

Feedback



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This chapter was drafted on the basis of the interviews carried out by Régis Barraud with Antoine Charrier (Institution Sèvre Nantaise), by Marylise Cottet and Christine Labeur with Hervé Caltran and Elodie Renouf (Grand Lyon), by Nicolas Maughan with Thierry Corneloup (SIRCC), by Bertrand Morandi and Anne Rivière-Honegger with Bénédicte Cordier (SMBVB), by Janique Valy with Sébastien Baron (IAV EPTB), by Marylise Cottet with Jean-Baptiste Chémery (Contrechamp consulting firm) and with Sybille Chiari (BOKU), by Anne Rivière-Honegger with Gérald Domon (University of Montréal), Julie Ruiz (University of Québec at Trois-Rivières), Florence Jacquinod (GéoVision Avenir / University of Lyon) and Justine Ultsch (CIRIDD and Water and sanitation department, City of Saint-Étienne / University of Lyon), and by Bertrand Morandi with Matthias Buchecker (WSL).

Bertrand Morandi and Anne Rivière-Honegger coordinated and monitored the writing process. Aurélie Sureau participated in writing the chapter. Céline Cordani and Dorothée Hoenen contributed to transcribing the texts.



Introduction

In view of creating a shared vision, the contribution of knowledge about stakeholder perceptions to managing aquatic environments, in different contexts and for various types of aquatic environments, and for the various steps in preparing a project, is presented here.

This last chapter is a compilation of feedback data from the diverse aquatic environments studied in this book and from the research and management experiences of a number of projects, both in France and abroad (see Figure 61). To do so, the discussions initiated during the symposia were expanded upon via a series of interviews with several important managers and researchers. The goal was to pull together a number of "stakeholder viewpoints" providing examples and feedback useful in expressing various needs and gaining perspective in terms of current practices. The interviews were carried out by the members of the *Perception aqua* group using a common set of questions. The discussions were recorded and transcribed in full. The written documents were then validated by the interviewees.

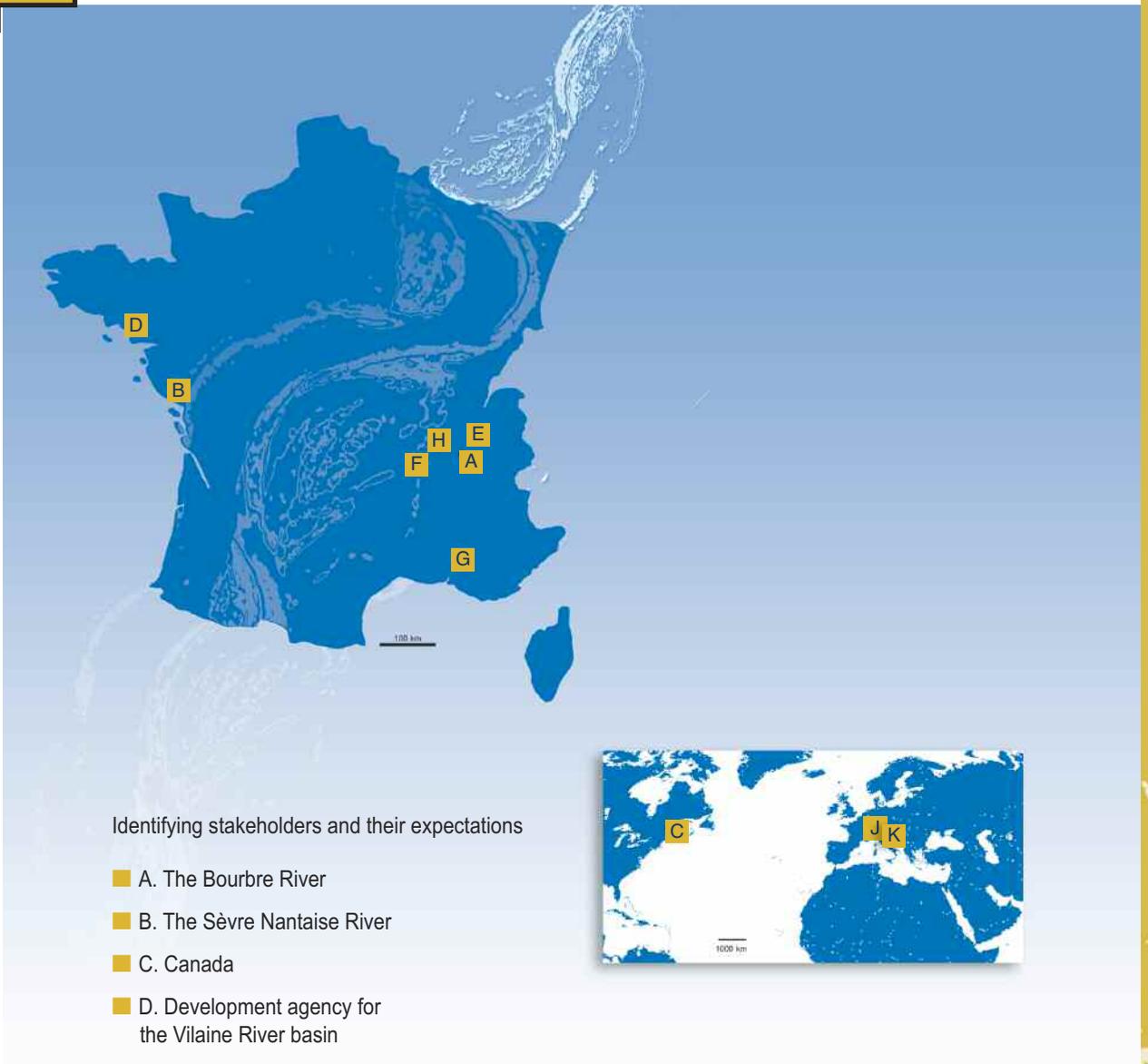
The feedback presented in this chapter is representative of:

- the diversity of the many legislative and regulatory texts in the water and aquatic-environment sector and more generally in the environmental and landscape-planning field. Any approach to management projects must necessarily take into account the legislative and regulatory issues;
- the specific aspects of the areas covered by the projects, ranging from urban areas to nature parks, and all the related issues. The projects are themselves highly diverse, with some proposing work on river banks to restore the landscape and recreational functions, while others primarily address flood-prevention issues;
- the many different types of environment studied, ranging from peat bogs to large rivers. Perceptions will obviously vary depending on whether the issue at hand is a river, a bog or a pond. Though not predetermined, it is certain that uses, practices and the images evoked depend on the environment, its biophysical characteristics and the landscape.

This feedback is organised similarly to the previous chapters around the progression of projects, ranging from the identification of stakeholders and their expectations, to learning the history of aquatic environments and to questioning and conducting post-project appraisals of management practices.

Figure

61



Learning more on the history of aquatic environments

- F. The Furan River
- G. The Calavon-Coulon River basin

Questioning and assessing management practices

- H. The Grand Lyon urban area
- I. A consulting firm
- J. Switzerland
- K. Austria

Bénédicte Cordier, SMABB policy officer for SBMP implementation and communication officer for certain projects in the river contract.

On the basis of your local experience and some precise examples, could you tell us about the importance of perception issues in the environmental management of aquatic environments in the Bourbre basin?

I think the term "perception of aquatic environments" is not currently used. However, perceptions of aquatic environments necessarily influence the opinions of residents and even of some river technicians on the Bourbre. For example, during a forum on alternative transportation, someone showed me a picture of the Bourbre where it was channelised and lined with poplars. The person said, "Oh, look how pretty the Bourbre is there!". Paradoxically, precisely that section of the Bourbre is not "pretty" to our eyes (see Figure a). I remember thinking that our opinions were "pretty" divergent and that we did not have the same perception. For a cyclist, the straight section of the Bourbre makes for easy travel and is perhaps even seen as beautiful. For a river technician, on the other hand, the straight Bourbre is simply a canal and not a river with a living ecosystem, that can overflow and that retains some naturalness.

On the institutional level, the concept of perception is never mentioned. But on the basis of my contacts, it is clear that perceptions exist, however they are not the same for everyone and they are not discussed. There is no shared vision or even any thought that might bring us to question the perceptions of other people concerning the river.

So in the studies that you have carried out to date on the Bourbre, perceptions have never been taken into account, for example the perceptions of local residents or in conjunction with projects?

I attempt to keep clearly in mind the difference between perception, on the one hand, and public engagement and communication on the other. The latter two are integral parts of our daily work. Concerning perception, I now work with an intern on the topic of flooding, not as pertains to civil work, but rather training, information and efforts to reduce vulnerability. The intern has met a certain number of mayors and gone through a questionnaire that we drafted together concerning flooding and runoff. So, I think we have begun to work on the issue of perceptions with questions such as "How do you see the Bourbre? Is it a problem for you?". Finally, in a few projects, we have touched on the issue of how people perceive the river, but it has not been the core issue. For example, in the framework of our hydromorphological study, it was of course the ecological benefits for the river that determined the setting of priorities, but there will be a public-involvement process at some later time. The objective of the public engagement and communication is to convince people of the importance of river renaturation and the benefits in ecological terms (improved water quality, better ecosystems, etc.), but also in terms of the living conditions for local residents. For the management plan, the public-involvement process was built into the technical specifications and into the selected set of deliverables (see Figure b). A consulting firm has been specifically put in charge of the public-involvement process. However, the issue of perceptions has not been explicitly addressed. There has been no real thought put into "What could be the value of a study on perceptions?".

Has it been possible to truly take into account the results of the work on flooding, the information collected?

It confirmed that the issue of flooding in the Bourbre basin is not generally seen as a problem necessarily linked to flooding of the Bourbre itself, but rather as a problem of runoff. When the intern met with the elected officials to discuss the flooding of the Bourbre, they spoke primarily of problems caused by stormwater runoff (see Figure c). That alone was of great use to us.

The report drafted by the intern will contribute to setting up the Action programme for flood prevention (PAPI) and will help in identifying the necessary projects and incorporating them in the PAPI. And now when towns contact us for their Local urbanisation plan (PLU) or their stormwater-management plan, we stress much more heavily the importance of focussing on runoff. I think the work of the intern confirmed a number of things that we had felt, but that had never been clearly expressed.

If you were to run a study on perceptions, how would you go about it?

 If tomorrow, we were to run a perception study on the Bourbre, I think we would try to work with the non-profit associations because it is always difficult to meet the public. By "associations", I mean in the wider sense, not only environmental groups. The idea would be to have representatives of the population and, of course, managers and our standard partners, i.e. the municipal associations, farmers, industrial companies, the Chamber of commerce and industry, and the members of the local water commission (CLE), which already comprises a number of stakeholder groups, similar to the river-contract organisation. And to implement the study, we would need special expertise, for example consulting firms that specialised in that particular field.

In terms of management and anticipating things, on what scale do you think a perception study would be useful? The whole river basin or some other scale?

 I think there are two levels. Initially, the river-basin scale can be used for programming, to anticipate the necessary work, to identify and set priorities for certain sectors on which the population focusses, but that we do not see as important for the restoration of aquatic environments. But in as much as these sectors are seen as important by the residents, it may be useful to work on them in order to progressively lead the public to accept work on other sectors that are truly important in terms of environmental added value.

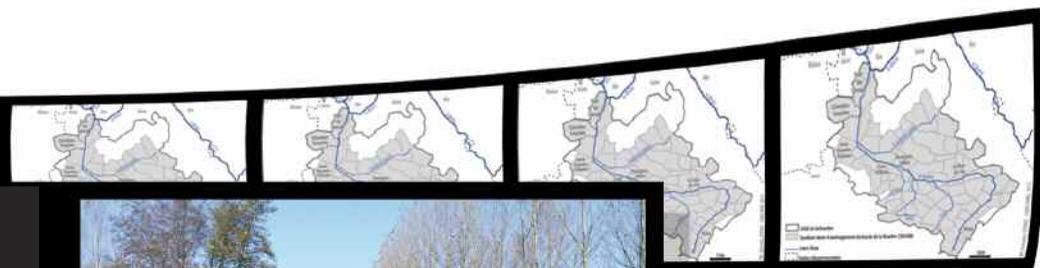
Ideally, we should work on a fairly large scale and integrate perception factors when the time has come to set priorities among the sectors. In this case, we could truly speak of anticipation. Today, that is not how we work, undoubtedly because our funding partners have major demands in terms of meeting the deadlines for the Water framework directive. We can hope to progressively include perception factors and thus not intervene purely on the technical level in an area, but also enhance living conditions in conjunction with the population, so that the residents feel inclined to support the project. In this latter case, the scale is different and corresponds, to my mind, more to the municipal-association level, i.e. not only an environmental (water, river, etc.) level, but more a territorial level.

Contact

The Bourbre-basin development board (SMABB) - Isère department

Internet site: www.smabb.fr





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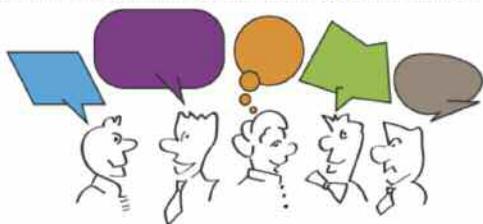
The channelised Bourbre River, lined with poplars. This reach is located in the town of Colombier-Saugnieu, just upstream of the Barquette bridge.

Excerpt from the SMABB newsletter (September 2011), explaining the public-involvement process launched in the framework of the overall management plan for the river basin.

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Comment serez-vous impliqué ?

L'ambition du SMABB est d'associer un maximum d'acteurs du territoire à l'élaboration de ce schéma. Plusieurs instances vont accompagner la démarche, permettant d'associer différents partenaires aux réflexions et aux décisions qui seront prises.



On peut d'ores et déjà citer :

■ Les groupes focus

Ils permettent d'associer dès la phase d'état des lieux : les acteurs du monde de l'agriculture ; les acteurs de la protection de l'environnement ; les acteurs du monde de l'aménagement et de la gestion des inondations ; les élus du territoire.

■ Le comité de pilotage

Il assure le pilotage général de l'étude et la validation des scénarios et des axes d'interventions proposés. Il rassemble les principaux décideurs (SMABB, élus du territoire, services de l'Etat, partenaires institutionnels...).

■ Le comité de concertation

C'est un comité de pilotage élargi, regroupant les partenaires institutionnels, des élus de chaque partie du territoire, des représentants socioprofessionnels, des usagers... Il joue le rôle de relais entre le comité de pilotage et les acteurs de terrain, et assure la cohérence d'ensemble des décisions prises au niveau global.

