EP Loire) under the dual patronage of the European "Freude am Fluss" project, led by the University of Nijmegen, and the Orléans Loire Festival.

At the request of the EP Loire, the "Loire Studies" association accepted the task of writing this report. Since the participants received a volume of abstracts of the presentations prior to the start of the colloquium, the aim here is not to assemble these contributions again in another volume of proceedings, but rather to give the reader food for thought drawn from the ideas expressed in the presentations. This reflection covers several themes, presented in different chapters, preceded by the essential introductory remarks made by the Mayor of Orléans, the President of EP Loire and the Director of the "Water and Society Centre" of the University of Nijmegen that runs the "Freude am Fluss" project.

In conclusion, the accent will be placed on the inevitable conflict between the dangers to which riverside residents are exposed and the attraction that rivers exert on the many people who wish to benefit from their presence to practice sports and leisure activities or, more simply, just to contemplate them.

"FREUDE AM FLUSS"

Freude am Fluss ("enjoying life along the river") is a five-year European project started in 2003. This initiative is based on the observation that for many decades European towns have developed alongside rivers without taking into account flood risks. Increasing awareness of this problem has led Germany, France and the Netherlands to pool their experience of the Rhine and the Loire with the goal of implementing action plans to reduce the risks of overflow of river embankments in the medium term.

The lead partner in this project is Radboud University Nijmegen in the Netherlands, and the two French partners are EP Loire (www.eptb-loire.fr) and the Agence de l'Eau Loire-Bretagne (www.eau-loire-bretagne.fr).

The project aims to study and define possible avenues of progress and put some of them into application through processes involving close collaboration between the public authorities and riverside residents. It should contribute to the successful conclusion of works and major developments that encounter real resistance from populations and that necessitate far-reaching dialogue.

The question of flood control must be studied in parallel with the benefits of living alongside rivers, taking into account the different positive aspects: socio-economic, recreational, ecological, patrimonial and quality of life.

More concretely, it is necessary to adopt an approach based on the "more room for rivers" principle to enable flood streams to pass and limit the risks. The goal is to enable rivers to function again in a more natural manner.

The recent experience of the European OSIRIS research project as regards improved information for elected councillors which is now seeing operational developments at national level and with Polish partners, confirms the interest of the *Freude am Fluss* project which encourages sharing of experience across Europe. It is participating at its level in the emergence of a new river management policy in several Northern European countries (Germany, Netherlands, United Kingdom) which aims, whenever possible, to give rivers more "freedom space" to reduce inundation risks.

For more information and more details of all the contributions at this colloquium, you can consult the website: www.freudeamfluss.fr

By presenting examples and selected real projects along the Loire, the Rhine and other large rivers European, and by enabling dialogue between the public and the speakers, the objective of the colloquium is to reply to three questions:

- Is there a common approach in Europe to the development and use of land alongside large rivers?
- Is this approach compatible with flood control?

- What are the respective roles and expectations of public authorities and field players?

One particularly important objective of the colloquium is the sharing of experience and points of view of public and local authorities situated close to large rivers in the Netherlands, Germany and France.

*Opening of
the conference*



OPENING OF THE CONFERENCE

The host of the colloquium, **Willem de Bruyn**, President of the "*Symbiose tussen Veiligheid in Natuur*" Foundation (safety-nature symbiosis) greeted the participants by underlining the quality and interest of the two days of conferences. He then handed over to Serge Grouard, Parliamentary Delegate and Mayor of Orléans.

Serge Grouard welcomed the visitors and thanked *Freude am Fluss*, the mainspring of this event, for having chosen Orléans as its venue, coinciding with the city's second Loire Festival. He confirmed that Orléans is effectively very much concerned by the questions of leisure and inundation risks associated with the Loire river. Without dwelling on the leisure aspects, he focused on the risks posed by the river's capricious character:

At the moment the Loire, splendid at low water, is the 'long river of sand' mentioned by Charles Péguy, the notable poet and author born in Orléans. Yet at this same time of year it is sometime in flood. In September 2003, during the first Loire Festival, it was even lower than today, but three months later the Loire was lapping at the edge of the riverside road on the northern embankment in Orléans.

This episode led the city to look more closely at the preparation of its managers and their ability to deal with a crisis situation and its consequences. Despite the work already accomplished by many parties involved, unfortunately there remains much progress to be made on these points. It's true that we are trying to anticipate events (as evidenced by this meeting today), but are we taking the steps concomitant with this anticipation? The reply to this question is not very clear.

The example of the Jargeau spillway, one example among a dozen others, shows that many uncertainties subsist as to the wisdom of its use, or not, in the event of a crisis, and that we should applaud the launching of a number of studies on the question of safety dikes. We have had lots of time to think about the anticipation and management of inundation risks, but it seems that we have always had something more urgent to do than spend time on a risk that by its very nature is hypothetical. Another point that we should not forget is that the Loire can not only overflow its embankments, it can also invade low land by upward infiltration of the water table, something most of our citizens have not yet understood.

Regarding crisis management, we need to remain very modest yet very determined. Very modest especially when we witness such recent events as the flooding in New Orleans and Louisiana and the difficulty of world's most powerful nation, with its enormous logistic capacity, in managing this emergency – even though it was long forecast. If today we were confronted by a major flood of the Loire, we would not have the means necessary to deal with it. Crisis management cannot be improvised. Unpredictable factors must be anticipated as best we can; we need an emergency plan to implement as soon as a flood is announced, with a crisis unit and all the necessary resources, notably to move people out of dangerous zones. We must also secure these zones, a job that cannot be handled by our local police and therefore

requires military support. Orléans is presently working on such an emergency plan with the aim of creating an operational organisation.

Jean Germain, president of the EP Loire, thanked the personalities present and the participants who came in large numbers not only from the Loire basin but from the rest of France, Europe and Morocco. He was particularly happy to officially open this exchange of experience between different rivers at a time when the construction of the "European peoples' community" is only just starting. In the past rivers were often the front line of battles, obstacles difficult to cross. Today they have become links that unite the towns and peoples of our countries.

He thanked Serge Grouard for his welcome, for accepting the inclusion of the colloquium in the second Orléans Loire Festival, and for having made the city's conference centre available.

He was pleased to meet once again a number of colleagues from Nijmegen, explaining that prior to becoming Mayor of Tours he was President of the city's François Rabelais University and that he had participated in the creation of an economic interest group under the name *European Training University* in which the University of Nijmegen is involved.

The strong participation at this colloquium, with more than 300 registered visitors, is proof enough of the interest of a subject that has not previously been addressed with this dual approach: a "flood control" approach but one that also aims to reply to the aspirations, often contradictory, of our modern societies, the desire for safety and comfort, for environmental protection and riverside leisure facilities.

This colloquium in Orléans, organised as part of the European *Freude am Fluss* project whose objectives will be presented by Mr. Smits of the University of Nijmegen, follows a first conference of Mayors on 25th and 26th May 2005 in Nijmegen, and precedes a third conference scheduled for 19th and 20th June 2006 in Karlsruhe, Germany.

The colloquium is organised by the Etablissement Public Loire (EP Loire), in financial partnership with Europe, the State, the Agence de l'Eau Loire-Bretagne and France's Geological and Mining Research Bureau (BRGM), with the support of the Loire Valley World Heritage Mission, the Conservation Agency for the Loire River and its Tributaries and the Town Planning Agency of the Orléans conurbation.

EP Loire is an initiative covering the Loire river and its main tributaries. Its role is to promote global actions and solidarity between local communities in the execution, financing and supervision of water development or management, environmental protection and economic development projects. Its zone of influence in the Loire basin therefore includes six Regions, sixteen Departments, eighteen cities and conurbations of more than 30,000 inhabitants and eleven intercommunity syndicates (SICALA) grouping communes with less than 30,000 inhabitants in each Department.

EP Loire is involved in the implementation of the *Loire Grandeur Nature* plan, whose main objectives were defined by the French government on two occasions, in January 1994 then in July 1999.

Priority has been given to flood control and more particularly to reducing inundation risks in the Middle Loire which is the reference French territory in the *Freude am Fluss* project. This concerns more particularly the following authorities, all EP Loire members: three Regions (Burgundy, Centre and Pays-de-la-Loire), six Departments and their SICALAs (Nièvre, Cher, Loiret, Loir-et-Cher, Indre-et-Loire and Maine-et-Loire), and the towns and conurbations of Blois, Orléans, Nevers, Saumur and Tours.

Very important studies conducted over the past ten years on the Middle Loire by the *Plan Loire* multi-disciplinary team have revealed that a major flood of the Loire would have very serious consequences both in France and elsewhere in Europe. A flood like the biggest ones of the 19th century (1846, 1856, 1866) would threaten, in the Middle Loire, 240 communes, 300,000 inhabitants and 13,600 enterprises. Flood damage to property is estimated to be €6bn.

The competent authorities expect to learn much from the interchanges and discussions during these two days to assist and accelerate the implementation of an operational action plan by French public authorities which are emulating the good practices of their German and Dutch counterparts on the Meuse and the Rhine.

Also under preparation, thanks to cooperation between the Centre Region, EP Loire, the Loiret Departmental Council and the State, is a European Flood Risk Prevention Centre, a project initiated by the President of the Loiret Departmental Council.

Mr. Germain also reminded us that many CNRS research teams are working on this subject. These will certainly have to be approached so they can report their varied research objectives and the progress of their work. We need to estimate the necessary financing and calculate the amounts that local authorities should add to the €40,000 allocated annually to about forty research teams.

The interest, diversity and quality of the contributions grouped in the document given to the colloquium participants confirms that a new development model is emerging in Europe, one that aims to allow people to live better along large rivers while reconciling risks and leisure. The "*Loire à Velo*" (Loire by bicycle) project is just one example.

It is expected that the richness of the debates will reveal orientations, recommendations and ideas for experiments that will enable everyone to participate in this movement and in the production of the elements expected by Europe in the framework of the *Freude am Fluss* project. And even the emergence of a veritable European river management model which could be seen from across the Atlantic.

Finally, Mr. Germain, on behalf of everyone, thanked Mr. Viau, Prefect of the Centre Region and Basin Coordinator, for his expected presence at the closure of the colloquium, prior to a conference and debate on water organised by the Loire-Bretagne basin committee in application of the new European directive-framework on water.

To conclude, Mr. Germain said he hoped that the participants would enjoy much fruitful interchange and also much *Freude* along this Loire river now part of mankind's World Heritage.

Presentation by Toine Smits, Director of the "*Centre for Water and Society*" of the University of Nijmegen (running the *Freude am Fluss* project)

It is a great honour for the Radboud University Nijmegen, in charge of the *Freude am Fluss* project, to address the participants of the second *Freude am Fluss* conference. We should remember that the city of Nijmegen has a special link with this region of the Loire that goes back to medieval times. Indeed a unique exhibition has just opened in Nijmegen, underlining this historic relationship. It concerns three medieval painters: Paul, Herman and Jean de Limbourg, born in 1380 in a street close to Nijmegen town hall, the venue of the first *Freude am Fluss* conference. The Limbourg brothers became highly reputed painters, placed at the zenith of medieval art. A large part of their work, at the origin of their worldwide reputation, was ordered by Jean de France, Duke of Berry (1340-1416).

Today, it is not medieval art that brings together the colloquium participants, but today's culture, in particular the question of "sustainable" land occupation and protection against inundation. Over the last decade, many European countries have suffered flooding. Climatic change has been put forward as the prime cause of these perturbations, but this is in fact only a partial explanation. The main cause is territorial development that has sacrificed a large part of the natural hydrographic network for the needs of navigation, housing and farming. The time has come to change our land occupancy strategy.

Most of the European Community's decision-makers are aware of the threat. In France a few years ago a study was carried out on the Loire basin concerning the potential inundation risks. An overview of some of its results is presented as part of this colloquium. These results speak for themselves and they are quite a shock, both for decision-makers and the public. Such studies have been made in many other European river basins and the conclusions are often similar, sometimes even worse.

The major challenge today is now to switch to more sustainable development of river basins. This means making a greater effort to adapt our land occupancy to the functioning of the natural hydrographic networks. "Sustainable" protection against inundation involves more than just the technical aspects (construction of barrages and embankments, etc.), it requires a complex set of measures with economic, social, cultural and natural implications in the hydrographic basins. This rational vision conflicts somewhat with that of communes reticent to see these measures applied in their own localities. This is the well-known "*Not in my back yard*" syndrome, also known as the "NIMBY" reaction. The challenge is to convert this position into a more positive "*Please in my back yard*" attitude, in other words to transform NIMBY into PIMBY.

An analysis of protection policies imposed "top-down" reveals three causes of this NIMBY attitude:

- at the start of the communication and decision-making process, local bodies receive information at different levels, which often results in different perceptions of the nature of the problems and of the possible solutions;
- local authorities often have the impression of not being well informed, since they feel excluded from national flood control policies;
- imposed policies often short-circuit local land usage and economic development plans, which creates a "they-win-we-lose" feeling among local authorities: they must sacrifice land but without any compensating gains.

This analysis underlies the launch of the European project Interreg III B *Freude am Fluss* initiated by Radboud University of Nijmegen and executed in close collaboration with eight partners in the Netherlands and others in France (EP Loire and Agence de l'Eau Loire-Bretagne) and Germany. The project started in 2003, focusing on a response to a central question: "How can waterway managers avoid the NIMBY problem?"

The *Freude am Fluss* approach integrates in a set of flood control measures designed to reduce inundation risks while supporting the benefits of waterways for riverside communities, as for example the economic implications of the construction of flood-resistant houses.

What are the expectations of the *Freude am Fluss* project?

First, develop a specific communication and cooperation strategy between local authorities alongside the waterways. This is referred to as a Joint Planning Approach (JPA), operating in a bottom-up manner and attempting to effectively take into account local opportunities while at the same time implementing flood control measures. In their projects the local authorities therefore see themselves as partners from the start of the flood protection process, not as victims of policies imposed from above.

The JPA provides a methodological base for realising two regional plans adapted to flooding: local flood zoning plans in the Rhine and Loire basins and a strategic management plan for the flood plains that ensures a balance between the ecological aspects and the challenges of inundation protection.

The project must also deliver a large number of strong orientations to help European authorities implement a flood defence strategy.

The road ahead is still long for the *Freude am Fluss* partners. Yet the results already achieved have attracted international attention. In October 2005, the partners were invited to present the project at a European Commission meeting in Strasbourg (European Solidarity Week), and again in March 2006 at a specific event during the World Water Forum in Mexico.

By way of conclusion, we should remember that the *Freude am Fluss* approach is founded on the belief that it makes more sense to live with nature rather to fight it. In this perspective, the ideas on land occupation and the determinant role that local authorities must play are essential. The German and Dutch presentations at this conference will illustrate these aspects in more detail.

In Europe the *Freude am Fluss* approach will be marked by a series of interesting opportunities, but will also reveal many shortcomings in our knowledge that must be rectified, notably by sharing opinions and experience across Europe. For this purpose, conferences like this one appear essential.

***Global integrated
management
of floods risks***



GLOBAL INTEGRATED MANAGEMENT OF FLOOD RISKS

Protection against the inundations includes three aspects: prevention, actions outside crisis periods, and management of crises when they occur and their consequences.

Prevention efforts aim to minimise the effects of rising rivers and protect land occupied by man. This implies the imposition of regulations covering the occupancy and management of land exposed to risks. To avoid potential conflicts between central and local authorities and between the authorities and the population it is essential to increase the awareness of exposed populations. Prevention also means preparing for crisis management by making suitable means available.

The presentations at the colloquium have underlined the need for a global, integrated approach to flood control with the aim of reducing, as much as possible, the damage suffered by populations and the environment.

This global approach is applied at two levels. Flood forecasting and informing of the populations is performed at catchment basin level. On the other hand, the actions to be taken are organised at local level, which necessitates close cooperation between local authorities, local services and resident populations. The goals are to reduce the exposure of residents and the vulnerability of property, to guide the behaviour of inhabitants and to actually manage crises during and after floods.

Prevention requires a global policy

At national level: flood prevention policy in France

Global, integrated management implies an overall national view, even international in the case of the river basins crossing several countries. This was illustrated by the presentation entitled "*Flood control policy in France*" of **Noël Godard**, Deputy Director of Aquatic Milieus and Water Management at the Ministry of Ecology and Durable Development.

Inundation risk is the biggest natural risk in France in terms of damage caused (more than 50% of compensation paid out by the natural disaster funds instituted by the law of 1982), the number of communities inundated (more than 8,000), the extent of flood plains (more than 33,000 km²) and the number of people threatened (more than 4.5 million inhabitants, including 300,000 in the Loire valley). Moreover, we note that the severity of the damage has considerably increased in the past fifty years due to urban development in exposed zones.

In the 1980s, a policy was adopted founded on increased citizen awareness of risks, reduced flood plain vulnerability, improved crisis management thanks to better flood warning systems and real-time information and, finally, the idea of allowing flood streams to spread and dissipate their energy. This culminated in 1994 with the adoption of a government decennial flood control programme whose implementation was made concrete by contracts

between the State and the Regions. One result is the update of the Flood Zones Atlases ("AZI") intended to inform local authorities and exposed inhabitants of inundation risks.

In parallel, the Law dated 2nd February 1995 relating to the reinforcement of environmental protection was materialised by risk prevention plans ("PPR"), including inundation risk prevention plans ("PPRI"). These plans are intended to control urban development in zones exposed to natural risks. Decided by the Prefects after consultation with the local authorities and implemented by the decentralised public State services, they can prescribe measures such as work on existing buildings, interdiction of construction and farming practices. After approval, the "PPRs" become public easements and are annexed to the local town planning plan ("PLU") which must comply with them.

Since 2002 the flood control policy has been strongly pursued in the following directions: public information and awareness, implementation of prevention actions through territorial development and improvement of protection works.

Four sorts of actions are implemented:

- Reinforcement of the legislative framework. The Law dated 30th July 2003 places the accent on informing the public, notably during property purchases, and on flood management in the context of territorial development and reduction of vulnerability, in particular by constructive measures. It is providing for funding to enable acquisition of private and business property in risk zones in order to eliminate hazards, and to mobilise populations and entrepreneurs to reduce their vulnerability.

- Reorganisation of the flood warning services ("SPC"): at national level these are reduced from 52 to 22, each with 5 to 10 full-time staff.

- Creation of a "SCHAPI" hydrometeorology and flood prevention service whose vocation is to publish a "flood vigilance" map.

- Creation of flood control action plans in each basin through local initiatives but with financial aid from the State.

These actions concern not only devastating and deadly torrential floods, but also so-called slow-rise flooding (plains or ground water). We note that the *Plan Loire* was relaunched in 2002 then the Rhone Plan following the serious inundations in December 2003.

The securing of protection works is also an indispensable aspect, notably the monitoring and proper maintenance of embankments and, when necessary, their reinforcement.

At basin scale: the Plan Loire Grandeur Nature

The example of the *Loire Grandeur Nature* plan, described by **Olivier Cléricy** (manager of the *Plan Loire* Secretariat at the Regional Direction for Environment) illustrates this State policy applied in consultation with provincial authorities in the context of the basin of one of Europe's biggest rivers.

The Loire, subject to Atlantic and Mediterranean influences, has an irregular regime that can result in extreme low-water levels and devastating floods. Its course has been controlled since the Middle Ages and, despite its capricious hydrological nature, it was used for navigation until the end of the 19th century.

During the last third of the 20th century, development projects were obstructed by partisans of the status quo or even the re-establishment of a "wild" natural state.

Such problems pushed the government to create a global development plan for the Loire that aims to reconcile the needs of local populations with environmental protection. The *Loire Grandeur Nature* plan (4th January 1994) is just one aspect of the sustainable development of riverside communities. Its four complementary objectives are to ensure:

- safety of populations facing inundation risks,
- satisfaction of water needs in quantity and quality,
- restoration of the ecological diversity of natural milieus,
- protection of natural spaces and landscapes.

During the first phase of the plan, from 1994 to 1999, many actions were undertaken:

- control of building on flood plains,
- local protection of populations against inundation,
- studies to reduce inundation risks during flood periods of the Middle Loire and all along the Maine,
- completion of low-water control works and re-establishment of fish migration channels,
- new forms of management of the natural milieus.

On 23rd July 1999, on the basis of the acquired experience, the government proposed to participating communities a prolongation of the *Loire Grandeur Nature* plan by an interregional programme, from 2000 to 2006, with the following objectives:

- safety of populations exposed to inundation risks, by reducing their vulnerability, controlling building on flood plains, preventive information, improving flood warning systems, restoring the Loire river bed, reinforcing the levees and new protections in built-up areas;
- improved management of water resource by creation and implementation of water development and management schemes (SAGE) intended to ensure integrated management of Loire valley waterways at catchment area scale, in cooperation with local authorities and populations;
- restoration of aquatic milieus and rural areas in the valleys, notably recovery of rivers' "mobility spaces", restoration and preservation of fish spawning sites, support of remarkable migratory fish populations such as eel, shad and Loire salmon,
- promotion of the natural heritage, landscape and cultural of Loire valleys by developing new forms of tourism (bicycle, green tracks, navigable waterways), awareness actions, training and information.

For the period from 2000 to 2006 the cost of these actions is estimated to be more than €350m of which €119m is financed by the State.

At finer scale

On European rivers, flood control has led to multitude of projects and realisations in very varied institutional frameworks. At this level it is difficult to separate what is institutional from what is operational; indeed these two domains are closely linked. At a very fine local scale, we can take as an illustration of this link the La Bouillie spillway renovation project on the Loire at Blois, a project presented by **Julie Truffer**, Project Manager at the Blois Community of Communes.

On the left bank of the river, some districts of the town are exposed to a high or very high degree of risk. A spillway built in the 16th century immediately upstream serves to redirect excess water to low parts of the valley when the river is in flood. The last time it functioned was in 1907. In the absence of a major flood for a century the population obviously forgot the danger. Constructions have been installed downstream of the spillway which now finds itself largely blocked, exposing more than 400 residents to a serious risk. After studying several solutions, it appeared essential to progressively remove the aforementioned constructions. A deferred development zone ("ZAD") was created in order to allow the municipality to acquire the land and buildings by pre-emption. In this case it has not been necessary to create a special entity to manage the risk.