■ Les réunions publiques d'information

Ouvertes à tous, elles permettent d'informer l'ensemble de la population des avancées et des résultats de l'étude. Elles seront organisées : à l'issue des phases "Etat des lieux/diagnostic", "Définition des objectifs", et enfin à la fin de la phase "Choix du scénario final", pour présenter le schéma d'aménagement global.

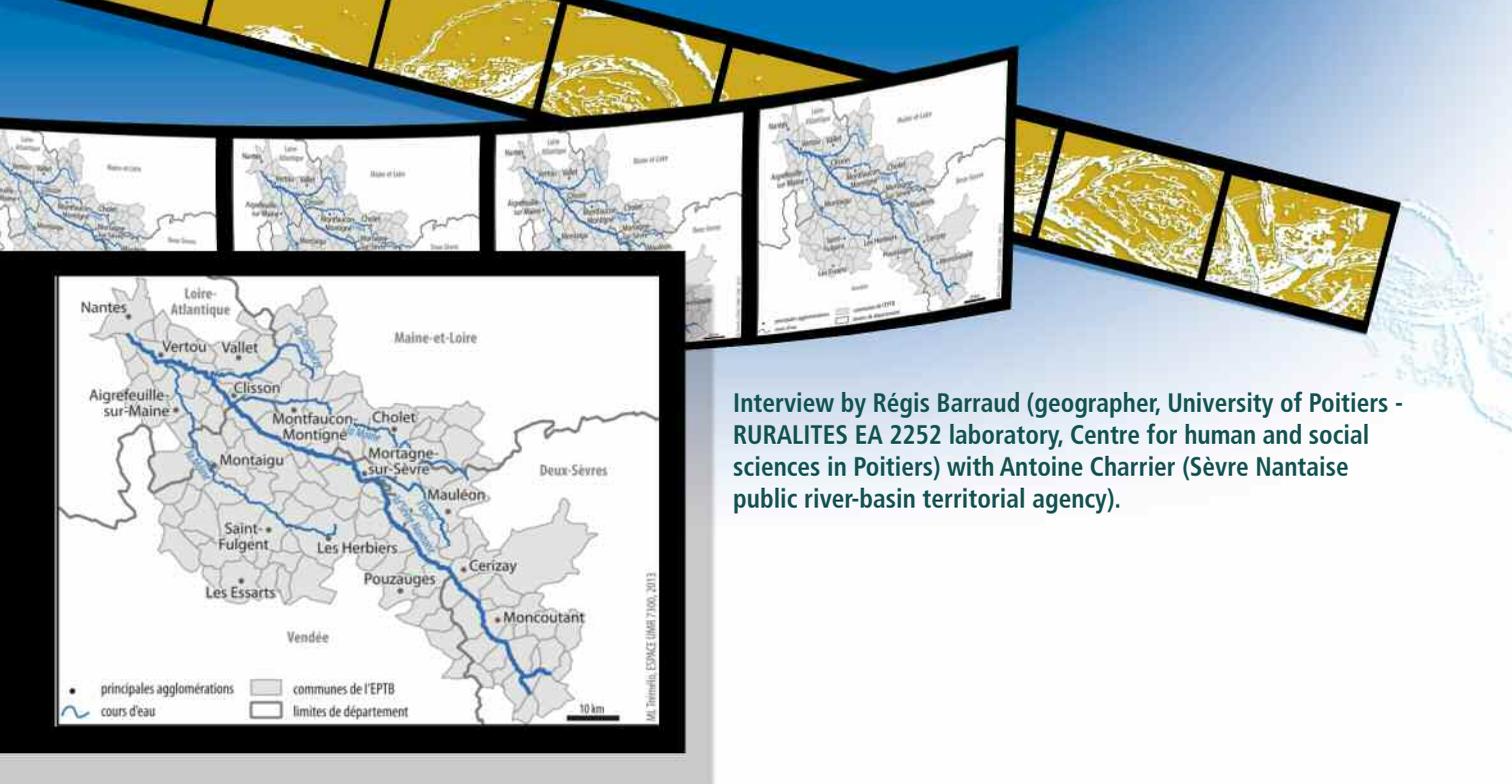
Les prochains numéros de cette lettre vous informeront de l'avancée de la démarche et des résultats de ces différentes rencontres.

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Flooding when the lower Agny (a tributary to the Bourbre) overflowed in the town of Nivolas-Vermelle in 1993 (left photo) and flooding due to runoff in the town of Les Eparres, in the Bourbre River basin in August 2011 (right photo).



Interview by Régis Barraud (geographer, University of Poitiers - RURALITES EA 2252 laboratory, Centre for human and social sciences in Poitiers) with Antoine Charrier (Sèvre Nantaise public river-basin territorial agency).

The Sèvre Nantaise River

Taking into account perceptions to make local stakeholders aware of the value of management projects

Introduction

The Sèvre Nantaise and its tributaries (Maine, Moine, Sanguèze, Ouin and Crême Rivers), drain a basin spanning 2 356 square kilometres and the total hydrographic network runs over 2 000 kilometres. From Nantes where it meets the Loire to the springs in the extreme southern section of the Amoricain Massif, the Sèvre Nantaise lends form to highly varied landscapes (bocage in Vendée, vineyards near Nantes, urban areas, etc.) and drains very different areas (urban and peri-urban near Nantes, low-density and ageing rural areas in the headlands, farm land and industrial areas near Cholet and in Vendée). The Sèvre Nantaise and its tributaries are characterised by significant variability in annual and interannual discharges, with severe low-flow levels. The rivers were heavily equipped with watermills which starting in the Middle Ages led to continuous economic development (the Breton Marchlands). The Sèvre Nantaise and its main tributaries are today dotted with almost 250 structures, of which most are old milling or factory sites (see Figure a). These relics of the past contribute to structuring the valley bottoms and constitute major management issues (patrimony, recreational uses, ecological restoration).

Several local management strategies have been formulated for the Sèvre Nantaise since the end of the 1970s. Following the creation of the Sèvre Nantaise association (1978), grouping the towns in the river basin to develop tourism and for patrimonial enhancement, a public entity to manage water and aquatic environments was launched in 1985. It was that entity that guided the drafting of the first river contract. In the field, mediation efforts and environmental-management work are carried out by seven river boards. The river technicians/mediators play an important role in local river management. Today, the Sèvre Nantaise public river-basin territorial agency (EPTB) coordinates implementation of the sub-basin management plan (SBMP), adopted in 2005 and currently being revised. The EPTB also coordinates the operational programmes to restore and maintain the rivers.

Antoine Charrier, head of landscape action, which coordinates the work of river boards and focusses on ecological continuity, hydraulic installations and the related uses.

On the basis of your local experience and some precise examples, could you tell us about the importance of perception issues in the environmental management of aquatic environments in your organisation? How are they taken into account, with which tools and which partners?

Perception issues play a central role in the management of aquatic environments in our basin. The perceptions of the various water users and the stakeholders in the management of rivers in the Sèvre Nantaise basin are noted and integrated right from the start of restoration and management projects and even during the overall formulation phase for our work strategies. That was notably the case for the management of hydraulic structures (mill dams, flap gates and other transverse installations). Perceptions are generally collected in a non-scientific manner, or shall we say an informal manner during the stakeholder-involvement process that serves to guide and implement our work. The perceptions can be collected in different ways, either via surveys or using less formal methods (round tables, interviews, collective work sessions). Concerning the management of hydraulic structures and valley-bottom landscapes, the technique implemented for the stakeholder and public-involvement assessments used these different collection methods. For projects involving major changes in the appearance of landscapes and the functioning of environments, steering committees are set up to monitor the projects on a very local level. In these committees, it is not rare to see the question of perceptions brought up. For example, in the Sanguèze valley, the experimental lowering of the water level in a pond was accompanied by a survey of the local residents and people using the pond (see Figure b).

But that is not all. The collected information on perceptions is very useful in adjusting our communication and information documents. We use that information at each step in promoting the projects (feedback, signs, press articles, etc.).

How are the studies on perceptions useful?

Once again, the gathering of information on opinions and feelings is essential to make local stakeholders (local residents, but also elected officials and the main decision-makers) aware of the value of the projects. Generally speaking, the perception of river status, its appearance or of the possible modifications will often influence the launch and the progression of a project. When perceptions are taken into account, acceptance of the necessary work is often greater. And finished projects are often assessed by residents and elected officials on the basis of their individual or collective perceptions.

Who decides whether or not to launch this type of study? Who are the influential persons?

In general, we do not launch a specific study on perceptions as such, but the issue is included in the development studies. The project manager, following an agreement with the steering committee, includes a section on social perceptions, focussing more or less on landscape issues, it must be said, just as these studies also include sections on legal and historical aspects, etc. The only study that specifically addressed the social representations of landscapes was carried out for the hydraulic structures, in the framework of a research contract with the EPTB, the Thouet valley board and an academic (a geographer). The project was financed by the *Loire Grandeur Nature* plan. The funding made it possible to conduct this more specific type of study. But it was the geographer who was the driving force behind the initiative and not our organisation, because we go about things in a more operational manner, notably at the request of our funding partners...

What did the study produce?

The study produced a number of opinions, consulted archives, mobilised university networks and their databases, etc.

What were the most useful techniques and methods? In your opinion, what type of information was the most easy to use for the project managers?

The surveys produced the most precise information, but required lead times for their production and processing that were not always compatible with our work schedules. The work groups in the field and the highly focussed interviews are techniques that make it possible to dig deeper, but they involve fewer people...

In the final analysis, what operational conclusions do you draw concerning the studies on perceptions? How well are they taken into account in management projects?

It is not easy to draw any conclusions on this issue. The analysis must take place on two levels. An overall level, on the scale of the entire river basin or of the sub-basins, and the local level, on the scale of each project, in the planning documents, the management strategy, efforts to raise awareness initiated right from the start. Perceptions are effectively taken into account in the field and projects are adjusted to meet the expectations of the local stakeholders with studies on buildings, flooding, compensatory and accompanying measures.

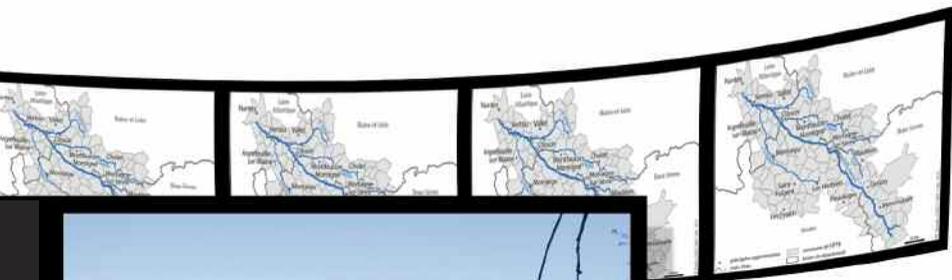
If you were to redo this type of study, what would be your expectations and how would you go about it?

Study on perceptions is inseparable from that on the participation of the public and stakeholder-involvement strategies (see Figure c). More public involvement is always expected, but as a manager, I expect the State to provide firm indications on what should be done. We must also keep the collective interest in mind and maintain balance in our projects. Is the subjective nature of perceptions necessarily compatible with projects targeting the collective interest?

Contact

The Sèvre Nantaise public river-basin territorial agency (EPTB)
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© R. Barraud

Poupet mill dam on the Sèvre Nantaise River. The Sèvre Nantaise a large lowland river flowing a total of 156 kilometres with an interannual mean discharge of approximately 25 cubic metres per second. On the regional level, it is a dynamic river with a slope of 3.5‰ between Mallièvre and the Longeron.



b



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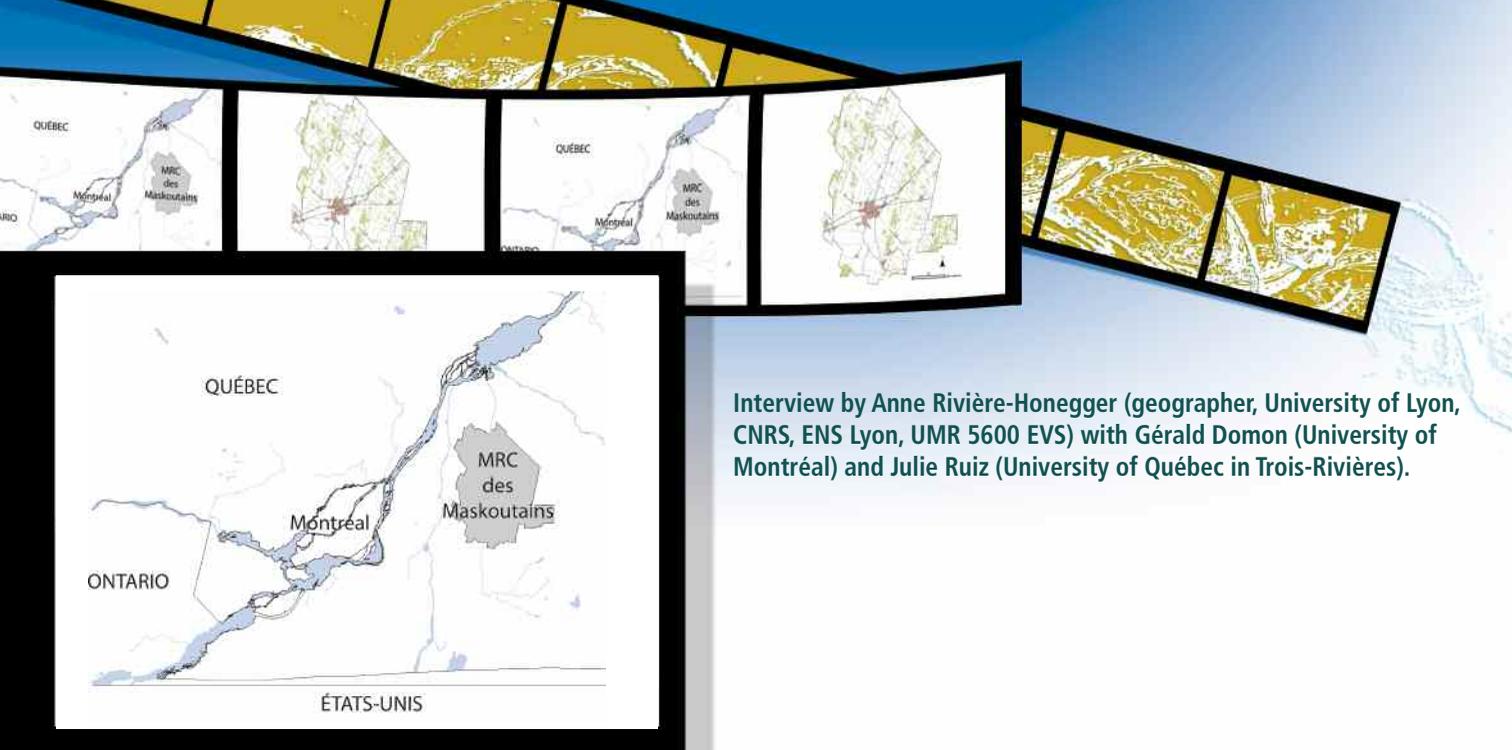
Experimental project to lower the water level on the Sanguèze river, in the town of Mouzillon. The photos show the situation before and after the work in 2004.

c



© EPTB Sèvre Nantaise

Informational meeting for the revision procedure of the Sèvre Nantaise SBMP.