In other cases however specialised organisations have been created. In general these direct the most important operations. For example, at Venlo in the Netherlands, for the "Meuse corridor" operation, an official body called *Maaswerken* associates four municipalities and three nature protection associations.

Examples of protection and development

Decision-makers must first be given the institutional bases that enable them to manage inundation risks effectively, but it is essential to move into the operational phase as rapidly as possible. Some examples were presented during the colloquium. These show that most managers do not limit their preoccupations to the challenge of flood control, they also integrate in their projects programmes concerning economic and leisure activities and the environment.

Nijmegen on the Waal

In the Netherlands, the example of the development of Nijmegen, presented by **Han Berg** (Project Manager for the city of Nijmegen), illustrates the necessity of dialogue between the national authority and municipalities to find solutions that reconcile urban interests with the need to control the river Waal when it is in flood.

The main activities in Nijmegen, the Netherlands' oldest city, are concentrated near the Waal. The city has developed on the south bank, with new districts increasingly remote from the river. In 1990 the municipality decided to develop Nijmegen on the north bank to defend the importance of the old town centre. This project was dubbed *Waal sprong*, meaning "jump across the Waal". However building in this zone interferes with the overflow spaces of the north bank that help to channel large masses of water arriving from the alpine regions and Germany.

In 1993 and 1995 the river reached very high levels, threatening to breach the high embankments. A total of 250,000 people were obliged to evacuate the region. The government concluded that in any case the river should be widened at Nijmegen and that this should be done by providing space in the new urban zone. The result was that, although building was already in progress, the government ordered this to be stopped in the new part of the town where 15,000 homes were planned.

After first considering insubordination and even legal action against the government, the municipality finally entered into discussions with the national authorities. The solution chosen is to build a 200 metre wide flood channel around the back of the buildings alongside the river, which will enable the river level to be lowered by 45 cm. This means that during flood periods the built-up area becomes an island served by only one bridge. However, this solution has allowed town planners to push the constructions right up to the edge of this secondary channel, considering its dyke to be a reliable embankment.

In the final analysis, the measures taken to lower the floodwater level by giving more space to the river have influenced the town planning in Waal where more attention is now paid to the river banks. By reducing the barrier obstructing the river, more space is left for flood streams. The studies are continuing in order to examine the possibilities of making an island or even a floating district between the citadel to the north and a new housing area to the south, which would create additional free space for the river.

Several lessons can be drawn from these projects. First, it is clear that technical expertise is essential to allow regional and local authorities to study with the citizens innovative solutions that can reconcile conflicting interests. The parties must first examine the local plan all along the river, then convince the regional and national authorities of the compatibility of their local development projects with the safety of citizens.

The Venlo corridor along the Meuse

After the floods suffered by the Netherlands in 1993 and 1995, the government launched a programme not only to reduce inundation risks but also to restore the river bed and the landscape, construct tourist infrastructures and support local development.

Keesjan Van Den Herik (landscape development expert working for the municipality of Venlo) presented the actions implemented since 2000, underlining their innovative approach. A total of 46 projects are involved intended to make more attractive 25 kilometres of river banks, known as the "Meuse corridor". The projects were developed by a central organisation called the *Maaswerken* in collaboration with the province, four municipalities and three nature protection associations in northern Limbourg. These projects are in part realised, some of them financed by contributions from the municipalities and associations. Among them we can mention the renovation of the natural meanders of the river, the excavation of lateral channels to reduce the impact of flood streams and the creation of walking paths and cycle tracks all along the banks. These realisations earned Venlo the European "greenest city" award in 2004.

The meandering river has not been channelled. It is lined by many hectares of natural land to which residents have free access. The projects therefore reveal the innovative approach of making the most of the ecological and tourist value of the river, and making the banks more attractive for residents.

La Bassée development project in the Seine basin

Jean-Louis Rizzoli (Deputy General Manager of the Seine Basin Interdepartmental Storage Dams Institution - IIBRS), presented the La Bassée development project located at the confluence of the Yonne and the Seine. These works are intended to complement the existing system of flood retarding reservoirs on the Marne, the Aube and the Seine, totalling

830 million cubic metres of storage. This system of large lakes has confirmed its effectiveness in handling non-exceptional flood streams, but the Seine valley remains vulnerable to bigger floods of the kind seen in 1910 and 1924.

The Institution has organised studies in partnership with upstream Regions with the aim of completing the protection system, applying a solidarity-based win-win approach: "protection downstream - development upstream".

In this context the La Bassée site has been the object of a global development study. The aim is to give back to the La Bassée downstream zone its role as a natural expansion space to absorb floodwater and to enhance its value while preserving existing activities and inhabited areas. The development involves storage units that are filled by pumping only during the highest floods of the Yonne. It includes 58 kilometres of low-height embankment slopes delimiting 2,300 hectares of storage that can accommodate 2.5 metres of water on average, with a total volume of 55 million cubic metres drawn from high flood points on the Yonne. For a water rise identical to that in 1910, the water line in Paris would be lowered by 30 cm, in addition to the 70 cm drop achieved by existing works. The conception of this development emulates those along the Rhine.

The Integrated Rhine Programme (Integrierte Rheinprogramm, IRP) in Germany

The IRP programme presented by **Volker Spath** (Director of the Institute for Landscape Ecology and Nature Conservation) includes the flood control master plan and the project of re-establishment of flood plains in the plain of the upper Rhine, in Baden-Wurtemberg. The scale of the danger is as follows: at a critical flow of 5,000 m³/s at Karlsruhe, an area of 1,000 km² will be inundated, affecting 95 towns and 700,000 inhabitants. Estimated damage would be €6bn.

The solution consists in the creating thirteen retention reservoirs totalling 7,000 hectares, at a cost of €520m. The region would be then protected against a bicentennial flood, whereas at the moment it is protected only against a sixty-year flood.

Presently, there are no houses in the thirteen selected zones which are mostly forested (68%) with a little agriculture (12%). Every 7 to 10 years it will be necessary to perform "ecological immersions" in order to overcome the consequences of periodic retentions that perturb the natural development of flora and fauna.

The city of Karlsruhe has also seized the opportunity of this project to define a leisure development plan.

Integrated management tools

The examples presented show that flood problems can be different according to the geographic conditions: the risk may concern the entire surface of a territory, as in the case of the Rhine in the Netherlands, or just valleys enclosed by hill slopes as found along the Loire.

Although there actually exists a global approach to flood control management along large rivers, as **Nicolas-Gérard Camphuis** (Manager of the multi-disciplinary *Loire Grandeur Nature* team) underlined in his conclusion of the first morning of the colloquium,

no single protection approach is any longer sufficient either for decision-makers or for residents.

Reconciling flood management with everyday life

We are seeing the emergence of a notion of integrated territorial development incorporating town planning methods that take better account of rivers, that are even "river-centric" and compatible with them. Since some property will always remain on the flood plain, we need to seek ways of reducing flood damage.

It is therefore possible to imagine projects that reconcile flood management with everyday life and leisure, and a constructive approach that involves residents more. The difficulty for decision-makers and their supporting technicians is to integrate all these aspects, since each of them intervenes in his own discipline and applies his own approach. So how should we manage this approach?

In all countries the State must intervene, if only through legislation or international relations, to ensure consistency along hydrographic basins, weighing the benefits and inconveniences for upstream and downstream communities, and of course managing national works.

But alongside the local authorities in direct contact with the State there are the inhabitants, economic players, managers of natural space and many other stakeholders all giving a sense to rivers in the own manner.

So how should we debate and decide?

Noël Godard reminded us of the measures taken by the French government in its flood control policy and, more generally, in the implementation of its water policy, taking into account the orientation of the European directives that recommend public participation.

Participation at local level requires information, consultation and advice. To satisfy these needs the Loiret Departmental Council is now creating structures to serve the territorial authorities whose role and organisation were described by **Eric Doligé**, the Council President. He first explained that the Council's initiative is motivated by the fact that the Loiret Department faces a real and serious flooding risk, since the Loire may yet again, at an unknown date, reproduce major floods like the ones seen during earlier centuries, particularly the 19th. A third of the Department's 334 towns are threatened along 100 kilometres of the Loire, and on its tributaries where the reaction time can be much shorter. In all 80,000 people, 31,000 dwellings and 3,000 enterprises are at risk, figures that can be compared with those given by Mr. Germain for the entire Loire.

The "small flood" of December 2003 occupied the headlines for a few days. Some people could not understand why flood threatened while the river flow was only 3,000 m³/s, compared to 7,000 or 8,000 m³/s in the exceptional years 1846, 1856 and 1866.

The Loiret Departmental Council is presently allocating €1.3m per year, a sum that includes its participation in the *Loire Grandeur Nature* plan and the CRISTAL network (forecasting), reinforcement of the levees and management of the flood-limiting barrages (protection), and maintenance of the Loire river bed (prevention).

To aid the communes and intercommunity cooperation establishments (EPCI), the Council decided in 2002 to create a "flood cell" with an annual budget of 300,000 euros and employing an engineer.

The Department is also working on a programme of studies with the aim of reducing the inundation risk across a catchment basin and a campaign to inform and increase the awareness of elected councillors. This is a response to the communes that have requested assistance and the support of a departmental structure, and that, with the exception of large towns such as Orléans about which Mr. Grouard spoke earlier, lack the resources needed for such work.

The Department is also imposing on itself the same recommendations it has made to its communes, by making an inventory of property located in flood plains. In all it has identified 156 buildings and a thousand people with social or economic field responsibilities which in the event of flooding could no longer correctly fulfil their missions at a time when the population needs them most.

The European Flood Risk Prevention Centre (CEPRI) project

The importance attached to inundation risk prevention by the Loiret Department and the existence in Orléans of a concentration of national structures concerned by water-related issues – the French Environmental Institute (IFEN), the Geological and Mining Research Bureau (BRGM), the Etablissement Public Loire (EP Loire), the Agence de l'Eau Loire-Bretagne, the Regional Environment Department (DIREN) – led the Department to participate in the creation of the CEPRI in 2003. The preparation of its organisation with the partners was completed in 2004.

The CEPRI is at the disposal of elected councillors and technicians of local authorities to help define efficient inundation prevention practices. Working with local stakeholders, the aim is to reduce the vulnerability of exposed property and populations through strategic counselling backed by information, tools and methodologies. The CEPRI plans to inform councillors and technicians, to federate them and encourage cooperation. All communes, even the smallest, should have at least one elected official and one trained technician to cope with a potential flood. Out of 36,000 communes in France, 16,000 are potential CEPRI "clients".

The CEPRI will have three missions:

- 1) Provide technical assistance to local public decision-makers through basic training and knowledge of equipment and techniques to determine the most effective choices in the local risk situation;
- 2) Run a platform for discussion and reference information on inundation risk prevention, since it appears essential to centralise information and local experience so it can be shared with other partners;
- 3) Act as an intermediary to inform national and European bodies of the concerns of local authorities. The European vocation of the CEPRI is materialised by an information centre and network. Its role is complementary to that of the SCHAPI mentioned by Mr. Godard. The CEPRI is a tool at the disposal of communes and their elected representatives to help them prepare.

The CEPRI should also enable France to consolidate its expertise in the field of inundation risk prevention while developing complementarity between State interventions and those of local authorities. From 2006, it may help to organise the sharing of experience and information with European partners on the subject of vulnerability.

In short, the Loiret Department now provides a support structure. One which must be brought to full speed without delay to see the real benefits of this initiative.

***Land occupancy
management
and population
awareness***



LAND OCCUPANCY MANAGEMENT AND POPULATION AWARENESS

The preoccupation of managers is to prevent and minimise inundation risks. During the last fifty year, these risks have increased due to urban expansion in the valleys of large European rivers. It has become evidently necessary to ensure the management of land exposed to flooding in cooperation with the populations concerned. This has become particularly urgent in that the risks to which inhabited land are exposed are often unknown to or poorly understood by the population. Recent events in Germany, the Netherlands, Poland and France show that this question of vulnerability of inhabitants to inundation risk must be better taken into account by territorial developers, notably in town planning. About ten presentations touched on this question of rural and urban land occupancy management with the aim of preventing or minimising inundation risks. Many of them show that local authorities are very much involved as partners and co-financer of these actions that cover very varied aspects.

In recent years there has been much media coverage of natural disasters, notably flooding in China, Cambodia, the United States and on the Old Continent along the Elbe, the Meuse and the Rhine in 1995, the Carpathian rivers in 1997 and the Vistule basin in 2001. France has also suffered with the Aude in 1999, Western France in 1995 and 2000 and the Rhone and the Loire in 2003.

Each of these events provided much information not only to flood managers but also to residents stricken by these extreme fluvial tantrums.

The presentations at this colloquium cover many of the different facets of this question of public awareness.

Observations and lessons

The 1997 floods in Poland: behaviour of inhabitants during the disaster

Roman Konieczny (Head of the Local Government Cooperation Unit of the Meteorology and Water Management Institute in Krakow) analysed the consequences of crisis management and population behaviour. The scale of this flood in 1997 flouted the occurrence probabilities calculated for recent floods in Europe. In the mountainous regions its scale exceeded the "1,000 year return period" level. Its extent was also exceptional since it covered all the Sudeten and Carpathians mountains. In Poland alone it caused the death of 54 people and as many again in the Czech Republic.

According to the latest estimation, the cost of this flood was €3.4bn. In all 162,500 people were evacuated; 500,000 hectares, 47,500 buildings, 9,000 enterprises, 71 hospitals, etc. were flooded.

For the Meteorology and Water Management Institute an event of such importance was an occasion to analyse the complex character of the protection, the human management and behaviour in an emergency situation. Some parts of this analysis, notably the reactions of

inhabitants, will be described later. Theoretically, an evacuation plan existed (people to be evacuated, transport, evacuation points), but unfortunately few people benefited from the system before the advent of the crisis.

There are many reasons for this:

- many inhabitants are unaware that their home is located on land likely to be flooded; surveys in individual communities reveal that only 22% to 62% of residents have not been informed of this;
- absence or late arrival of alerts; in some cases only 5% of the population received a warning;
- reluctance of residents to leave their homes vacant (security risk), although in fact few break-ins were reported in rural areas;
- evacuation sites are often too remote from the place of residence;
- finally, inhabitants have the impression of being treated like objects and know nothing of the protection, alert and evacuation systems due to lack of information and education about the flood problem.

On a more positive note, a study performed in a small village of southern Poland stricken by floods in 1997, 1998 and 2000, confirms that the experience of successive floods has had beneficial effects. In 1997, only 50% of the families were inclined to leave their home, a figure that has risen to almost 64% today. The change in attitude is even more marked for cars and machines: 36% in 1997, 43% in 1998 and 52% in 2000. The percentage of people that did not react to the alert declined from 16% in 1997 to 5% in 1998 and to just 3% in 2000. The crisis management by government and local authorities has undeniably made significantly progress.

In conclusion, improved behaviour of the population and preparedness of community crisis managers necessitates appropriate training and better circulation of information. With this in mind, exchanges of information are highly constructive.

Evacuation of 250,000 people in February 1995 between Nijmegen and Gorinchem

Rudy Van Meurs (journalist and writer) analyses the behaviour of both the local populations and the administrations and managers of the Meuse and the Rhine in the Netherlands during floods that extended even into western and northern France causing much damage.

The level of the Meuse at its confluence with the Rhine reached 16.68 m, just 15 cm below the highest ever recorded in 1926. The plan defined ten days earlier, which provided for an evacuation of the population at 16.50 m level, was known only to a few people. This resulted in disorder and much confusion between the administration and local authorities. Even worse, some problems appear to have been due to rivalry between some services.

The threatened populations fled even before they received the evacuation order, causing unnecessary congestion of the road network. Vehicles laden with passengers and baggage remained blocked in darkness for long hours, a situation that could have transformed into a catastrophe had the river embankments failed at this time. The situation was further aggravated by a generalised breakdown of telephone and IT communication. We can also regret the negative role played by the media, in particular sensationalist television reporting.

Complexity of the land to be managed

In today's industrial societies, land management involves several types of agents whose interests are varied and sometimes conflicting. Public authorities (State, regions, departments, towns, multi-community development syndicates, etc.), in their effort to ensure coherent land usage (in particular compatibility between urban development and river floods), apply many complex procedures that are difficult to implement. It therefore appears necessary to involve the populations concerned as early as possible in the decision-making process. Four of the presentations at the colloquium illustrate this type of approach.

Netherlands: the city of Nijmegen

The aim of this action programme is to limit the impact of floods, which means resolving the problem of narrowing of the Waal river bed as it traverses Nijmegen. Following exceptional water rise in 1993 and 1995 throughout the Netherlands, the government plans to limit urban expansion in Nijmegen to enable freer flow of the river. The city itself had proposed a different development approach. A consultation between the State and the municipality led to the stoppage of a city development project incompatible with the one initially envisaged by the State which aimed to provide more space for floodwater while assuring better protection of the city by means of a modern and partially adjustable barrage.

Netherlands: the town of Venlo

This example was presented by the town of Venlo around the development project of its "modern" district. To reduce the impact of river floods, the government has started an action programme supervised by a central body called *Maaswerken* with which municipalities and nature protection associations are associated. This innovative approach to flood control takes into account the potential ecological and tourism value of the river and aims to make the banks more attractive for residents. For its landscape actions, the town of Venlo won the European "greenest city" award in 2004.

Germany: a Rhine bank development project at Karlsruhe

The city of Karlsruhe is planning flood control and landscape and leisure enhancement actions in its region. This development programme, presented by **Thomas Henz** (Green Spaces Director of Karlsruhe), is part of the Integrated Rhine Programme (IRP) that manages the development of the river. The options chosen to facilitate floodwater flow include the creation of a landscaped park in the Rappenwört flood plain. This programme also provides for nature protection equipment and riverside leisure activities such as new footpaths.

Netherlands: a Rhine bank development project at Arnhem

The city of Arnhem which sits astride the Old Rhine has seen frequent floods of the Rhine and the IJssel river which runs close to the east of the city. Faced with these constraints, the municipality defined an urban development plan in partnership with the government and regional authorities and notably the *Stadsblocken/Meinerswijk*. **Chris De Ronde** (Deputy Mayor of Arnhem) presented this project entitled "Floriade" running from 2005 to 2010. It provides for a series of developments of the banks that will allow

development of built-up zones while preserving natural expansion spaces to absorb floodwater.

Developing intercommunity cooperation on land at risk

France: an intercommunity charter in Indre-et-Loire

This type of approach is illustrated by the creation of a charter involving 18 Loire valley communes in the Indre-et-Loire Department between Amboise and Chinon. Presented by **Marie-France Beaufile** (Senator and Mayor of Saint-Pierre-des-Corps), the aim of this charter is to better take into account the constraints imposed by inundation risks for inhabitants, to assure the durability of economic activities in the Loire Valley by reducing their vulnerability, to support economic development compatible with the inundation risks, to orient farming towards production activities compatible with the specific situation in the valley (stock raising, hemp growing, etc.). The charter also highlights the necessity of developing solidarity between communes, for example to make housing provision for evacuees during crises, to define joint actions to deal with traffic jams, interrupted drinking water and electricity, and so on. It also provides a more precise definition of the flooding vulnerability of land and of development orientations to enable inhabitants to continue living alongside the Loire. The content of the charter is an appropriate response to the recommendations of the European Communities Commission (July 2004) that encourage local authorities to develop awareness programmes for residents of flood plains by means of more effective, specific communication.

Germany: an intercommunity approach in the Starkenburg region

Andreas Schenkel (Head of the *Regionalbüro*, Starkenburg Region) described the approach developed in the Starkenburg region between the Rhine, the Main and the Neckar rivers, where about a million people live and which is highly exposed to flooding. The project aims to involve all local stakeholders to define a flood control strategy as part of a decentralised management system known as "responsibility sharing". The project therefore involves the municipalities, water services and civil defence and water management associations.

The creation of the project involved three phases:

- a preparatory phase now well advanced,
- a structuring phase: organisational "responsibility sharing" structures, definition of working groups, advertising, communication, etc.,
- an execution phase.

The approaches described by Marie-France Beaufile in the Indre-et-Loire Department and by Andreas Schenkel in Germany are similar in that they both aim to involve the local population in crisis management, make it more responsible and increase its awareness. They bring solid pedagogic benefits. Indeed, it is precisely this lack of involvement in crises of which some Oder residents complain, claiming they are treated like nothing more than "objects" (like Roman Konieczny's Polish flood victims), which explains their hostility to evacuation orders.

Involving inhabitants in flood management by keeping them informed and making them assume responsibility

The European OSIRIS project

Hélène XHAARD (Project Manager at the Etablissement Public Loire) and **Gilles MOREL** (Risk Projects Manager at the Maritime and River Technical Studies Centre) gave us an update on the European research OSIRIS project launched in 2000 whose objective is to improve the circulation of information for all people concerned, both residents and crisis managers. The mobile telephone and Internet are used for carrying information. In this framework several volunteer communities have tested new technologies (software, prototypes) for processing and distributing data. Following this project, the EP Loire has worked on the adaptation and development of these prototypes.

To meet the expectations of the stakeholders, an in-depth survey has been carried out of potential users of these new tools on two sites exposed to inundation:

- two left-bank communes downstream from Orléans: Cléry-Saint-André and Saint-Pryvé-Saint-Mesmin,
- communes at the confluence of the Vienne and the Loire.

Two hundred people in exposed zones were interviewed (farmers, residents, administrative managers, elected councillors, technicians, association representatives, and others). They expressed the need for more regular and complete information on the coherence of action decisions, on developments realised and on their effects. Most inhabitants are aware of the existence of the risk, but their knowledge is imprecise and they appear sensitive to rumours.

Elected councillors and technical services on the other hand want to see more consultation with the administration and would like above all to develop tools suitable for crisis management and preventive information.

The interviewers underline the general enthusiasm for more dialogue between stakeholders. Similar conclusions have been drawn in Poland and the Netherlands.