Interview by Anne Rivière-Honegger (geographer, University of Lyon, CNRS, ENS Lyon, UMR 5600 EVS) with Gérald Domon (University of Montréal) and Julie Ruiz (University of Québec in Trois-Rivières).

Canada

Revealing the role of water in a territory, contribution of a collective diagnosis of landscapes

Introduction

Under the auspices of the UNESCO chair for landscape and environment and the UQTR chair for landscape ecology and development, a project was carried out by a team of academics and professionals to reveal, valorise and redefine landscapes of areas undergoing intensification of farming in Québec (Canada), using the landscape assessment for Maskoutains county as the starting point.

Areas confronted with agricultural intensification, i.e. a concentration of agricultural production in areas where farming techniques have particularly intensified soil use, are widely known for their environmental problems (degradation in the quality of water and soil, loss of biodiversity). The communities in these areas are also confronted with a new risk of loss of dynamism due to a two-pronged phenomenon. On the one hand, the clear drop in the number of farmers caused by the merging of farms means that farming alone can no longer maintain a sufficient level of dynamism. And on the other, the trend toward uniformity and even undistinguishable landscapes means they are increasingly viewed negatively and, in a context where landscapes increasingly influence decisions on where to live, the communities have difficulties in attracting new people.

That is why it has become indispensable to work on these landscapes in order to satisfy the expectations of farmers and non-farming residents, new residents and people passing through. With the above in mind, the elected officials of the Maskoutains County regional municipality (MRC, an administrative unit similar to a French department), located about 40 kilometres from Montréal, launched the Maskoutains landscapes project. The overriding objective of the project is to reveal the qualities and characteristics of the landscape that the public no longer sees, to valorise them and to redefine the landscapes modified by agricultural intensification. A further objective is to assign new qualities to both the physical reality of the landscape and to the image that people have of the landscape.

Carried out by a team comprising academics, MRC professionals and representatives of the elected officials and various ministries, the complex project made use of a landscape assessment report produced by local stakeholders, elected officials and citizens, which facilitated the emergence of a common perspective concerning the future of the landscapes in the resulting plan. The results of this project led to work on agricultural features and the entry-ways to villages, and they also revealed the importance of water in the area. It is this latter aspect that is presented here.

Gérald Domon, Full professor, Deputy scientific director, UNESCO chair for landscape and the environment, School for development, University of Montréal and Julie Ruiz, Professor, Department of environmental sciences, Research chair UQTR 2013 for landscape ecology and development, University of Québec in Trois-Rivières.

Why is the landscape an excellent entry point for studies on the future of territories?

Whatever the definition selected, e.g., "visible part of a landscape", "part of the landscape perceived by residents", etc., the notion of landscape is special in that it necessarily involves both people and the physical reality of a certain place, where the first contemplate the second. But the image that results from this contemplation can differ considerably from one person (or group of persons) to another because it depends on both the cognitive perception of the physical reality (visible and experienced) and the value system specific to the person or group of persons. Thus the image held by a tourist, resident, ecologist or grain farmer can differ significantly. This image is bound to influence any impacts that people will have on the physical reality. For example, for a marsh perceived as an environment rich in biodiversity, people will be more inclined to protect and preserve the site, whereas if it is perceived as unhealthy and unproductive, the marsh is more likely to be drained and cultivated. What is more, as the increase in environmental awareness shows, knowledge and values can change over time, thus modifying what each person sees and appreciates in an area.

The landscape is thus a complex entity, constantly changing, that is the result of the interactions between two factors, themselves constantly changing, namely the area itself and the values held by each person (see Figure a). In addition, this entity is subjected to the influence of a set of external forces acting at times on the area, at times on the people, namely development policies and programmes, the market economy, pressure groups, neighbours, etc. Seen in this light, a landscape is certainly a complex framework, but also an integrative one that can be used to analyse and reveal underlying factors comprising issues that should be taken into account in environmental-management policies.

How large was the area covered by the status report? How was the description of the landscapes drafted?

The objective was to provide a factual description of the landscapes in a given area (the Maskoutains MRC) and the status report was necessarily based on the main dimensions of the landscape concept previously identified. In other words, it dealt with both the physical dimensions (characteristics and evolution) and the perceptual and cultural dimensions of the people inhabiting or visiting the area.

The physical basis supporting the landscape

Geological formations, the relief and soil quality together constitute the physical basis of an area and play an important role in the development of human activities. To explain this role, the ecological reference framework, i.e. a mapping technique for the physical basis developed over the past 30 years, can be used to distinguish sections of an area having a similar structure in terms of their relief, surface deposits and drainage. Land-use data was then incorporated in the map, making it possible to understand the spatial organisation and context.

With this information, two sections covering 185 square kilometres stood out from the large clay plains that cover most of the MRC, which spans a total of 1 300 km² (see Figure b). The two, highly eroded sections were formed by the two large rivers transiting the area. By digging into the plains, the rivers exposed the clay-rich terrain to higher risks of landslides during wet weather. The frequent landslides created ravines, more intimate landscapes that are

strikingly different than the surrounding plains. It is the physical basis that enables us to understand the current relief of the landscapes along the rivers, but it is our understanding of the changes in landscapes that informs on the presence of so much idle land in these sections.

Landscapes undergoing constant change

 A rapid glance at the landscape may leave an impression of immobility, however closer observation reveals the signs of constant evolution. Learning to read and to understand this evolution puts us in a position to better apprehend current landscapes and to anticipate the landscapes of the future. A central factor in any development project, the evolution of landscapes was analysed here on a scale ranging from the regional to the local, similar to the experience of a person travelling through the landscape in a car.

On the regional scale, topographic maps were used to track the major changes in the area over a century (1907 to 2009) and monitor the diversity of situations. For example, wooded areas as a whole in the area fell from 20 to 15%, but these figures mask very different situations. In the clay plains, they dropped regularly and in 2009 represented only 4% of the plains, whereas the eroded sections formed by the rivers have seen a recent increase in their wooded areas. However, it is on the local scale, that of the *rang*¹, that detailed mapping of land use using aerial photographs (1931, 1964, 2009) made it possible to understand the driving forces behind the renaturation of the eroded sections (see Figure c). It is now clear that it was the abandonment of the pastures, unsuitable for farming in the eroded sections, that explains why there is currently so much idle land along the rivers.

Landscapes as seen by visitors

 Many people, whether on a trip to see family or friends, or cycling, travel along the roads of the region. Which landscapes, thanks to their visual qualities, are the most likely to attract their attention? What are the elements and the places that strike a discordant note, i.e. are poorly integrated, disproportionate, poorly maintained, etc.

To answer these questions, a landscape architect travelled the roads. Aware that a visitor may view the area in many different manners, the architect attempted to identify the visual elements of interest and the discordant elements in aesthetic, environmental and cultural terms. Among all these elements, the views overlooking the rivers and the curving roads along the rivers clearly stood out as visual elements of aesthetic value (see Figure d). The latter effectively offer a very different travel experience than the straight roads in the plains. Conversely, river sections without riparian vegetation or of low quality were seen as discordant visual elements for environmental reasons.

Landscapes as seen by residents

 Residents do not see the area as a tourist might, their view is coloured by their experience and their knowledge. However, given that they are the people who will be the most impacted by any approach or activity leading to a transformation, development or redefinition of landscapes, knowledge of how they see the landscape is particularly important. Through a number of activities, including participatory map-making, discussions on photographs and even collages, people representing the environment (elected officials, stakeholders, municipal inspectors, municipal general managers), farmers and foresters, as well as children aged 9 to 13, expressed their opinions on what they see as good and bad landscapes. A total of 265 features were identified as being positive by the persons questioned. Among those features, rivers and virtually all the *rangs* along the rivers were some of the most

1. In Canada, the *rang* is the system by which rural properties are divided. The lots, generally rectangular, are set perpendicularly to a river or road in order to facilitate their access.

favourably judged, not only for aesthetic reasons, but also for their naturalness, the feelings of tranquillity produced and because they are seen as being rich in biodiversity (see Figure d). Of particular importance is the fact that this section of the status report listed the rivers as one of the main sources of pride of the population in the area.



How did you shift from the status report to a landscape diagnosis? How were landscape issues defined?



In as much as our objective was to "reveal, valorise and redefine" landscapes, it was important to define the issues raised, in view of determining why or where action was required. That is the overriding objective of a landscape diagnosis. Though it was tempting to bring in an expert who, on the basis of in-depth knowledge, could identify what he thought were the main issues, it was deemed necessary, for a project attempting to set up a collectively defined objective, to implement methods incorporating different points of view. A relatively large number of methods exist, however the most well-known and perhaps the simplest is the SWOT method (strengths - weaknesses - opportunities - threats).

Used during collaborative work sessions bringing together regional stakeholders on the topic of "Agriculture and landscapes", the method identified the rivers as one of the strengths of the area. On the other hand, the limited access to rivers and their degradation were seen as the main weaknesses.

In conclusion...

The collective study on and using the landscape in the "Maskoutains landscapes" project revealed the special role of water in the region. The study showed the importance of bringing several viewpoints to bear on the landscape because in a project launched to address the trend toward uniformity and even undistinguishable landscapes in areas confronted with agricultural intensification, the importance of water could well have been masked by the agricultural aspects.

What is more, the variety of viewpoints revealed the diversity of the aspects (ecological, recreational, aesthetic, etc.) to which rivers contribute. It also made it possible to go beyond the issues dealing with water quality and to work on ecological and social restoration projects.

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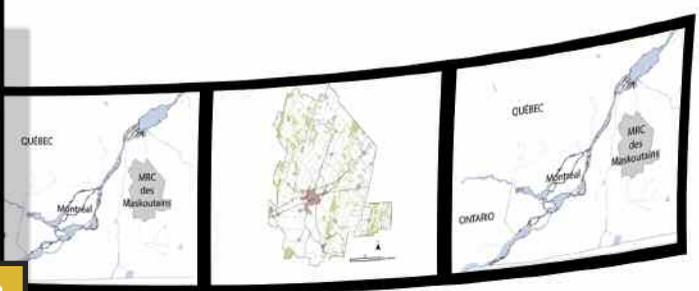
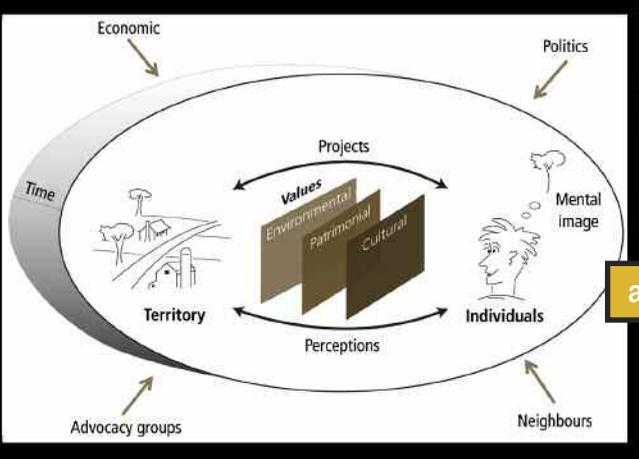
Julie Ruiz: Julie.Ruiz@uqtr.ca

Internet sites:

<http://www.unesco-paysage.umontreal.ca/>

https://oraprdnt.uqtr.quebec.ca/pls/public/gscw031?owa_no_site=1403&owa_no_fiche=1&owa_apercu=N&owa_imprimable=N&owa_bottin=

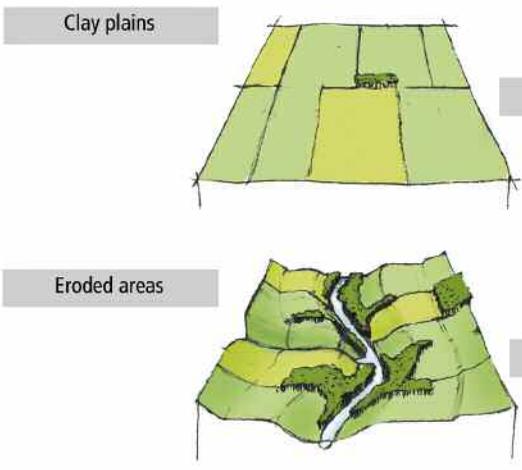
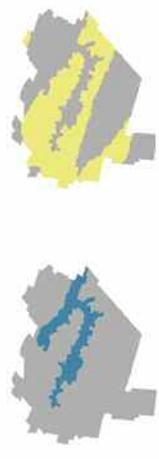




a

Landscape, a dynamic phenomenon resulting from the interaction between the land and people.

b

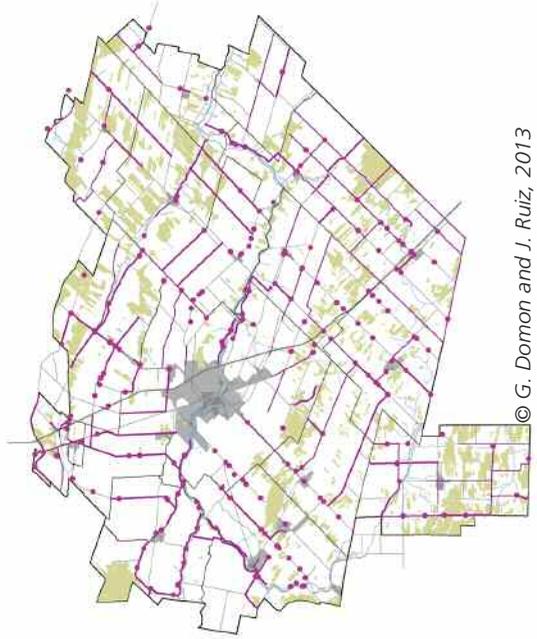


Areas eroded by rivers constitute islands of diversity in a landscape of intensively farmed plains.

d1

Elements of aesthetic visual interest listed by the expert

- Specific points (260)
- Road sections (70)



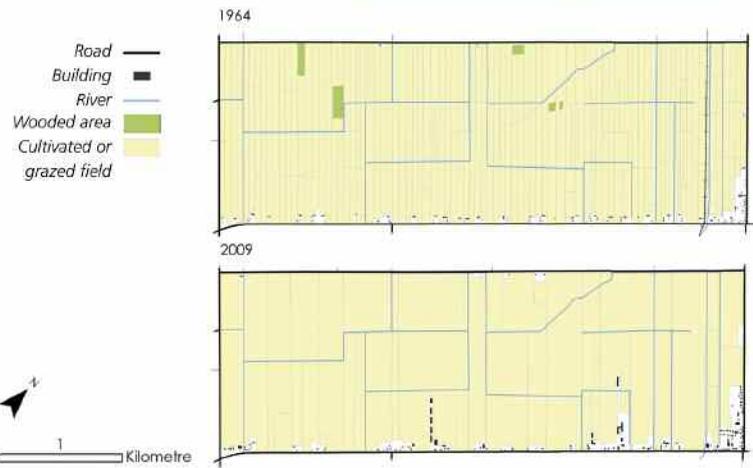
d1, d2, Rivers are highly appreciated.