The EP Loire undertook several actions at the end of the OSIRIS research project.

As an extension of the Polish experiment, the EP Loire has decided to develop a web portal to serve as a platform for technical interchange between local authorities in the basin. The site (www.inondation-Loire.fr), operational since January 2005, is also accessible to other people.

Moreover, in the line of the OSIRIS-Inondation crisis preparation software, a prototype of software used to prepare a community emergency plan has been tested by elected councillors and the services in Cléry-Saint-André and Saint-Pryvé-Saint-Mesmin. These communes have confirmed the positive benefits of the OSIRIS software both in terms of methods and organisation. The easy-to-use software can be distributed without licence to any person or group that asks for it; it can also be downloaded from the web: www.osiris-inondation.fr. Additionally, the EP Loire can provide assistance and training in the use of the software to Loire basin communities.

Reducing habitat vulnerability

This problem was presented by **Jean-Pierre Valette** (Flood Prevention Manager at the Regional Direction for Environment in the Region Centre). A survey of about one hundred families having suffered flooding twice in the lapse of ten years reveals that few people take measures to deal with a new flood. "*This behaviour can be explained by the belief that a repeat disaster is unlikely and the impression of not having any direct role to play in the reduction of vulnerability. This feedback has also revealed that, a few years after the disaster, economic losses are no longer what mark the memories, but rather the psychological impact which is still strongly felt.*"

Owing to the diversity of the habitat in which each case is specific, "all-purpose" regulations are ineffective for existing property. Therefore private initiative appears necessary to reduce the vulnerability of the habitat through better knowledge of the risks, by evaluating the impact of inundation on people and property and by implementing measures and useful works. Public authorities will need to provide indispensable information. For new housing, when this is allowed in low-risk zones, it nevertheless appears preferable that the authorities impose construction rules that limit the vulnerability of buildings and their equipment and also facilitate the transfer of inhabitants to safety and reduce the return delays. These measures have both social and economic objectives and we must make sure they are respected, for example when examining building permit applications.

What are the objectives?

- First, *knowledge of inundations*: presently, only one parameter is available, the highest recorded water level ("PHEC"); on the other hand, the elevations of housing are rarely known and are not easy to obtain.
- Next, *risk awareness*. Vulnerability must be evaluated for people and housing:
 - *People*: inundation presents a health risk. The solutions implemented require knowledge of the actual risk and specific organisational measures for each inhabitant;
 - *Housing*: buildings in inundatable zones are often not adapted to flooding. Very few residents are able to perform a self-diagnosis of their homes, and no veritable diagnostic service is available to them.

By developing a *risk culture* it is possible to act to reduce vulnerability. As a priority, we must ensure physical and emotional security for residents and, once the flood subsides, ensure that they can return to normal life rapidly (which implies limiting irreparable damage which would complicate their return home).

We must also make preparations for *living through the crisis period*, through three sorts of actions:

- moving possessions to safety, in particular the most precious and those needed as soon as the residents return ;
- provide temporary accommodation for people as soon as the floodwater arrives and throughout the crisis;
- return residents as soon as possible (but without taking risks) to start the clean-up and renovation.

To limit damage as far as possible, we need to rethink the *way houses are built*. Improvements should be sought to increase the protection of housing, or at least reduce damage to allow an early return.

It is regrettable that the majority of local professionals lack the experience needed to propose vulnerability-reducing solutions.

What *tools* do we have today? The DIREN and the *Plan Loire* multi-disciplinary team are working on two documents:

- The *Family Safety Plan*, a guide intended to help private citizens to take organisational actions without professional support; the plan accompanies them throughout the different phases, before, during and after the crisis. It is presently being tested by private citizens.
- The *Habitat Diagnostic* is developed jointly with building experts to detail and evaluate the nature of damage as a function of the depth and duration of immersion. This methodological guide is intended for professionals.

The distribution of these tools will make sense only if we can respond to the preoccupations of inhabitants.

Involving inhabitants in development projects

The examples presented show the involvement of municipalities and the population in the definition of development plans for inundatable land. The municipalities must satisfy social demands and the need for more regular and complete information. They must conduct their projects in complete transparency and better take into account the specific expectations of the inhabitants, as illustrated by the examples of La Bassée and La Bouillie.

La Bassée development project in the Yonne Department

To provide even better protection against the Seine in flood, the Seine Basin Interdepartmental Storage Dams Institution decided to build impounding basins at La Bassée between Bray and Montereau. From 2001 to the end of 2004 it carried out an exhaustive consultation upstream of the decision process with local authorities and inhabitants. The working groups led by local elected councillors were able to organise meetings with the inhabitants and professionals, notably with farmers in order to study the compatibility of the project with existing activities, agricultural in particular, the environmental aspects of the development of the La Bassée river wetlands, and the management of the proposed works. Local development studies are now being undertaken (in 2005) to evaluate the feasibility of the solutions envisaged.

La Bouillie spillways at Blois

To re-establish normal operation of La Bouillie spillway encumbered by constructions for several decades, the Blois Community of Communes created a Deferred Development Zone ("ZAD") at the request of the government. This enables it to acquire land and buildings by pre-emption when such property comes up for sale. This procedure avoids having to use expropriation procedures not at all appreciated by owners. In this manner, the Community of Communes was able to acquire 32 houses in 2005, and 12 others in the process of acquisition.

Flooding risk by rising groundwater

Since floods are usually associated with the overflow of a river, we tend to forget that they can also be caused by rising water tables and have disastrous economic and social

consequences. In his presentation, **Thierry Pointet** (Deputy Manager of the BRGM's Water Service) explained succinctly the participation of ground water in the formation of river floods.

Two cases can be identified:

- *Rapid flood.* In mountainous regions exposed to violent Mediterranean precipitation, a hydrogram is formed by run-off. The state of humidity of the soil (non-saturated zone) however plays an important role in the triggering of the flood. On a number of test basins it is already possible to interpret satellite images and determine the level of risk and thereby ascertain whether or not rainfall is likely to trigger a flood.
- *Slow flood.* The role of the water table is essential. For anticipation purposes it is possible to monitor the table status, estimate water flows, risks and the rate of fall of the water level. A tool of this kind is already used in the Somme basin.

The BRGM is presently working on a mapping of zones at risk in France's sedimentary basins, indicating the probability (or "sensitivity"), in normal meteorological conditions, that rising groundwater could trigger a slow and durable flood. The zones most exposed to risks are those where the water table is not far below the surface and subject to rapid fluctuations. These are mainly the alluvial and coastal plains and wetlands whose total area in metropolitan France is 140,000 km².

We can conclude that good knowledge of the surface and basement milieus enables a very useful simulation tool to be developed for long-term forecasting of inundation risks. Moreover, the BRGM will be able to provide water table flood risk indicators to public authorities responsible for warning the public.

Development of the Tagliamento in the Southern Alps in Italy

This example, presented by **Nicoletta Toniutti** (manager of the Tagliamento *European Alpine Programme* - WWF Italy), highlights the divergences between exposed inhabitants, whose priority is to assure the protection of their land against catastrophic floods, and residents in zones where protection works are planned who oppose such projects often on the ground that the river's ecosystem must be preserved.

The 178 km long Tagliamento river runs from the Alps to the Adriatic; its catchment basin measures 2,877 km². The last 30 kilometres are enclosed by dykes constraining the channel to a width of 175 metres. The river's catchment basin has one of Europe's highest rainfalls: up to 3,000 mm. Very sudden changes in the water level of as much as 7 metres can occur in the channelled section at Latisana. On 4th and 5th November 1966, the swollen river burst through the dykes causing 14 deaths; 5,000 people lost their homes and 24,000 houses suffered serious damage.

After 40 years of discussions between regional and national authorities, during which period houses and industrial building and intensive agriculture continued to develop in the old flood plain along the middle and lower sections of the river, the local Water Authority announced a solution based on the construction of retention basins to buffer rising water and regulation systems with intact flood plains. This plan would destroy one of the river's most important ecological zones.

In 2003, the WWF Italy presented a preliminary feasibility study taking into account the hydrological, geomorphological, socio-economic and ecological aspects. Complex knowledge must be acquired by drawing on multidisciplinary sources; participation of the inhabitants is important, with real and active involvement of the communities in the basin. The type of measures to be implemented has not been disclosed.

For the time being, the communities and administrations agree to consider hydraulic safety as an absolute priority. They favour the construction of impounding basins on the Middle Tagliamento. But of course the administrations and inhabitants living in this area are opposed and are backed by environmental organisations.

Since it is difficult to weigh the losses and gains, it is proposed to reinforce the participation and start serious negotiations.

"The WWF believes that hydraulic safety and protection of the Tagliamento itself are compatible objectives that must be reached with the contribution of all the communities and administrations present along the river", although this excludes seeking a consensus on the construction of protection works.

***River awareness
through
landscapes***



RIVER AWARENESS THROUGH LANDSCAPES

The value of landscapes

The previous chapters were essentially concerned with the question of the risks to which riverside residents and property are exposed. Everyone can see that we must learn to manage these risks, but also that the study of this challenge should be enlarged to cover other aspects too. It's true that rivers are sometimes dangerous, but they also provide amenities for many people. One of these is an attractive landscape, the first subject to be considered.

As Europeans start to rediscover their rivers today, landscapes are of prime importance, whether they be natural or extremely "humanised". In Bordeaux, for example, the riverfront of the "Port de la Lune", until recently a zone of derelict buildings, has been renovated bringing it into direct contact with the Garonne river again. Above Candes-Saint-Martin, walkers can now enjoy a splendid panorama of the confluence of the Loire and the Vienne.

The landscape value of rivers is now taken into account in studies and projects intended to improve riverside safety. A large number of presentations concerning flood control or land management reveal that the landscape, its preservation and its exploitation are now present in the minds of managers. We have seen this in the *Loire Grandeur Nature* plan presented by O. Cléricy, and in the projects at Nijmegen, Venlo, La Bassée and the Integrated Rhine Programme in Germany.

A perception survey

Concerning the Loire, steps have been taken to find out how men and women feel about and react to the presence of a landscape of which the river is the prime feature. Other actions have attempted to make people more aware of these landscapes and help them to "understand and use them". In many places work is underway or already completed to make landscapes more attractive and facilitate access to them.

Frédérique Redors (Project Manager at the Regional Nature Conservation Agency for the Loire River and its Tributaries) presented the conditions in which a survey of a targeted section of the population was carried out in 2000. The aim was to understand local relationships with the Loire, knowledge and real perception of the river, what it represents and how it is appreciated.

The speaker presented and commented the replies, pointing out that the respondents to the questionnaire had frequent contacts with the Conservation Agency. In other words, these people are already sensitive to the Loire. Even so, their replies are rich in information.

First it appears that this population, most of whom have resided near the Loire or even on its banks for more than twenty years, have no desire to move away. They not only appreciate seeing the river "on the way to work" but they pursue leisure activities along the river. For them, the Loire is a place for strolling, hiking and fishing. However few people use a boat.

Residents have limited knowledge of the flora and fauna, but they can identify some trees (willow, poplar, ash) and other plants (reeds, fritillaries, hemp). For them, the animals most associated with the Loire are the heron and pike, but they also know the coypu, the eel, terns, gulls and ducks. Knowledge of pike and eel is no doubt associated with local gastronomy.

In the eyes of residents the valley is above all characterised by its vine-covered hillsides. But no emblematic place in particular springs to mind in the replies which tend to mention individual elements of the landscape: the strands, shores, islands, churches and chateaux. It's true that it is difficult to reduce the Loire valley to any single place.

The interviewees also have knowledge of the life on the Loire through festive activities, such as "upstream transport of salt from Guerande". Their vision of the Loire is coloured by the writings of J. Gracq and J. du Bellay; no other authors are mentioned.

Regarding sounds, sights, colours and odours, the residents listen to the cries of birds and the sounds of the water; they are also sensitive to the silence. Landscapes are perceived in their globality, as mentioned earlier, in particular churches and chateaux. Among the colours, blue and green dominate, then grey and yellow. The perception of odours highlights those of the mud and sediments, but also cut hay and wet grass.

When they leave the Loire valley, the residents miss the water, the sands and the islands. They rarely mention any man-made installations, but rather the calm, serenity and peace of mind inspired by the river.

Expressed subjects of concern include the lowering of the water line, the state of the banks and levees, and water pollution. Actions they would like to see to enhance the river are above all of an ecological nature, and tourism to a lesser degree. Economic and architectural factors are rarely seen to have great importance.

Conserving the natural appearance of landscapes

The Regional Nature Conservation Agency for the Loire River and its Tributaries

Nicole Le Nevez (Agency Director) presented the actions taken by various organisations to conserve the original appearance of river landscapes. She first explained that the Conservation Agency's mission is to contribute to the preservation and economic development of landscapes, and to keep the public informed and aware of important issues.

The Agency has a dual role:

- understand and share knowledge,
- create active partnerships around shared objectives.

The speaker also mentioned that meeting days, publications, exhibitions and websites also contribute to information and awareness.

First we need to understand the land in question in order to give new sense to our familiar landscapes which are by no means unchanging (indeed, they have never ceased to change) by making thematic descriptions, analysing their functioning, searching the archives

and carrying out surveys of residents, some of which have already been completed, as we have seen earlier. Complementary land usage studies have identified three "reference" landscapes:

- the Loire estuary where it meets the ocean: a vast horizontal landscape of wetlands that lives to the rhythm of the tides;
- the promontories: hills often wooded, topped with villages and offering broad panoramas;
- the levees undulating on the right bank, facing wooded hillsides on the other bank and islands midstream.

Various part of the landscape have benefited from intervention programmes: consolidation of banks, restoration of riverside constructions, maintenance of copses and preservation of meadowland. In the framework of the European Natura 2000 directive, objectives have been defined and approved and action is progressively being taken. Other work underway includes reinforcement of the levees, breakwater repairs and construction of the *Loire à Velo* cycle track.

The Loire's admission to the UNESCO World Heritage List as a cultural landscape confirms the worth of these preservation and development efforts.

The Bird Protection League - Auvergne

Jean-Christophe Gigault (League Director) presented some of the actions undertaken.

The interest raised by the Loire Valley landscape and the fauna that live there has spurred various organisations and local authorities to take actions to increase and improve the knowledge of inhabitants and visitors of the various sites constituting the landscape. The result is green tourism offering: nature houses, equipped natural sites, nature outings and sojourns.

The *Loire Nature* programme was launched in 1993 with the aim of reinforcing the notion of "breathing space for the river" and preserving natural milieus. Today is participating in the interregional *Loire Grandeur Nature* programme that will establish management methods guaranteeing the preservation of the ecological functions of Loire basin wetlands. Looking beyond purely preservation actions, the programme is also intended to increase public awareness and the support the development of nature tourism.

Nature tourism appears to offer considerable potential on rivers:

- Compared to other types of natural milieus, mountains for example, rivers support an undeniable ecological richness and diversity (fauna, flora, habitat) that is easy to observe.
- Nature tourism is a fast-developing form of tourism and one which has the advantage of being year-round. In France, tourism development around large and small rivers is attracting the attention of the tourism industry, and environment agents are increasingly professional in this domain.

This development is however subject to some conditions:

- As tourism develops, large rivers must be preserved and managed. Concerted actions are essential to find a middle line between protection and development.

- Tourism development necessitates a networking effort, animation of the agents, structuring of the offering and communication and promotion actions. At local level this work must be conducted with the cooperation of tourism and environment professionals.
- The development of nature tourism on large rivers is a long-term effort (for example, the progress of the *Loire Nature* programme after four years). It must be the fruit of a partnership between tourism and environment professionals, private and public, and be supported morally and financially by public authorities.

The two speakers whose contributions have just been summarised wished to explain how they sought to understand the desires of the populations and dispensed advice in order to conduct actions that satisfy these desires while conserving a high-quality natural environment.

An example of partnership: the Orleans-Val de Loire community of communes (the "Agglo")

Jacques Martinet and Jacques Bie (Vice-Presidents of the Orléans-Val de Loire Community of Communes) then showed how this Community rapidly established a project and undertook its realisation.

The Agglo, situated between the Sologne and the Orléans Forest, encompasses 22 communes. It is traversed by the Loire which since time immemorial has been a major channel for interchanges between civilisations. The river and its environment offer the benefits of natural spaces and landscapes that deserve our close attention.

The part of the Loire Valley included in the UNESCO World Heritage List covers several communes of the Agglo, adequate proof of the extraordinary quality of this environment. This listing is an opportunity that the Agglo would like to seize in order to speed the return of the Loire environment to its rightful place in the daily life of the local populations and to exploit its geographic position near its most famous tourist attraction, the chateaux of the Loire valley.

The Agglo has established the *Loire Trame Verte* (green corridor Loire) project whose ambition, by bringing the communes that compose it closer together, is to construct a structured landscaped environment to further enhance the quality of life, notably by the creation of a "green framework". This will take the form of a network of discovery routes, harmonious and well-balanced, of course related to the Loire itself, and taking into account inundation risks.

More precisely, the project plan provides for three priority developments:

1 – Develop cycling tracks for leisure and tourism:

- construction of loops in the Orléans Forest to enable a broad public to enjoy the forest while respecting its biodiversity;
- construction of a "green link" between the Loire and its tributary the Loiret,
- integration of the *Loire à Velo* cycle track on the south and north banks of the river.

For the conurbation this project represents a triple challenge:

- improve and exploit the Loire heritage and the urban and natural banks of the Loire,
- encourage cycling throughout the conurbation;
- promote "ecotourism" in natural spaces while respecting the environment, plus sports activities.

This approach is clearly one of "sustainable development".

2 - Develop pedestrians discovery paths around the Loire, the Loiret and the Orléans canal. Walking paths will help to enhance the value of the landscaped spaces and to link the Loire, the Loiret and the Orléans canal. These paths will connect ten different places of patrimonial interest where the Agglo will make large investments. Action priorities have been defined and other projects are likely to be added later.

3 – Loire – Orléans canal. Developing the banks of the Loire in Orléans, between the George V bridge and the place known as *Cabinet Vert* where the Orléans canal now ends, is one of the main facets of *Loire Trame Verte*. The challenge is to inject new life into the riverside districts of Orléans close to the city's historic centre. The river can bring new value to the city and vice versa, and hopefully revive the conurbation's relationship with its river.

To perpetuate the historic marine activity on the river in Orléans, new usages of the embankments will be developed: urban life, walking and other leisure activities. After the renovation of the Place de Loire, now completed, the reopening of the town to its river will continue with architectural developments and landscaping of the embankments. Hydraulic works are planned including re-excavation of the section of the Orléans canal filled a few years ago, between the *Cabinet Vert* and the terminal locks at *Fort Alleaume*. The re-opening of the canal is supported by the Loiret Departmental Council whose ultimate objective is to re-open the entire canal to allow leisure navigation between Orléans and Montargis and even as far as the Seine. Fixed and floating pontoons will be installed on the Loire for mooring boats.

This project focuses on accessibility and conviviality, with particular accent on mixed usages: pedestrians, babies in prams, skate-boarders and cyclists will all be able to enjoy this promenade without hindering each other, each with their own dedicated spaces.

Finally, two traditional Loire river boats will be tied up throughout the year opposite the Place de Loire. Among other uses, they will serve as cafes, restaurants and exhibition rooms.

The *Loire Trame Verte* project also provides for the development of a leisure area on the land at Ile Charlemagne and Bois de l'Ile located not far from Orléans city centre. These will constitute a "Loire Park" of more than 300 hectares.

Thanks to this ambitious *Loire Trame Verte* project, every village and every town large or small in the Agglo will open onto the river and its natural spaces. It will enhance lifestyle and provide animation while leveraging tourism and economic activities.

The project is driven by a passion for the Loire, the Loiret and the Orléans Forest and the desire to share this space with all, both visitors and inhabitants of the conurbations.

These four presentations reveal the desire of Loire valley populations to make their regions known and to defend the quality of their environment by protecting the fauna and flora, even going as far as recuperating spaces abandoned to the excesses of civilisation. Such recovery projects are always problematic in that they conflict with the interests of individuals who have long made use of natural spaces and fight to continue using them as they like, without concern for damage they might cause. The actions undertaken all along the Loire continue to advance slowly, step by step. The main thing is that they progress, which allows us to hope that our younger generations will be able to enjoy riverside space for simple, natural leisure.

***Sport and
leisure activities***



SPORT AND LEISURE ACTIVITIES

A dozen presentations addressed the question of sport and leisure activities along large rivers, most of them relating to the Loire. Two presentations enlarged the scope to other European rivers, generally offering a similar context.

The 2000 survey in the Pays de la Loire by the Conservation Agency for the Loire River and its Tributaries revealed to what extent the river is important to residents. The image they have, collectively, is that of a simplified, schematised river landscape composed of few, mostly natural elements giving the impression that the Loire remains an untamed river, even along its highly constrained and urbanised downstream section. People have a rather emotional attachment to *their* river, a feeling that in fact makes them very suspicious of all outside interference.

Inclusion of the Loire valley in the Unesco World Heritage list

The Loire has won the hearts of many people other than those who live in the valley. Its worldwide reputation spurred the UNESCO to include its middle course in its World Heritage List on 30th November 2000, as **Dominique Tremblay** (Director of the Loire Valley World Heritage Mission) explained in his presentation. This decision imposes an obligation to impose practices that will maintain and develop excellence. It brings no specific financial resources and imposes no "legal threats", but it should be considered to be a factor of emulation and a means of reinforcing the identity and attractiveness of the river and its environment.

The current context appears favourable to renewed appropriation of the Loire by local populations, reanimation of the river and its banks, and welcoming of visitors. Sports and leisure will necessarily play an important role in this renaissance.

Most of the presentations at the colloquium concern specific practices. These can be divided into two categories: water-related activities and activities practised near the river.

Water-related activities

Leisure navigation

Leisure Navigation Master Plans for the Loire

Philippe Duchêne (Director of ACT-Ouest, expert advising the Loire Valley Mission) presented this document produced by the Loire Valley Mission, a body created after the UNESCO World Heritage listing. The author points out that several sorts of navigation are possible on the Loire, from single-seat kayaks to passenger boats, but that this is limited to discontinuous basins separated by obstacles all along the river. The diversity of demand must be taken into account, and without forgetting that the activities in question are economically fragile.