Surface deposits

- Sand
- Clay

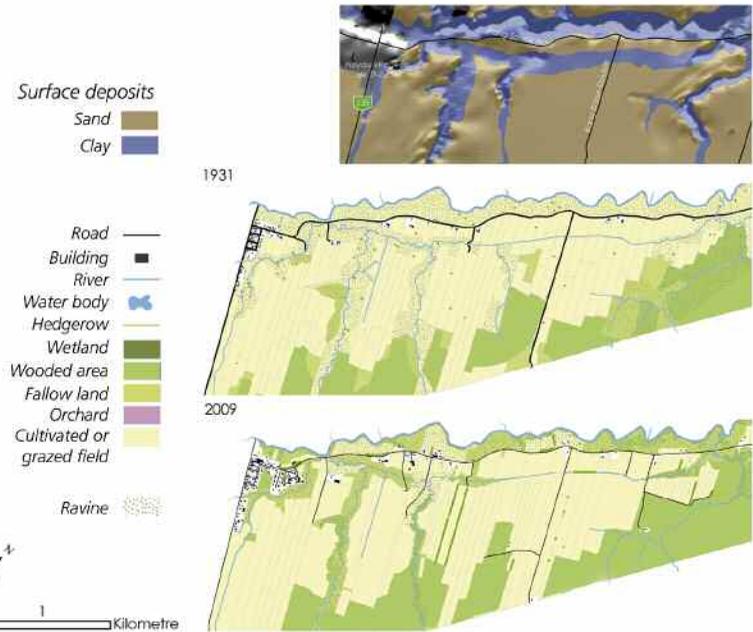


Clay plains and eroded areas evolve very differently in the landscape.



On the clay plains, the landscape tends toward uniformity

© G. Domon and J. Ruiz, 2013



In the eroded areas, the landscape recovers its naturalness

d2

Elements of interest listed by the population

Specific points noted by

- 1 participant
- 2 to 5 participants
- more than 5 participants

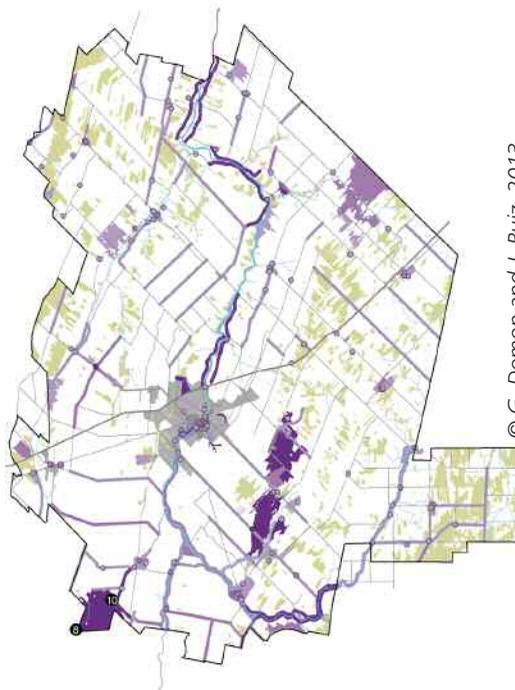
Linear elements noted by

- 1 participant
- 2 to 5 participants
- more than 5 participants

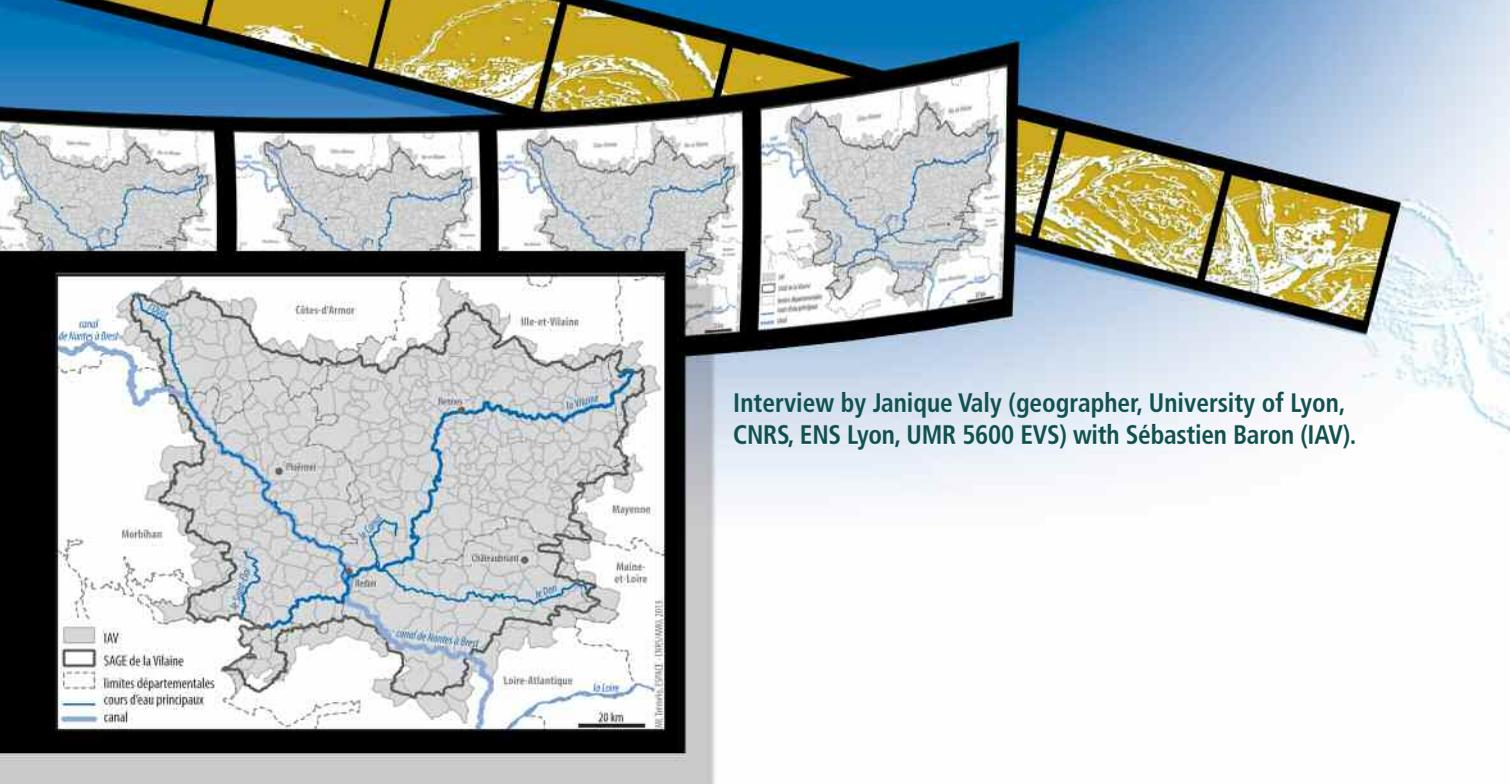
Sections of territory noted by

- 1 participant
- 2 to 5 participants
- more than 5 participants

- Roads
- River
- Wooded areas
- Urban and village centres



© G. Domon and J. Ruiz, 2013



Interview by Janique Valy (geographer, University of Lyon, CNRS, ENS Lyon, UMR 5600 EVS) with Sébastien Baron (IAV).

Development agency for the Vilaine River basin

"Understanding the perception of water makes it possible to raise awareness."

Introduction

The Vilaine River basin covers an area of 11 000 square kilometres, spread over two regions (Bretagne and Pays-de-Loire) and six departments (Côtes d'Armor, Ille-et-Vilaine, Loire-Atlantique, Maine-et-Loire, Mayenne and Morbihan). The basin is characterised by a dense, upriver network and slight slopes. The Development agency for the Vilaine River basin (IAV) was initially created by the Loire-Atlantique, Ille-et-Vilaine and Morbihan departments to manage hydraulic projects, but that mission later shifted to balanced water management for the river basin as a whole. Its tasks include:

- management of the Arzal estuarine dam with two main objectives, i.e. limit flooding in the town of Redon and maintain a reservoir of fresh water intended for drinking water (see Figure a);
- production of drinking water in a factory supplying up to one million people in the summer and ensuring a regional regulatory function;
- regional coordination in that it manages the Vilaine SBMP (voted in 2003 and fully revised in 2014) and provides assistance to the boards of the sub-basins;
- flood control by managing two action programmes for flood prevention (PAPI) in the Vilaine basin (the first from 2003 to 2011 and the second from 2012 to 2018) (see Figure b);
- management of natural environments, including the Natura 2000 programme for the Redon marshes, migratory fish, invasive plants and the Vilaine estuary.

The IAV was awarded the status of a public river-basin territorial agency (EPTB) in 2007. In its management work, the IAV has a major advantage in terms of its boundaries, i.e. the river basin making up the SBMP perimeter is identical to perimeters for the EPTB and the PAPI.

Sébastien Baron, flood-prevention and water-awareness engineer at the Development agency for the Vilaine River basin.

On the basis of your experience, could you tell us how perception issues are taken into account in basin management by IAV and the role they play today?

The perceptions of the various stakeholders involved in water management are taken into account on different levels.

First of all, on the level of the Vilaine basin as a whole, in the local water commission managed by IAV, each stakeholder presents his point of view and defends his interests. The different perceptions are expressed there and taken into account during the negotiations. IAV also works to raise the awareness of stakeholders in an effort cutting across the various water issues. The studies on perceptions that we have run have guided those awareness efforts and the positions adopted by IAV. During the revision of the SBMP, launched in 2011 and that should be finished in 2014, we included a chapter on raising the awareness of three priority groups of people, the project-site landowners and decision-makers, economic stakeholders and notably farmers, and finally young people and the general public. The chapter defined the organisational conditions as well as the key message for each issue.

In 2009-2010, IAV also ran a feasibility study in view of setting up a programme to raise water awareness throughout the Vilaine basin. The creation of a "Teaching tools" section on the IAV site is the first step in that direction (<http://www.eptb-vilaine.fr/site/index.php/ressources-pedago>). To date, it deals only with flooding and we designed a booklet for teachers and instructors working in environmental-education non-profits (see Figure c). The booklet contains ideas for activities related to the school curricula of children between the ages of 11 and 14 and provides links to numerous resources, e.g. scientific data, photographs, field trips. This section will grow progressively to cover the other issues managed by IAV, namely wetlands, the estuary and migratory fish.

This aspect is also taken into account in our operational work programmes. They generally include a phase for a territorial status report that, in addition to environmental data, lists the desires of the involved stakeholders. For example, in the Redon marches, the Natura 2000 programme is based on intense discussions with the elected officials, farmers, fishers and environmentalists. It is through daily contacts with the people in the area and the elected officials that we have come to understand the different perceptions concerning wetlands. In addition, a study is now under way on how to promote the marshes. It started with a photo-interpretation workshop on the perception of marshes and their promotion. Participants included elected officials, farmers, fishers, hunters, naturalists and economic-development agents for the various departments and the Chamber of commerce and industry (CCI). In the Vilaine estuary, projects are coordinated by an estuary committee made up of elected officials, commercial fishing and boating firms and environmental-protection groups. A sociological study was carried out in 2004 and made available to a wider public as a book, *L'estuaire de la Vilaine*, published by the Rennes university press.

Concerning flooding, a research programme was initiated during the first PAPI to uncover the different perceptions on the topic and to inject opinions differing from those of the managers. The multi-disciplinary study, coordinated by Nadia Dupont, a geographer at the University of Rennes II, included sections on the history, geography, sociology and economy of flooding. The research programme was presented during a symposium in June 2011 and a book, *Quand les cours d'eau débordent*, was published by the Rennes university press. The book was subsequently given by IAV to the mayors of all the towns exposed to flooding and to the State services and local governments involved in flood management.

What were the results of the studies on perceptions and what did they contribute to your work?

 These studies put us in a position to understand the behaviour and reactions that we observed during meetings with elected officials or during public meetings. Sometimes we propose an approach, but it does not go through because it does not correspond to the people's perceptions. For example, the concept of a river basin is not widely known, particularly among the general public. Another example is flooding. It is interesting to understand how people perceive floods. Do they see above all the natural or the anthropogenic factors?

What is the outlook and what are your expectations concerning studies on perceptions?

 We will carry out the awareness-raising projects stipulated in the SBMP, with in particular training sessions for elected officials. The latter are in effect decision-makers, developers, they issue building permits, draft the local urbanisation plan (PLU), but above all, they are in daily contact with the residents and the non-profit associations.

Two research programmes will be launched in the framework of the second PAPI. One will assess the effectiveness of our preventive information efforts, e.g. the installation of flood markers and the distribution of the Municipal information documents on major hazards (DICRIM).

Studies on perceptions provide opinions that differ from those of the managers. Project-site landowners, including IAV, do well to take them into account in formulating programmes and defining projects, but also in working to raise the awareness of the various stakeholders.

Contact

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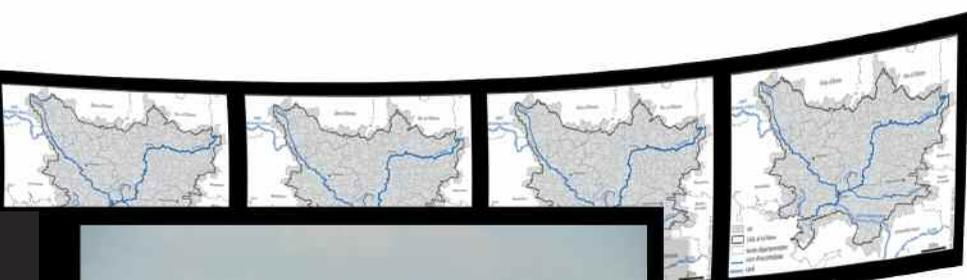
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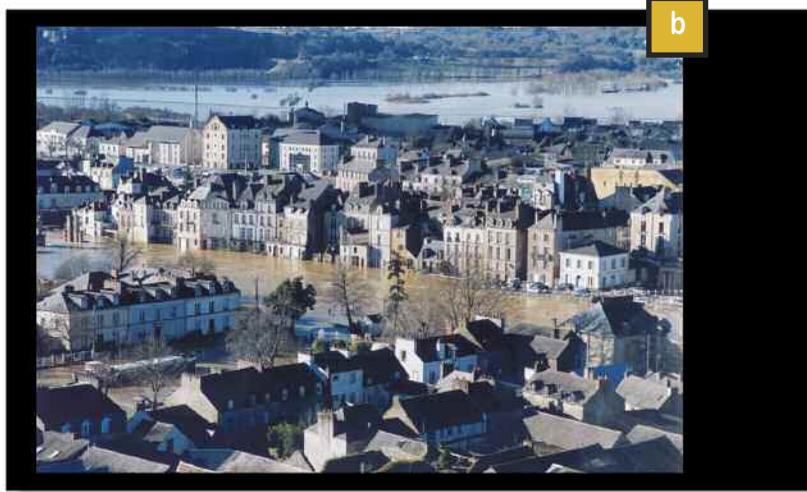


© IAV, 2014



a

The Arzal dam, at the mouth of the Vilaine, blocks the lower river basin from the ocean and thus limits the risks of floods caused by the combined effects of high waters and high tides.



b

© IAV, 2014

The last major floods caused by the Vilaine River occurred in 1995 and 2001.

c



L'institution d'aménagement de la Vilaine propose un

LIVRET THEMATIQUE : LES INONDATIONS

Propositions pédagogiques pour le collège

« Laissez vivre l'eau qui vit, l'eau qui bondit, l'eau qui jaillit » - Philippe Soupault

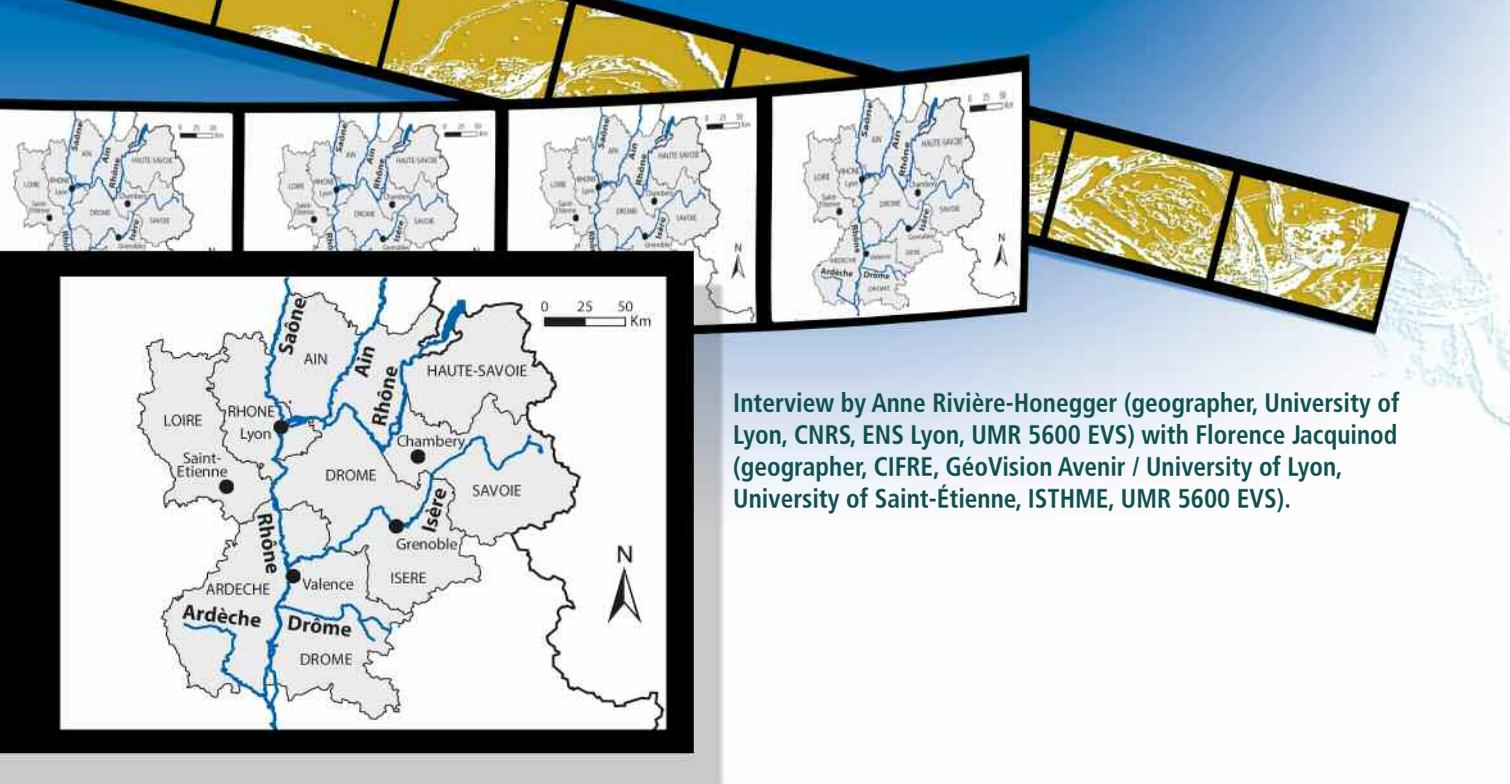
Février 2013

1

© IAV

Booklet on floods, intended for school children in the basin of the Vilaine River.

c,d © Justine Ullsch, 2008



Interview by Anne Rivière-Honegger (geographer, University of Lyon, CNRS, ENS Lyon, UMR 5600 EVS) with Florence Jacquinod (geographer, CIFRE, GéoVision Avenir / University of Lyon, University of Saint-Étienne, ISTHME, UMR 5600 EVS).

The Rhône River

3D geovisualisation techniques for the public-involvement process in the Flood-prevention plans (PPRI). Action research to develop tools to represent risks

Introduction

Between 2009 and 2013, several action-research projects were carried out by the Saint-Étienne section of UMR 5600 Environment, City and Society in a partnership with the Rhône-Alpes regional environmental directorate (DREAL RA) (Jacquinod, 2012; Jacquinod and Langumier, 2010; Jacquinod, 2014).

Funding was supplied by the European regional development fund (ERDF) as part of the Flooding section of the Rhône plan.

The purpose of the action-research projects was to develop 3D georeferenced landscape images for use in the flood-prevention policy. The 3D geovisualisation images portray areas subject to flood risks and the corresponding high-water phenomena, also known as the hydraulic hazards to which they are exposed. The images assist the stakeholders involved in implementing the prevention policy in devising development projects for the areas at risk, in discussing the necessary measures and, more generally, in informing stakeholders of the existence and the scope of flood risks in the area.

Florence Jacquinod (geographer), Ph.D, ISTHME associate researcher, University Jean-Monnet Saint-Étienne, CNRS – UMR 5600 Environment, City and Society.

In your opinion, what are the objectives and the value of action research to develop 3D geovisualisation?

In compliance with instructions (3 July 2007) on the consultation of stakeholders, the public-involvement process with the population and the implication of local governments in the Natural-hazard prevention plans (PPRN), 3D geovisualisation images of floodable areas can serve as resources for increasing public awareness of the Flood-prevention plans (PPRI) by proposing more intuitive maps of the potential hazards. Their purpose is to ensure better understanding of the technical data and of the consequences of floodable areas on development issues and dynamics (see Figure a).

The full value of the partnership between researchers and managers is achieved by pooling the scientific and operational skills of each participant. The partnership is particularly useful in complex and changing technological contexts in view of producing high-performance tools and an in-depth understanding of how they can contribute to existing practices in the environmental-management field.

The decision in favour of action research and a partnership with a research lab to develop these tools is based above all on the relative newness and the complexity of the implemented technologies. The objective of the collaboration between universities and State services is to develop tools and methods that are effective and suited to the needs of the entities in charge of implementing hazard-prevention policies. To that end, an action-research project is set up to experiment with the tools during actual use in order to produce precise knowledge suited to the operational context of the tools.

Researchers contribute to producing 3D geovisualisation images in conjunction with operational stakeholders and also observe how the images are actually used. Observations are direct, i.e. a form of participant observation in which the researcher observes the situations in which he participates. This type of observation, through active participation in hazard-prevention projects and in drafting regulatory documents, puts the researcher in a position to observe how 3D visualisation images are produced and used, but also to formulate, in conjunction with the operational stakeholders, methods that correspond precisely to the needs of the stakeholders. The observations made are also of use in more general approaches about how 3D visualisation images are used for landscape planning and management. Comparison of the scientific knowledge on 3D tools and their use with the experience and practices of operational stakeholders is a means both to create relevant tools and to produce in-depth knowledge on the observed processes (the PPRI in this case).

How is a 3D geovisualisation tool produced?

Practically speaking, 3D geovisualisation images are produced in several steps, as is shown by the following example concerning a town along the Rhône River. 3D geovisualisation images are produced using existing geographic databases and, for the Rhône, the Rhône topographic database assembled by the National geographic and forestry institute, which precisely describes the topography of the river and the floodable areas. Other databases are used to produce a general depiction of the area, including the BD ORTHO and BD TOPO databases from the National geographic and forestry institute. Data on flood risks are then added to the model, as are other significant elements, e.g. windmills, that serve as landmarks when visualising and presenting the 3D model (see Figure b).

What results were produced by the 3D tools for the Rhône Plan?

 In the framework of the Flooding section of the Rhône Plan, the 3D tools were used for approximately 20 towns in five departments, for both stakeholder-engagement meetings with elected officials and public meetings with local residents. The results were positive for the State services, for which the 3D tools constituted a real advantage in guiding the involvement process, notably in terms of making technical information on risks available in a clear and informative manner. When people are open for discussion, the 3D images of the area serve as a starting point for dialogue. They provide a clear presentation of the delivered data and a basis for building a shared analysis of the territory. For researchers, these experiments using actual projects make it possible to better understand the different roles played by 3D images in the context of different strategies for which they are used, and to produce scientific knowledge on the topic.

In your opinion, what are the key factors that contribute to the success of the project?

 In general, success depends on close collaboration between the various stakeholders. In a difficult context where we are implementing multiple reforms, including the general revision of public policies, the objective of the State services is to deploy the means required to acquire new skills by undertaking a transfer from research to the operational field of public action. In return, researchers benefit from the experience and expertise of the operational stakeholders in organising their studies.

More specifically, the following key points should be underscored:

-  the importance of reliable and sufficiently precise geographic data (in our case, the BDT Rhône database was an excellent source of topographic data);
-  the importance of collaborating with the various services that can each provide different skills and knowledge on the studied areas. Effective use of the tools requires that the many stakeholders work together to understand and become familiar with the new technologies, and to ensure that the resulting models are suited to the needs of each territory and to the corresponding procedures;
-  the importance of paying particular attention to the manner in which the territory is represented and in which digital visualisations are managed, particularly in the case of 3D geovisualisation images which have not yet been standardised and for which no symbolic codes have been established. However, it should be noted that ethical guidelines setting good practices for 3D geovisualisation images for urbanisation and development work exist, see the site <http://www.3dok.info/>.

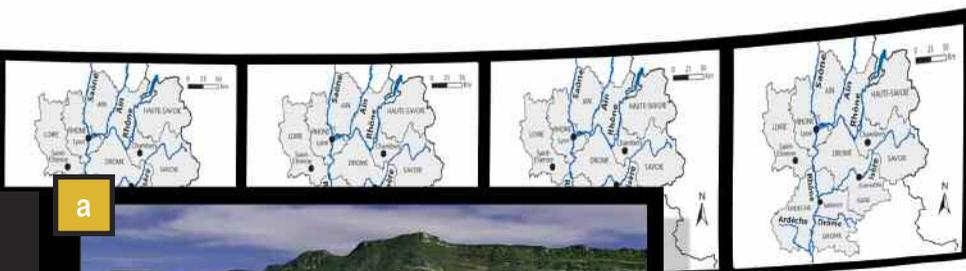
Contact

Florence Jacquinod: jacquinod@gmail.com

The website of the Rhône Plan has a page specifically dedicated to this issue:

<http://www.planrhone.fr/front/index.php?lvid=273&dsgtypid=252&pos=3>.





a



© Image F. Jacquinod - IGN Data, CNR

Image of an area along the Rhône showing existing hazards (PPRI flood risks indicated in shades of blue). Working document, June 2012.

© Image F. Jacquinod - IGN Data, CNR

b



1. **3D modelling of the studied area**, based on relief mapping (DTM) and databases for a general depiction of the area (Large-scale reference dataset and Rhône topographic database (BDT) from the National geographic and forestry institute), working document, February 2011.