Five categories of practices can be developed:

- "green tourism" and discovery activities,
- cruising on passenger boats,
- exploration on the river in supervised groups,
- river events (e.g. meetings of traditional boats),
- individual practices in secure zones.

Quantitatively the objective is to:

- sustain about fifty traditional or ecotourism boats,
- increase the number of passenger boats to about ten,
- form a network for river exploration for the use of about five hundred canoes and kayaks,
- develop about thirty "Loire ports" specially built and equipped, since the old ports are no longer usable.

This strategy is founded on three principles:

- 1 - reinforce the viability of enterprises and associations,
- 2 - develop joint strategies and actions,
- 3 - encourage the expression of local initiatives.

A "pilot basin" is currently under study between Savennières and Montsoreau. The Orléans conurbation is expected to participate in experiments performed in the framework of the Master Plans.

Once the schema is decided its components must be realized. In parallel a "toolbox" will be formalised, which will include a navigation charter, examples of basin projects and a list of durable partnerships. And it will be necessary to mobilise institutional partners: *Loire Grandeur Nature* plan, public authorities, etc.

Canoeing and kayaking

As a complement to Philippe Duchêne's presentation of a project run by an official institution, **Annick Gombert** (Vice-President of the Centre Region Canoe-Kayak Committee) gave the point of view of the adepts of a specific sport, canoeing and kayaking, explaining the advantages (attractive landscapes, a rich river heritage, various types of navigation, manoeuvrability of the craft, etc.) but also the problems (safety, discontinuity of navigable sections, insufficiency of specific equipment, lack of complementarity with other activities). Improvements are possible as regards user safety, the appeal of the sport and respect of the environment. Users would like to see the removal of some dangerous obstacles, the re-establishment of water continuity (channels around barrages, for example), improved access to the water, creation of nautical stopping places, accommodation facilities and white water sections. Finally, it appears necessary to train managers, recruit staff, publish "river sheets" and create a reservation system.

Bathing

Swimming in the Loire

Jean-Michel Roudier (Nièvre Department Museums and Heritage Curator) told a pleasant history of this activity in Middle Loire, reminding us of its oldness and mentioning official beaches and public baths whose main problems were safety and decency. From the end of the 1950s, the practice declined as the population became more aware of the risks, of increasing water pollution and competition from an increasingly number of swimming pools. However, since the end of the 1980s, the river has slowly been "reconquered" by residents and new demand for swimming has developed which we must try to satisfy.

A beach at Beaugency

This situation naturally introduced the presentation by **Claude Bourdin** (Mayor of Beaugency). Fifty years ago in Beaugency there existed a beach with diving boards, protected from the strong currents by a dyke. The destruction of these works in 1995 was accompanied by the interdiction of bathing in view of the serious risks. An idea then emerged to build an artificial beach. Between 14th July and 15th August 2005, 1,800 tons of sand were spread over an area of 1,800 m²; various installations were built, either technical or for enjoyment. The beach attracted 30,000 people and the experiment will be repeated in 2006.

Europe's "Big Jump"

While the previous presentation concerned a very localised project, that of **Roberto Epple** (Director of *European Rivers Network*) had much larger geographic scope, with *Big Jump*, a European swimming day forming part of the awareness programme of the *Réapprendre la rivière* (rediscover the river) association. Today, as water quality and the river environment continue to improve, the art of living with rivers starts flourishing again, with former activities reappearing on the water and the banks.

In 2002, the international swimming day (*Big Jump*) in the Elbe broke new ground: 100,000 people participated at 55 locations. A ten-year project was defined to encourage citizens to discover and reconquer rivers and lakes.

The 2005 edition of *Big Jump* proved to be a success beyond all expectations. An estimated 200,000 to 300,000 people participated on 31 rivers in 22 countries, thanks to numerous and varied partnerships. The event attracted massive media coverage.

Now we must try to assess what has been done. The next rendezvous is scheduled for 2010. By then many other events will take place in the same spirit.

Leisure fishing

This activity was covered only by the presentation of **Renaud Colin** (Project Manager at EP Loire). With four million freshwater fishermen, half of them very regular, France appears to be privileged in this respect. However we observe some decline of this activity, despite the considerable potential.

In the Loire basin the question of fishing is now being examined, drawing on a study by the EP Loire concerning the tourist fishing offering. This study is part of an approach intended to examine all national potentialities.

Access to the water

For the water-based activities previously mentioned access to the river can be a serious problem. This point was raised by **Philippe Auclerc** (chief editor of the "La Loire et ses terroirs" magazine). The problem is complex in that the notion of accessibility varies according to the type of activity and according to the individual; nothing is frozen either in space or in time. The demand is therefore multiple, but the equipment specific to each activity is not necessarily incompatible with that of others or with the natural environment. Not all places are suitable for easy access, and accessibility in a given place may vary with the seasons; some river banks lie on public land and are more easily exploited than those on private land. Finally, access restrictions must be imposed in protected areas. Access is facilitated by the presence of riverside paths, but the diversity of the activities can lead to conflicting interests on communal paths and in the conurbations, and these must not be underestimated.

It appears urgent to define a specific strategy to reinforce the consistency of the access and eliminate conflicts, for example the dangers of bathing in places where canoe-kayak is practised. Improved access to the river will require suitable signposting, the creation of specific equipment and the requalification of bridges, slipways and quays as points of access.

Riverside activities

Cycling

This was the subject of two presentations which were remarkable for their territorial coverage.

A European project: the rivers "Euroveloroute"

The presentation of **Jean-Claude Eude** (Studies and Prospective Manager, Centre Region) had European scope. He described a cycle track project whose ambition is to link Nantes to Budapest. Its benefits are numerous: cycle tourism is very popular and the proposed route traverses regions of exceptional natural and cultural heritage. The creation of such a track would have large local impact and certainly contribute to development in these regions.

This project has three aspects:

- economic: investments of several hundred million euros, but major gains in terms of employment and rural revitalisation;
- social: intensification of interchanges between towns and the countryside and benefits in terms of health and education;
- environmental: this non-pollutant form of transport will help to underpin the economic development and protection of natural spaces.

This project is an excellent example of international cooperation. Seven working groups were created to:

- design and test analysis tools,
- improve the accessibility to the cycle track, preferably via public transport,
- develop a network of suitable accommodation,
- assure the promotion of the track,
- enhance the value of the natural heritage,
- develop continuous signposting,
- construct the "missing links" all along the route, essentially sections that do not follow a waterway.

A cycle track in Anjou: the Belle Poule levee

Raymond Bablée (Deputy Network Development Managers of the Maine-et-Loire Department) and **Jean-Claude Beaupère** (Deputy-Mayor of the town of Ponts-de-Cé) presented the work on the Belle Poule levee, upstream from Ponts-de-Cé (Maine-et-Loire), which in future will be reserved mainly for cyclists. This work, part of the *Loire à Velo* operation, was conducted by the Maine-et-Loire Departmental Council with the participation of the Angers and Saumur conurbations, and the support of the Pays de la Loire and Centre Regions.

Hiking

The only presentation on this subject, by **Alain Nevière** (Vice-President of the ATEN – French Hiking Federation), concerned the long-distance hiking trail ("GR" *grande randonnée*) known as "GR3". After tracing the history of GR trails, he underlined the importance of the French Hiking Federation responsible for 180,000 km of trails and that boasts 175,000 registered members managed by 3,000 associations.

The GR3 trail follows the Loire from its source to the ocean. Its first section was inaugurated on 31st August 1947 in Orléans. The route tends to hug the river but it offers some deviations to allow hikers to discover remarkable natural or urban sites. A number of so-called walking loops accessible to all categories of walkers are also attached to the GR trail.

Here, as on all the other GRs, it is imperative to ensure continuity of the route which is constantly threatened by interruption by appropriations and work sites. So it is essential to monitor the signposting and keep hiking guides up-to-date. Finally, we must address the problems raised by the use of GR trails for purposes other than walking.

Green tourism

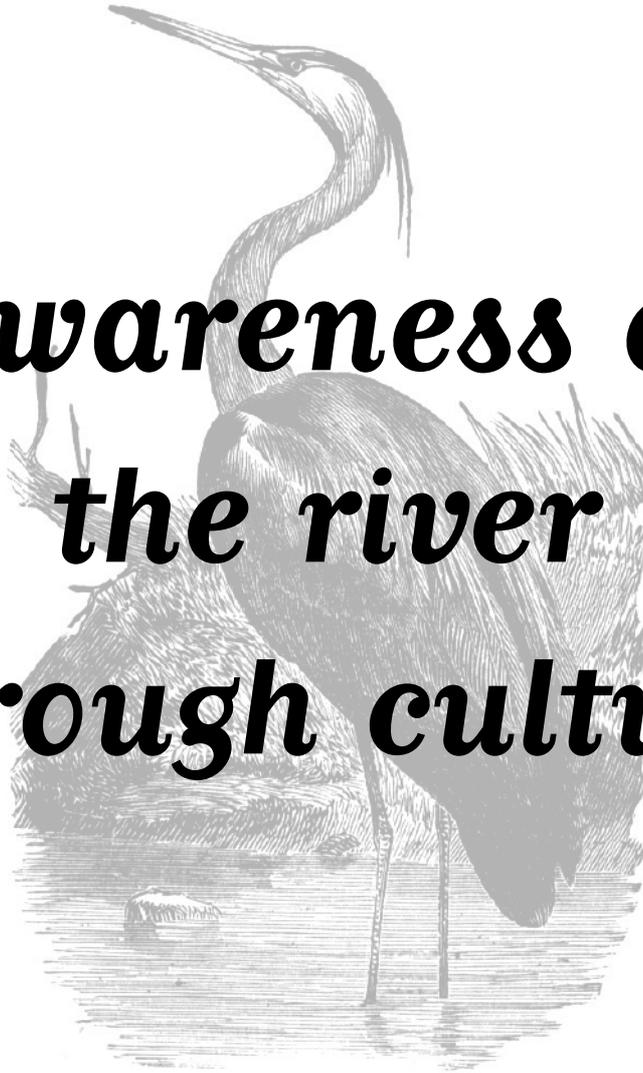
Jean-Christophe Gigault (Auvergne Bird Protection League) presented the perspectives of green tourism in the Loire basin, an activity turned essentially to the observation of nature and which can contribute to local development. He reminded us of past projects (ornithological tourism in 2001, the role of protection associations in 2004) and mentioned the links with other initiatives in France and worldwide.

His project, developed as part of the *Loire Nature* programme, aims to provide for management of natural sites and develop public awareness. Following a market study, projects now underway will create sojourns and develop special events common to the entire

basin (*Loire Nature* evenings, for example). For such realisations networking of partners is indispensable.

The Loire, like all large rivers, offers major potentialities thanks to its ecological richness and diversity, and, of course, its tourism appeal. However this potential can be exploited only if we can effectively protect nature, tightly manage tourist activities and achieve sustainable development.

***Awareness of
the river
through culture***



AWARENESS OF THE RIVER THROUGH CULTURE

From time immemorial the Loire has been a place for dreaming and discovery, appropriated by painters and writers, by simple strollers and residents of its banks who all appreciate this landscaping changing daily and with the seasons. In such a context, it is hardly a surprise to find different approaches to its development at this "*Freude am Fluss*" colloquium: first that of Philippe Auclerc looking at the question of access to rivers for leisure, then that of Dominique Tremblay presenting the perspectives of the Loire Valley World Heritage listing. Many other subjects could have been included, such as the *Loire Studies Association* approach described in its special issue at the end of 2005 on the theme "Awareness and pedagogy: apprehending and seeing the Loire - diverse initiatives" organised into three levels: pedagogy, proximity awareness and imagination.

An open loire

It is clear that we need to address the question of leisure and access to the Loire, the first being dependent on the second. Expectations differ according to whether you are a Sunday afternoon stroller, a serious hiker, a fisherman, a kayaking adept or a painter, not to mention "professionals" of the Loire for whom the river is a development and occupational vehicle. It should be possible to address this diversity of needs in the framework of the World Heritage listing, but here we will limit ourselves to leisure activities.

The first question we can ask concerns localised access to the river or continuous access all along its course. Local access can suffice for fishing and some sports, but it is inadequate for walking, hiking and cycling. The *Loire à Velo* project should enable the creation of a continuous track all along its course, a facility the Loire deserves. We believe that everyone should have the possibility of observing the ever-changing appearance of the Loire – shifting sandbanks, vegetation and so on – all along its course as the seasons go by.

This strategy is compatible, as Philippe Auclerc reminded us, with specific developments intended to support particular leisure activities, whether these be wharfs and ports to enable the mooring of barges and traditional *futreaux*, artificial beaches for summer sports, or protected bird-watching areas. It might even be interesting to differentiate river sections according to various criteria.

At this point we should mention the constraints imposed by regulations, in particular the distinction between the public river domain ("DPF") and the private domain to which special access rules apply. There are also reserved spaces (nature reserves, zones of natural interest (ecology, fauna, flora), bird protection zones, *Natura 2000* protected areas, etc.) each of which requires specific management. In other words, river access is not free; all development must take these constraints into account.

Qualification of means of access to the Loire therefore requires a veritable strategy, one whose primary aim is to enable access to the river wherever possible, but also to take into account the types of leisure activities concerned, the desires of residents and the legal constraints, while striving to ensure overall coherence and protection of this unique resource.

The Loire as part of the world heritage

What has just been said concerns the entire length of the Loire, whereas the part now included in the World Heritage, between Sully-sur-Loire and Chalonnes-sur-Loire, is only 280 km long and covers 800 km² of land. The inclusion in the UNESCO list dates back to 30th November 2000. To acknowledge this distinction, a multiple approach to the development of the protected zone should be adopted, the aim being to create a durable effort combining protection, enhancement and exploitation, promotion of durable, environment-friendly activities, and access (with responsibility) for all. The three classic pillars of sustainable development apply well to this strategy that encompasses the environmental, social and economic aspects.

The UNESCO label merits a response in terms of exceptional quality of the whole territory, whether natural or built-up. Everyone must subscribe to this requirement through solid and far-reaching partnerships, since individual initiatives alone will not be sufficient. The World Heritage label brings no particular direct financial benefits; it corresponds to a qualification whose preservation requires the concerted effort of inhabitants and decision-makers.

The difficulties appear when we attempt to reconcile environmental protection with development of activities, notably leisure activities enjoyed by large numbers of people. Various projects are already launched, such as *Loire à Velo* and the leisure navigation development plan. International river-to-river interchanges are already established with the aim of finding innovative development approaches.

The Loire Valley Mission's website (www.valdeloire.org) presents the tools proposed by the Mission and the initiatives taken by it or by its partners: reports on the *Loire à Velo* and the *Loire à Pied* (Loire on foot), cultural visits (notably exhibitions in museums), international cooperation (European Interreg IIIC Vitour project in Portugal, launched in July 2005; Loire-Niger charter signed in November 2005), European summer university (5th edition in September 2005), directory of bibliographic and documentary resources opened in October 2005. The inauguration of the 150 kilometre Tours-Angers section of the *Loire à Velo* was marked by major inter-regional festivities on 3rd July 2005 in Montsoreau – Candes-Saint-Martin.

Conclusion

The Loire offers almost unlimited scope for action. It is capable of satisfying the cultural needs of larger populations – provided we implement the initiatives in a coherent manner and take care to protect and promote this exceptional heritage.



***Closing
session***

CLOSING SESSION

SPEECH BY Mr. ANDRE VIAU

Prefect of the Centre region, Prefect of the Loiret, Coordinator of the Loire-Bretagne basin

The *Freude am Fluss* colloquium illustrates the success of the European transregional INTERREG programmes. Researchers, decision-makers and inhabitants are federating around the question of rivers. Despite their geographic separation, they find similarities; their challenges and actual experience provide mutual enrichment. This particularly stimulating meeting with our Dutch and German partners is a fine illustration.

In my view, this colloquium raises three questions.

First, the question of a common approach to rivers, one that can be widely adopted. This is what the city of Orléans is trying to find through projects such as the Loire Festival and *Loire Trame Verte*.

Second, we must seriously take inundation risks into account. Although floods are often remote memories, such those of 1910 in Paris, awareness of the risk has developed recently but it still needs to be reinforced. This realisation concerns in particular the obvious shortcomings of our defence works in the event of a catastrophic flood. On this point, I should like to underline the quality of the consultation with the population, now a feature of many actions undertaken, as evidenced by this colloquium.

Finally, what do we expect from public authorities?

First and foremost, we need to develop a global perspective and look beyond our small local sectors. Indeed this idea already guides the actions of partners in the Loire basin, such as the water agency, the basin committee, and the Prefect coordinating the basin. Everyone must bear in mind that all actions affecting the river can have upstream and downstream impact.

Next, we need to consider the diversity of the points of view to be taken into account and the difficulty of reconciling them. The river is a water resource, abundant and of adequate quality, but we also need to consider its biodiversity, the zones and landscapes to be protected, and built-up land. We must examine all aspects then find the best compromise possible at appropriate scales.

Finally, we expect the public authorities to assure safety, notably relating to inundation, before, during and after the events. This presupposes a command unit; the Prefect carries the responsibility of crisis management. For the Loire – and this is true in other basins too – we cannot allow ourselves to address this issue Department by Department, even if there exists a central coordination body that depends on the defence zone of Rennes. It is for this reason that I have asked Mr. Besème, former Director of the water agency, to assume the

responsibility for a study that will resolve this coordination problem. We must maintain the mobilisation of all partners even after crises, since the flood victims often have the impression of being rather forgotten.

One last word to our friends from abroad: I invite them not to leave us immediately but to come and enjoy the Loire Festival, a good example of the desire of a city to re-appropriate its large river.

***Some ideas
for the future***



SOME IDEAS FOR THE FUTURE

Loire Studies Association

The "Risks and leisure along major European rivers" colloquium was first of all an opportunity to address the notion of risk from a large number of points of view. With more time, we could have pushed the discussion even further, in particular the nature and degree of risks depending on the place, the time and above all the seasons. We could also have examined more closely the role of the population according to its size and distribution; risk cannot be addressed in the same terms in the Danube delta, for example, as at the mouth of Rhine or the Meuse. We could have discussed building density and the ways it can aggravate inundations, and the impact of some farming practices.

The other facet of the colloquium was leisure and tourism development along rivers. These discussion also proved to be highly pertinent.

Risks

As regards risks, the colloquium placed the spotlight on protection. The participants presented examples of public policies and local and regional initiatives. This is an area of study likely to become deeper: the policies of different European countries and the Community itself will become the object of studies and useful comparisons. Other monographs describing particular projects and realisations, like those presented here in Orléans, will extend our knowledge.

Global, integrated management of risks and crises has become a clear necessity. Ideally we should study the river from its sources to its mouth, focusing not just on floods and defence works, but all pertinent aspects, everything that impacts the natural and human environment.

Some speakers underlined how difficult it sometimes is to improve the public's awareness of the risks they are running by choosing to live on flood plains. For many people, the low probability that a crisis will arise in the near future tends to make them refuse this eventuality. A big effort is therefore necessary, not by adopting an alarmist discourse but by encouraging a genuine "risk culture" like the one that exists in Japan with regard to earthquakes.

The first step in this approach concerns the measures to be taken before the crisis actually happens, which include:

- determining the zones of maximum risk;
- planning effective new constructions ;
- renovating old constructions that are ineffective;
- training residents to organise and manage their homes to minimise risks.

These measures must not apply only to private housing but to buildings public too (remember the disaster at the Faculty of Literature in Metz, built on an inundatable island on the Moselle, its library submerged after being imprudently installed in the basement).

When facing a crisis, the authorities, to protect property and above all people as effectively as possible, must have an evacuation plan, a backup plan and thorough training to ensure optimal coordination of the services. This now appears evident, but it can be very useful to compare whenever possible what is being done from one end of Europe to the other.

Leisure

The question of leisure on rivers and their banks was the subject of fewer presentations, yet this does not imply that this subject is of lesser importance.

Rivers provide a very pleasant environment for people. The return of many Europeans to their rivers that they had somewhat forgotten offers an opportunity to develop leisure activities, in particular those that can tolerate inundations without serious long-term consequences. Certain sports come to mind, some of which were mentioned during the colloquium. Through discussions and sharing of experience, devotees of different disciplines will be able to appreciate the range of possibilities.

And we should not forget the cultural aspect: rivers are sources of literary and artistic inspiration. With their bridges, ports and other installations that they share with canals, they are an important part of Europe's heritage. This important aspect, little addressed at this colloquium, should be reviewed at future meetings.

Perspectives

The colloquium of Orléans mobilised above all managers. Managers working for local authorities, administrations, associations and organisations close to the public authorities. But other experience and other knowledge can be valuable too, such as that of universities and research centres, "river houses" and museums and the countless associations working to share their knowledge of these natural assets, the rivers of Europe. This would be one way of opening up this subject in the future.

Two other fields logically emerged at the colloquium:

- a collection of case studies organised by themes and regularly updated by new experiments;
- a methodological base incorporating technical and social tools.

This colloquium clearly revealed that many actions have been undertaken on a case by case basis, guided by technical and social considerations, the latter often being essential in decision-making processes. Even though the contexts differ, the approaches are full of lessons enabling similar operations to be envisaged. This updated collection of case studies therefore appears vital, constituting an "experience baseline".

In parallel, various methodologies have been employed in diverse situations. The corresponding tools are available and could lead to constructive interchanges and even to usage agreements or contracts. But we need to know the nature of these tools and their performance. This same remark applies to survey techniques and methods of involving

inhabitants, a sensitive subject increasingly in the news as public involvement in the decision-making process grows. The approaches of the OSIRIS programme, for example, were presented during the colloquium, and there are others.

These proposals concern as much the "floods" (risks) part of this colloquium as the "leisure" part for which this meeting has abundantly revealed the current synergies and the potential for development and exploitation of riverside land.