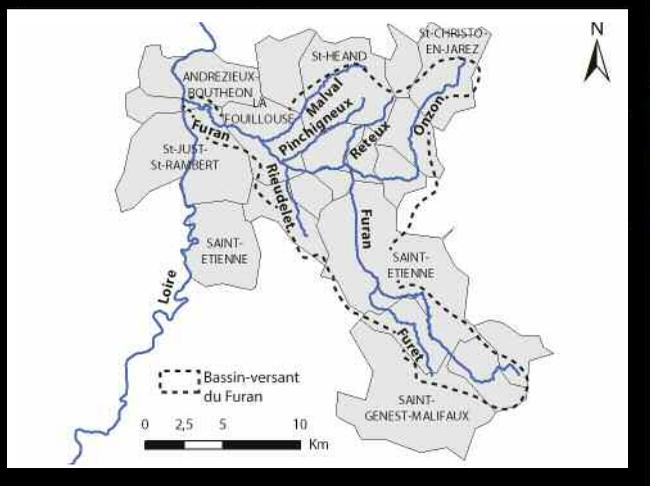
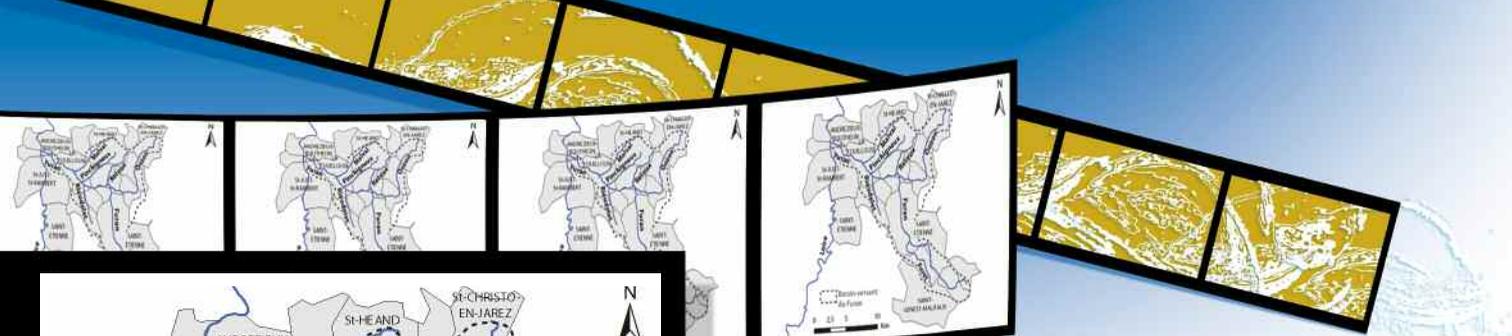
2. **Model showing the flood risks**, based on work done by the Regional environmental directorate, working document, February 2011.



© Image F. Jacquinod - IGN Data, CNR

3. **Finishing work and insertion of landmarks** with the local services (departmental territorial directorates) that are highly familiar with the studied area (in this case, addition of windmills and bridges along the Rhône), working document, February 2011.

4. **Creation of images, fly-over films and/or interactive models** to be used during the stakeholder-involvement phase, in conjunction with the State services drafting the PPRI plans, working document, February 2011.



Interview by Anne Rivière-Honegger (geographer, University of Lyon, CNRS, ENS Lyon, UMR 5600 EVS) with Justine Ultsch (geographer, CIFRE-CIRIDD and the Water and sanitation service, City of Saint-Étienne / University of Lyon, University of Saint-Étienne, ISTHME, UMR 5600 EVS).

The Furan River

An example of participant research on the Furan River in Saint-Étienne (Loire department)

Introduction

The Furan is a small river 36 kilometres long with approximately 30 tributaries. The relatively small basin, covering 178 square kilometres, drains an area with some 230 000 inhabitants in 17 towns. The Furan originates in the Pilat mountains (see Figure a), in the town of Bessat, located along the ridge that divides the Rhône and Loire basins. It flows down steep slopes to eventually join the Loire at the town of Andrézieux. The torrential regime is the product of the high-gradient terrain in the basin and the violent, highly localised storms, resulting in significant variations in discharge (severe floods and minimal low-flow levels).

Another specific aspect of the Furan is the fact that the river is completely covered for 4.8 kilometres where it crosses through the city of Saint-Étienne. The river, its tributaries and the adjacent reaches were covered between the 1600s and the 1900s as a solution to different problems, including health issues, easier travel within the city and as a means to facilitate urban expansion, to prevent floods and avoid certain social conflicts.

Justine Ultsch (geographer), ISTHME Ph.D student, University Jean-Monnet Saint-Étienne, CNRS – UMR 5600 Environment, City and Society.

What was the context for your research?

Covering the Furan meant that the now-underground river progressively became the main conduit for wastewater in the city (see Figures b and c). As a result, until recently, the ecosystem was severely degraded and remains anthropogenised to a large extent, a situation confirmed by the attribution of the "heavily modified water body" status to the section downstream of the city in the framework of Water framework directive (WFD) implementation.

Since 2004, the combined effect of major sanitation work to clean the Furan (with a 90% target compared to 10% previously) and efforts to manage flood risks, in a more general context of policies to restore urban rivers, led the city of Saint-Étienne to study the possible futures, both material and symbolic, for the river in a context of urban development (see Figure d).

To contribute to that study, I worked for the city of Saint-Étienne for a period of three years as an employee of the International resource and innovation centre for sustainable development (CIRIDD) in the framework of an Industrial contract for training through research (CIFRE) with the goal of preparing a geography and development thesis on changes in practices and discourse on the Furan from the end of the 1600s to the present, in order to shed light on the meaning and conditions of the potential restoration (Ultsch, 2010; Brenas *et al.*, 2009).

The objective of my task as a researcher on the Furan, reporting to the Water and sanitation department of the Roads and infrastructure directorate, was to understand the river in its many cross-cutting aspects. This was necessary given that the Furan was a central factor in a number of issues, as demonstrated by the many projects run by the various directorates of the city (roads, infrastructure, urbanism, cultural affairs, etc.) and by other stakeholders such as the Rivers department of the Saint-Étienne Métropole urban area.

In which fields were you particularly active?

This participant research was particularly active in four different fields:

- **environmental**, notably outreach efforts for sanitation work via different events (exhibitions, open-houses at the wastewater-treatment plant, underground visits along the Furan, etc.) and raising awareness about flood risks, notably in the history section of the interactive Urban information document on major hazards (DICRIM);
- **patrimonial**, including projects focussing on the river as a central component in the history of the city, with the *Ville d'art et d'histoire* prize and the Saint-Étienne municipal archives (publications, exhibitions, educational games, preparation of a geohistorical geographic information system, etc.);
- **urbanism**, via the inclusion of the river and its potential restoration in urban planning, strategic and regulatory documents (e.g. for a ZPPAUP¹), as well as in operational urban projects (renovation of squares, creation of a Furan-Furet educational train, etc.);
- **design**, in conjunction with the Cité du Design, involving an expanded study on the promotion of the river in the framework of the Design Biennial in 2008.

1. ZPPAUP, a protection zone for architectural, urban and landscape patrimony, an instrument now replaced by Areas for the promotion of architecture and patrimony (AVAP).

How was the work organised between managers and the researcher?

Initially, the work contributed to establishing in-depth geohistorical knowledge on the development and uses of the Furan in the urban development of Saint-Étienne over the long term (end of the 1600s to the present) by delving into specific archives. This knowledge, the groundwork for the research, was used in both the patrimonialisation process already under way for the Furan and in certain urban projects where the presence of the river can be mobilised in favour of the development policies.

Certain projects were developed jointly in a manager-researcher partnership, in response to both operational and scientific issues, for example the historical and geographic information system for the city of Saint-Étienne and the Furan River, called PGHASE (geohistorical project on the development of Saint-Étienne). This tool can be used for a diachronic depiction of development in Saint-Étienne and more specifically the hydrographic network, certain aspects of which continue to impact development projects.

How did your work contribute to operational management?

The presence of a researcher in the human and social sciences working on an "environmental" topic made it possible to remove barriers between the skills and responsibilities of the various directorates and to compare the knowledge and practices of each job sector, thus paving the way for a cross-cutting study of the Furan, both within the municipal services and without.

The multi-faceted study put us in a position to explore new groupings of stakeholders that were not in the habit of working together and, when the results were positive, to launch discussions on the outlook for restoring the Furan. The discussions were enhanced by a comparison of cities, occasionally networked, that had already undertaken efforts to daylight and restore, either physically and/or symbolically, their partially covered rivers.

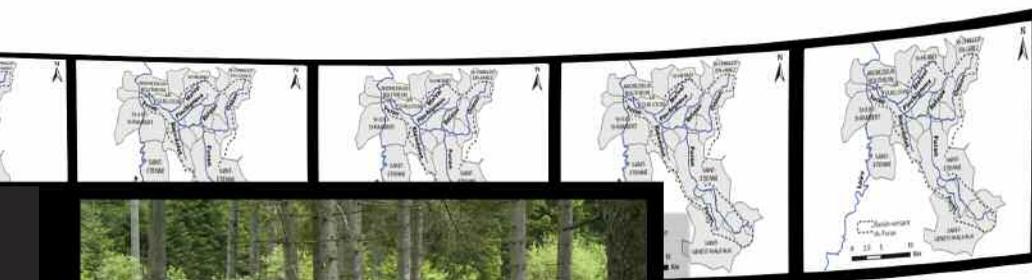
And the scientific contributions?

The research context, characterised by immersion in the services in the city of Saint-Étienne, made it possible to set up direct participant observation over a long period. The project was not only an opportunity to access new, complementary material providing information on the modifications to the river in Saint-Étienne, but also to acquire a more in-depth understanding of the decision-making processes involved in restoration and development projects. This action research is also said to be "participant" because, to various degrees, the researcher accompanied the changes and produced knowledge on those changes. This positioning encouraged the co-construction of the research topic by bringing into play the various forms of knowledge and related actions of the stakeholders involved.

Contact

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a

© Justine Ultsch, 2008

The Furon from upstream to downstream

Upstream of Saint-Étienne, in the Pilat mountains, at a place called Pont Sauvignet.



b

© Justine Ultsch, 2008

The Furon flowing through the Rivière quarter in Saint-Étienne.



c

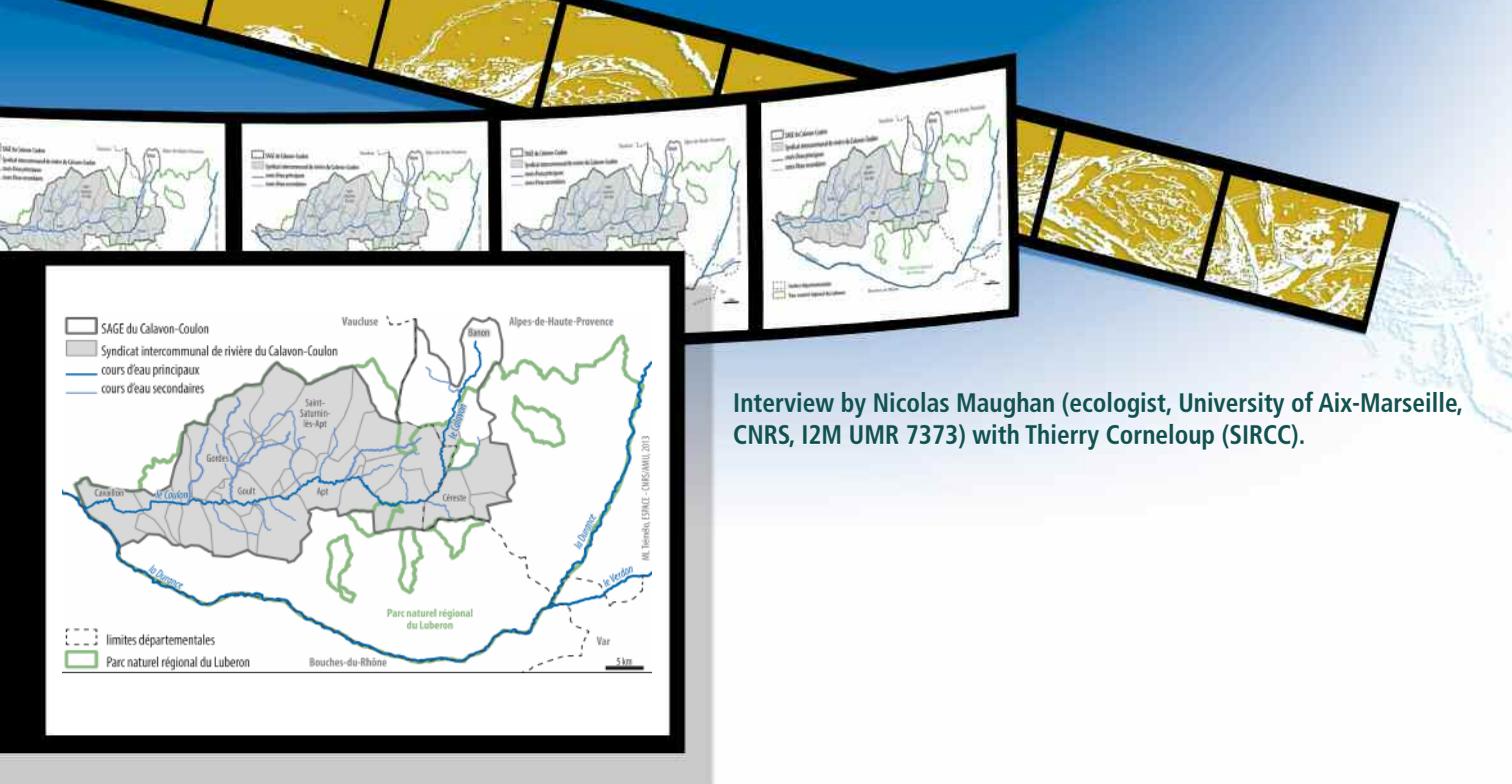
In the Valbenoîte section of Saint-Étienne, just before the river flows underground.



d

The Furon River just downstream of Saint-Étienne, at the outlet of the buried section, in the town of Fouillouse.

c,d © Justine Ultsch, 2008



Interview by Nicolas Maughan (ecologist, University of Aix-Marseille, CNRS, I2M UMR 7373) with Thierry Corneloup (SIRCC).

The Calavon-Coulon River basin

"Acknowledging perceptions is a daily and indispensable effort."

Introduction

The Calavon-Coulon is a Mediterranean river originating in the Alpes-de-Haute-Provence department at the base of Lure Mountain. It flows through the southern section of the Vaucluse department over a distance of 88 kilometres before joining the Durance River near the city of Cavillon, not far from Avignon. It drains a karstic basin of approximately 1 000 square kilometres and has the name Calavon in the upstream section and Coulon in the downstream section. Similar to many Mediterranean rivers, its management must take into account the scarcity of water during the summer and the large quantities during the fall and winter that regularly provoke flooding in the downstream section where the most urbanised parts of the river basin are located. The first management measures for the Calavon-Coulon were launched and implemented thanks to the initiative taken by the Luberon regional nature park, created in 1977, through which the river flows. These first efforts primarily concerned chronic pollution produced by the city of Apt (industrial emissions). It was following the severe flooding in Cavillon in January 1994 that the need for physical management of the river became evident and that the creation of a river board was proposed. Ten years later, in 2005, the founding documents for the Calavon-Coulon River Board were officially signed.

In the Rhône-Méditerranée-Corse basin, a total of over 40 sub-basin management plans (SBMP) have been established. The second SBMP for the Calavon-Coulon is now being ratified. The Flood-prevention plan (PPRI) for the Calavon-Coulon was finalised on 26 July 2002.

Thierry Corneloup, hired in 2006 as the director, set up the overall structure and managed the board until 2012. He is now a policy officer for "Water and aquatic environments" for the Provence-Alpes-Côte-d'Azur (PACA) region.

On the basis of your experience, could you tell us about the role played by perception issues in the environmental management of rivers?

The role of perception in my work was never precisely defined and formatted in a programme, for example an "Analysis of the perception of issues" on the basis of surveys and questionnaires. But in real life, in the actual management of projects, whether in putting together the governance of the river board with elected officials or in implementing measures to control flooding (notably work to protect and maintain river beds), we were obliged to strive for consensus and to explain to the population what we were doing and what we were not doing. This approach is more a part of the overall strategy of projects.

For example, my first job was to set up a river board capable of making elected officials, who had different views and policies concerning water issues, work together. During the preliminary phase of setting up the board, I spent a great deal of time on discussions enabling elected officials to express their expectations and explain in detail their perceptions concerning water management. There were differences in the ideas expressed by local residents and the elected officials, which suggested that a number of different features had to be included in the board. I would not say that a project must be approved unanimously, that is simply impossible, but there must be a certain degree of consensus, of approval, notably on the part of the local residents.

Why and how did you develop the study of perception issues?

It had already been done in a number of river basins in the Rhône-Méditerranée-Corse basin, prior to formulating SBMPs and at the end of each SBMP in order to obtain feedback. Due to my multi-disciplinary training, including sociological approaches, I am open to perception issues. And I attach a great deal of importance to this type of approach. Within the river board, though things were not formally organised, there was nonetheless, in the field, time for these issues. For me, there was a real need. That being said, an analysis of perceptions and an identification of "stakeholder interactions" did not take place prior to each project because we did not necessarily have time for that.

Concerning the human sciences, historians took part in preparing the PPRI. In this case, it was commissioned by the State. The purpose was to carry out a historical study in advance of the technical hydraulic work for the PPRI of the Vaucluse department. The study was based on a collection of images, post cards, interviews with stakeholders and local people. A film was produced to present the study. We participated in the film by supplying documents showing land use prior to the Second World War and current use of the floodable zones. The result was a diachronic approach and some very "expressive" documents.

I thought it was very worthwhile to put the history of the river basin into perspective. The study revealed the past management work and the creation of the various river boards over the centuries, as well as all the challenges they faced. That explained in part the difficulties encountered in establishing the current river board. It was also an occasion to highlight the patrimonial value of certain installations along the river. Those installations are currently a key element in discussions on ecological continuity and sediment transport... where different perceptions are in play.

We used the film in our management work, notably during meetings, as a means to initiate dialogue with the population and elected officials.

Are the local stakeholders accustomed and open to dialogue given that they are located in a regional nature park?

Concerning certain environmental projects, the answer is yes. It helps to be part of the regional nature park, because certain people are already highly aware of the impacts of infrastructure on natural environments. Conversely, for flood control, which in some cases requires major construction activities (see Figure a), the environmental-protection groups sometimes see our approach as contradictory. What is an advantage in some situations is a disadvantage in others.

There are a certain number of more or less influential non-profit associations in the Luberon regional park that were active participants in setting up the SBMP. I think it is very important to involve the population in preparing projects, but we must avoid creating expectations that we cannot meet, due to a lack of resources. That is what happened in 1994 after the floods. There were great expectations concerning a programme in which the public had participated. Then 15 years later, in 2008 when a major flood occurred, the population did not understand why the consequences were so terrible (see Figure b). Work had been begun, but the project as a whole was far from finished. The absence of communication on its progress had created "erroneous" perceptions and produced an impression of safety concerning the hazards involved, a dangerous situation when risks exist, whatever the level of work undertaken to minimise those risks.

Did you organise large meetings with all the stakeholders or did you prefer smaller meetings for specific groups?

We did both because people express themselves differently depending on the configuration. Initially, particularly following a crisis such as floods, it is important to bring everyone together. These meetings serve as an outlet for the anger and frustration. That is important. But afterwards comes the time for analysis and it is necessary to work in small groups. For example, that is what we did following the flood in 2008. We worked with people from the various flooded sections of town, often organised in associations, so that they could explain "what is OK and what is not" and so we could provide answers on what we could and could not realistically do. In this agricultural area, the issue of dredging was thus debated publicly and the proposals of the river board could be presented in detail and adjusted where necessary.

Were you satisfied with these efforts to encourage participation and what advice would you give to an organisation thinking about launching this type of process?

My goal was to carry out work, major construction projects in some cases, to prevent flooding. To that end, it was necessary to defuse the contentious points in the project by encouraging the local residents and the non-profit associations to participate. For example, we included the non-profit associations for flood victims who had been traumatised by the floods (see Figure c). We provided them with an opportunity to participate in the stakeholder-involvement process. That enabled us to defuse certain situations, to remain on schedule and to meet the set objectives. The same was true for the ecological value of the environment which was taken into account via the compensatory measures and the preservation of certain areas.

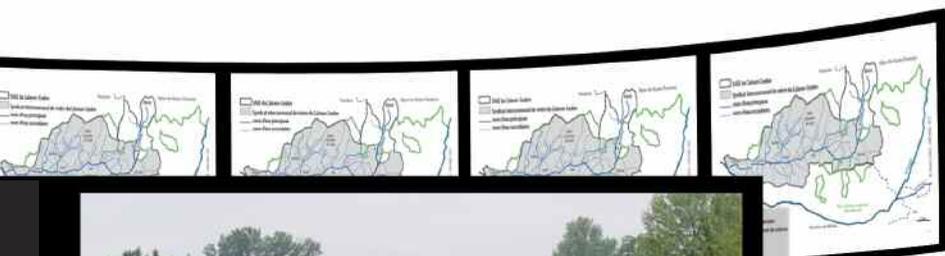
In terms of any advice I could give, practically speaking, I would say that it is necessary to organise meetings regularly with the local residents and stakeholders. In order to hear the different opinions and to explain our decisions and the factors justifying those decisions. The manager or the representatives of the entity involved locally in the project should be present. I truly think that a manager must be sociologically aware of the interaction between stakeholders. That is part of the day-to-day work, with elected officials, local residents and the non-profits. It is all part of the stakeholder-involvement process and the effort to communicate, to present the project. It is not only indispensable, but mandatory.

Contact

Internet site: <http://www.sircc.fr/>

Link to the film by Gilles Charensol and Denis Cœur:

<http://www.cimalpes.fr/Films-de-montagne-752-1258-0-0.html>



a

© T. Corneloup, 2011

Major construction to resize the river at Cavallon in 2011, which was contentious with environmental-protection groups and parts of the population.



b

© T. Corneloup, 2008

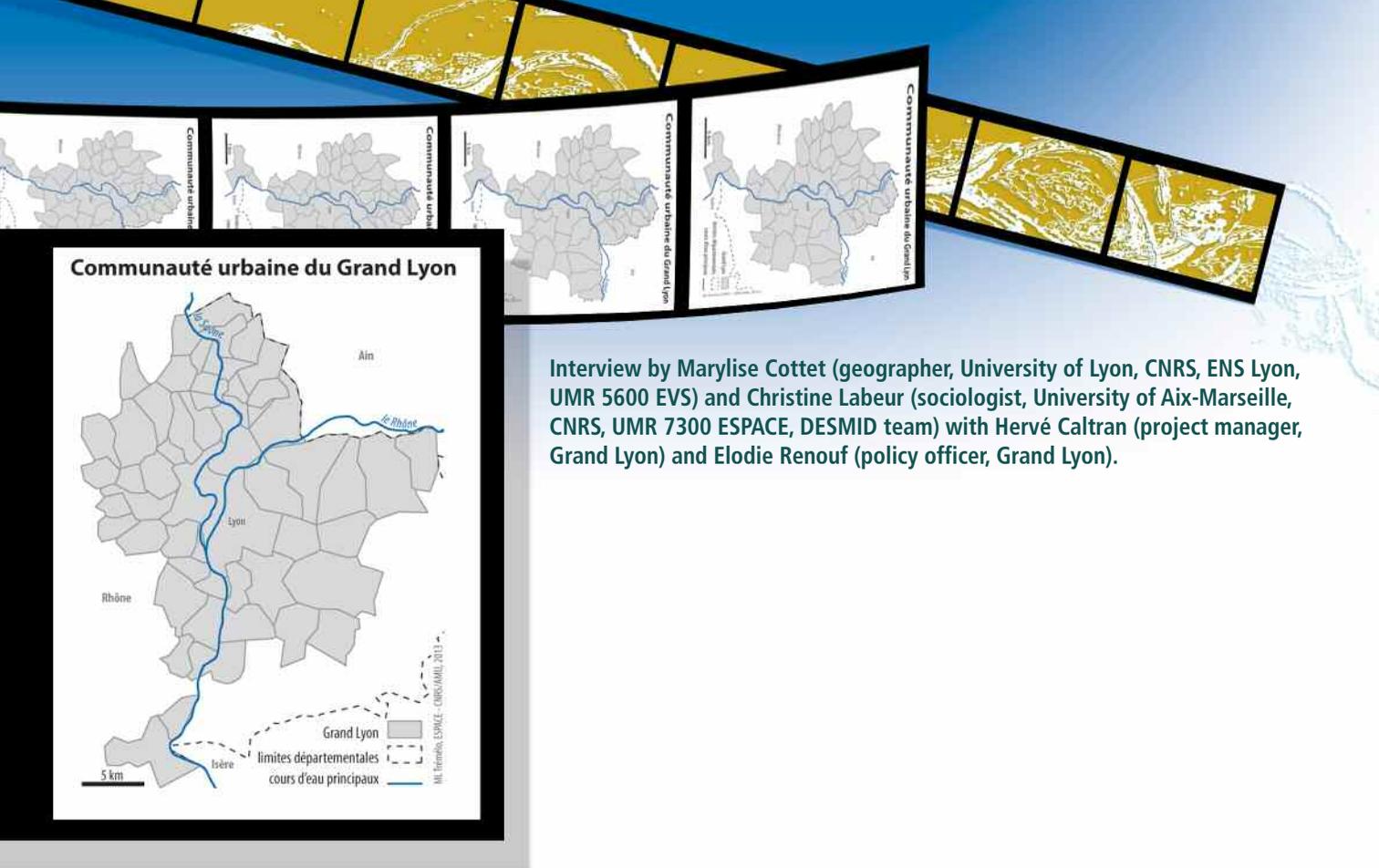
Flood of the Cavalon River in December 2008 in the town of Apt with traumatic consequences for the population.



c

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Public-engagement meeting in 2010, between elected officials and local residents.



Interview by Marylise Cottet (geographer, University of Lyon, CNRS, ENS Lyon, UMR 5600 EVS) and Christine Labeur (sociologist, University of Aix-Marseille, CNRS, UMR 7300 ESPACE, DESMID team) with Hervé Caltran (project manager, Grand Lyon) and Elodie Renouf (policy officer, Grand Lyon).

The Grand Lyon urban area

A new look at incorporating perceptions of rivers in urban areas

Introduction

Grand Lyon, the name of the Greater Lyon urban area, is an inter-municipal entity grouping 58 towns around Lyon. It is located in the Rhône department in the heart of the Rhône-Alpes region. Given the number of inhabitants (1.2 million), it is the largest public board for inter-municipal cooperation in France. It is active in a wide array of sectors affecting the daily life of residents, including water management. Grand Lyon has now adopted a proactive policy for sustainable development.

The area is crossed by two large rivers, the Rhône and its tributary, the Saône. There are also a multitude of smaller rivers in urban and peri-urban settings. Preservation of the quantity and quality of water resources is a prime issue within the Water directorate, where the work centres on drinking water and sanitation. The Grand Lyon urban area is also in charge of managing other issues related to aquatic environments, e.g. flood control and environmental preservation.

Hervé Caltran, project manager in the research department of the Grand Lyon Water directorate, and Élodie Renouf, policy officer in the unit for strategy and sustainable development in the same directorate.

On the basis of your experience, could you tell us about the context and the role of perception issues in the management of aquatic environments in your organisation?

Since the creation of the urban area, the work at the Water directorate has dealt with technical aspects concerning sanitation and drinking water. The role played by perception issues in the management of aquatic environments was slight, even non-existent. But there has been a change over the past few years. Grand Lyon now pays greater attention to the management of aquatic environments. For example, a plan for the political term, signed in 2008, repositioned aquatic environments as the central issue for our directorate. Even though, practically speaking, we continue to focus essentially on drinking water and sanitation, the importance of environments has grown. It is in this context that perception issues have started to emerge. With the development of opportunity studies and studies on project results, it is clear that more questions are now being asked about how people feel or see things. This increasing interest in perceptions recently took form in a new study initiated in 2010 by the Water directorate. It covers all the streams in the Grand Lyon urban area (see Figure a). It came into being due to the desire to mobilise elected officials around the issues of water management, stream daylighting and maintenance, in order to set up effective management on the river-basin scale, similar to that found in other inter-municipal river boards.

Tell us more about the study.

A consulting firm was hired to conduct the study. Initially, it consisted of a water-quality assessment that also focussed on flooding and on biodiversity. Our request, i.e. that of Grand Lyon, was to identify the important issues, to rank them and, on that basis, to make proposals on how we could manage rivers and streams. But above and beyond this technical diagnosis, we also wanted an assessment of sociological aspects (on perception), to show that our management approach, in fact a service, was approved by elected officials. For an issue to exist, there must first be a problem. The problem must also be expressed by a person or entity. If there is a problem with water quality, but no one cares, there is not an issue. If there is a problem with water quality and a non-profit association, an elected official or a stakeholder in the field repeatedly insists that "there is a problem", the problem becomes an issue and it is necessary to find an answer. The purpose of the study was to understand the expectations and the issues involved in the urban area. Issues can be defined and problems identified by listening to what people in the field have to say. The perception of people living along rivers and streams is not necessarily identical to that of technicians.

That is why we decided to directly question elected officials in the field to see how they perceive their rivers. The objective was to include the results in the aforementioned study. A questionnaire comprising 20 questions was drafted and sent to the 58 towns making up Grand Lyon (see Figure b). The instructions stipulated that the questionnaire was to be filled out by the mayor or a deputy mayor, not by the administrative or technical services of the town. The idea was then to process the answers statistically and to present them to the participants (see Figure c).

Were you satisfied with the results? What information did the perception study provide?

We were satisfied because we achieved a 50% return rate and because the instructions were followed.

To begin with, the study provided us with information on the local expectations throughout the area. The first conclusion has to do with the high response rates in towns confronted with runoff and flooding problems. Clearly, the elected officials respond when there are problems. That is fairly symptomatic. It would also appear that there are two types of towns that differ in terms of how they perceive rivers. The first group consists of towns that

see the presence of a river as beneficial, notably in terms of living conditions. For the second group, on the other hand, the presence of a river and the risk of flooding represents a constraint. The two groups however agree that they want Grand Lyon to manage the rivers and streams.

The meetings organised during the study also revealed the unexpected relationship that urban residents have with rivers. In cities and towns, there is no proprietary relation with a river, as is often the case in rural areas where the river passes through or along the property of the local residents. The latter may see the river as a constraint or as something positive. They may be more or less attached to the river. In cities and towns, there is an impression that the river does not belong to anyone. It is often located beyond property lines, in a public area, and can be culverted or blocked off. In which case no one will defend it or raise any questions about it. That is why it is all the more important to know the perceptions of the local residents in urban areas. And that explains why we must completely change our approach to subsequent work, for example when we want to restore a river or carry out maintenance work.

The last observation is that expectations concerning urban and peri-urban environments include a major "living conditions" component that we, the managers, never imagined. We became aware of it thanks to this study. It was interesting to note this more social perception that emerged during the overall analysis of the urban area. It provides a degree of perspective with respect to the regulatory aspects and technical approaches that this type of analysis can produce. As managers, we deal more with the technical aspects, with river hydraulics, water quality, biota, etc., but when we question the local residents in the field, they mention problems having to do with odours, the landscape and aesthetic aspects. There are truly differences between the approaches of technicians and local residents. As technicians, it is useful to see these issues in a fresh light, without any pre-determined opinions. This knowledge on perceptions is also a means for managers to become aware of their own perceptions and, with any luck, to adapt them in order to better deal with future, local issues. When a manager is subsequently called on to work on the restoration or the maintenance of a river in an urban area, it will be necessary to completely modify his approach and perception of rivers. This opportunity study revealed a new way of perceiving water management in an urban setting and will serve in our efforts to mobilise elected officials.

Contact

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communauté urbaine
GRANDLYON

a



An assessment study was carried out on the perception of urban streams and related issues in the Grand Lyon urban area.

The questionnaire below was sent to the towns in the Grand Lyon urban area as part of the assessment study on local streams.

b

ANNEXE 1 : Questionnaire

Gestion des ruisseaux non domaniaux du Grand Lyon
Enquête auprès des Maires - Avril 2011

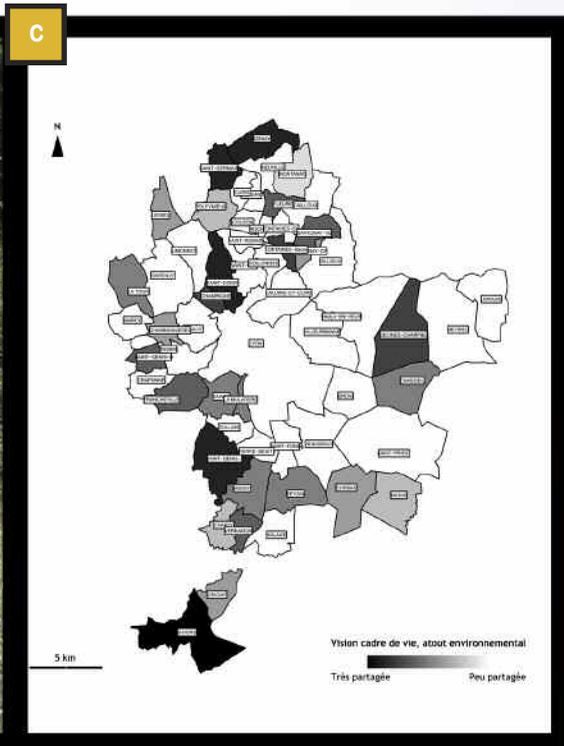
Commune :
Nom et fonction :

Entourez une ou plusieurs réponses.

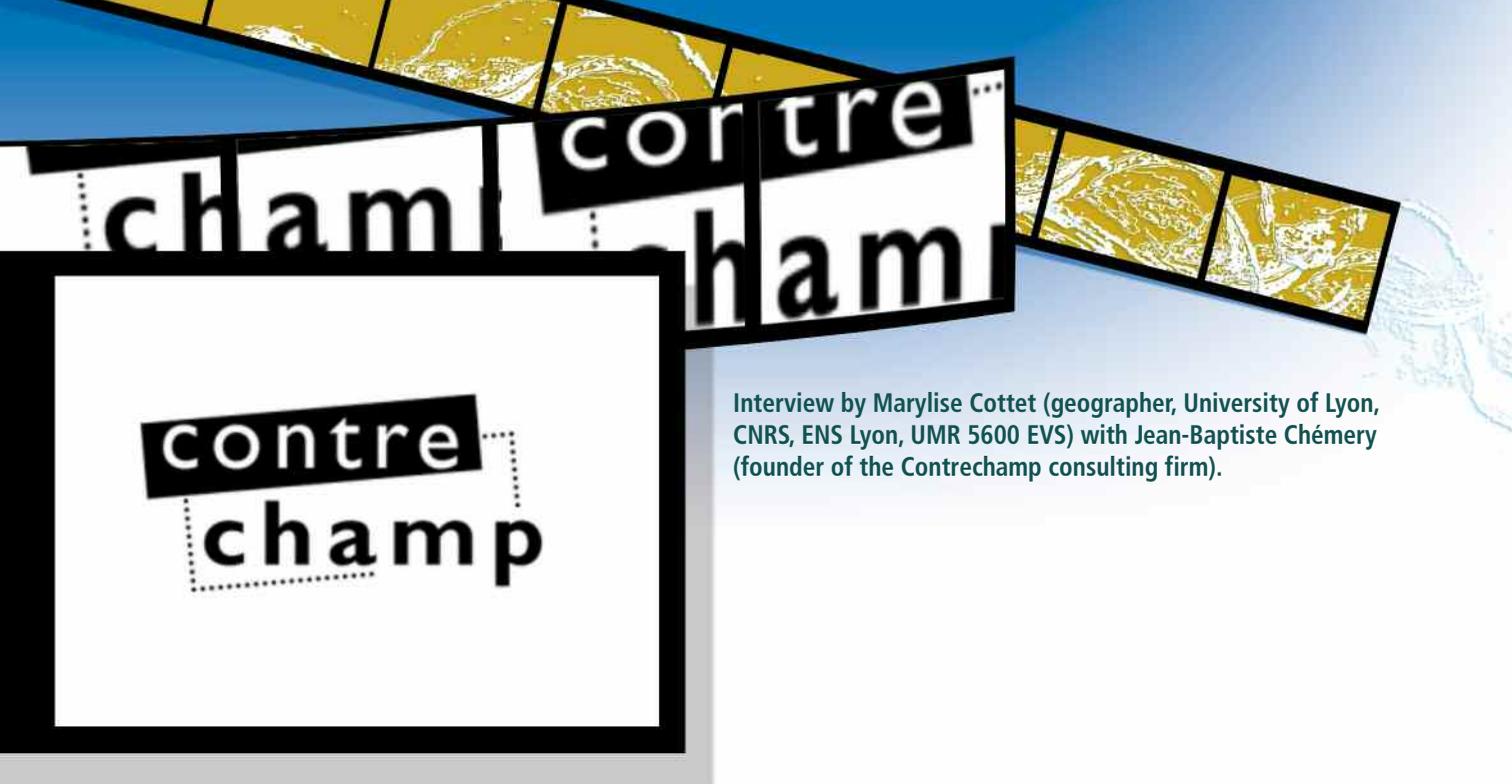
- Ma commune connaît des problèmes liés :
 - A. Aux ruisseaux (débordements)
 - B. Aux ruisseaux (autre ; précisez)
 - C. Aux ruissellements des parcelles agricoles
 - D. Aux ruissellements des sources
 - E. Pas de problèmes
- Je connais les ruisseaux et les ruissellements de ma commune (leur cheminement, les principaux problèmes qu'ils posent) :
 - A. Très bien
 - B. A peu près
 - C. Très mal
- Pour vous, un ruisseau ça peut-être :
 - A. Un cours d'eau avec un lit naturel ?
 - B. Un cours d'eau avec un lit canalisé ?
 - C. Un cours d'eau avec un écoulement permanent ?
 - D. Un cours d'eau avec un écoulement intermittent ?
 - E. Un fossé avec parfois de l'eau dedans ?
- Les ruisseaux sur ma commune :
 - A. Ne sentaient pas bons (comme les chats de Jacques Brel) alors on les a enterrés
 - B. Sont beaux, on aime s'y promener
 - C. Ont été oubliés alors ils se mettent en colère et se rappellent à notre bon souvenir
 - D. Un des rares lieux de nature sur notre territoire
- Ont-ils un intérêt pour la commune ?
 - A. Aucun ; terrain dévalisé, zone inondable
 - B. Paysagère/écologique
 - C. Cadre de vie : pêche, loisirs, promenade
- La première chose à laquelle je pense lorsqu'on me parle de ruisseaux, c'est :
 - A. Les travaux et problèmes que cela implique
 - B. Les procédures administratives à suivre pour mettre en œuvre toute action
 - C. Le coût que cela représente
 - D. La richesse écologique et la biodiversité que cela représente
- Les cours d'eau :
 - A. Il n'y a pas besoin de s'en occuper
 - B. C'est à la commune de s'en occuper
 - C. C'est aux riverains de s'en occuper
 - D. C'est au Grand Lyon de s'en occuper
- Sur ma commune :
 - A. J'ai des projets en cours en lien avec les ruisseaux
 - B. J'aimerais être mieux protégé des risques que représentent les ruisseaux
 - C. J'aimerais que les ruisseaux soient mieux valorisés pour l'environnement et le cadre de vie
- Sur ma commune, les ruisseaux :
 - A. N'intéressent personne
 - B. Intéressent quelques riverains pour des questions d'intérêts particuliers
 - C. Intéressent les pêcheurs et quelques associations « école »
 - D. Intéressent une part de la population pour qui le cadre de vie et l'environnement compte.
- Ce qui fait que les ruisseaux ou ruissellement posent problème :
 - A. L'évolution du climat
 - B. L'évolution de l'urbanisation
 - C. Les pratiques des riverains
 - D. Les pratiques des industriels
 - E. Les pratiques agricoles
 - F. Les contraintes liées à l'environnement / la pêche
 - G. Ils ne posent pas de problèmes

communauté urbaine
GRAND LYON

c



Map summarising the results of the questionnaire. The darker the colour, the more streams are perceived as positive elements in living conditions and as an environmental strong point for the town.



Interview by Marylise Cottet (geographer, University of Lyon, CNRS, ENS Lyon, UMR 5600 EVS) with Jean-Baptiste Chémery (founder of the Contrechamp consulting firm).

A consulting firm

What flexibility exists for managers to assert their own specific priorities and perceptions?

Introduction

Contrechamp is a small consulting firm founded in 1995 that supports and assesses public policies and territorial projects. It makes use of collective discussions, partnerships and stakeholder-involvement processes. It pays close attention to stakeholders and stakeholder dynamics in developing a socio-technical (study of the social conditions under which technical changes are carried out) and/or a socio-political approach (analysis of stakeholder interaction, partnerships, governance, etc.), based on close ties with the stakeholders in the supported or studied processes.

Contrechamp has specific experience in supporting and assessing landscape-management procedures concerning water and aquatic environments, e.g., sub-basin management plans (SBMP), river contracts, action programmes for flood prevention (PAPI), etc. The firm has also been active for a number of years in assessing public policies and systems, recently including various policies implemented by Water agencies (wetlands, maintenance and physical restoration of rivers, etc.). Contrechamp also carries out sociological studies, addressing both managers and beneficiaries of management on aquatic environments (Tille basins, Lake Bourget, Drôme and Arve Rivers, etc.).

Jean-Baptiste Chémery, geographer and sociologist, founder of the Contrechamp consulting firm.

In the current legislative and regulatory context governing the management of water and aquatic environments, how much freedom do managers have in implementing management projects?

On the basis of a dozen or so years devoted to assessing concerted management projects for water and aquatic environments on the scale of entire river basins (environmental contracts, SBMPs essentially in the Rhône-Méditerranée basin, see Figure a), our feeling is that the degree of freedom enjoyed by managers has undergone a significant change for various reasons.

Toward the end of the 1990s and early 2000s, the technical and financial partners tended to organise concerted management systems for each river basin. It may be said that the main issue at that time was to effectively ensure the political involvement and socio-technical management by establishing contractual relationships, e.g., environmental contracts or, more rarely, SBMPs. In this approach, most of the money put into these projects was devoted to improving water quality and funding expensive collective-sanitation services, which were undoubtedly a decisive factor in motivating elected officials to participate in these projects. Significantly less attention was paid to aquatic environments, where most projects dealt with traditional maintenance work on rivers (maintenance of riparian vegetation, removal of jamming material, etc.). The creation of teams comprising social-insertion workers for most of the maintenance work added a "social welfare" aspect to the projects that elected officials (and the population) appreciated, particularly in rural areas. Similarly, the inclusion of river-restoration projects targeting the landscape and the local tourism industry occasionally contributed to encouraging the participation of local governments (enhanced access to a river, creation of discovery trails, etc.). In this context, without going so far as to speak of true freedom, it may be said that the traditional and new expectations of local managers were largely taken into account.

Starting in the middle of the last decade, the implementation of the Water framework directive (WFD), which set new objectives for water policy in terms of the status of aquatic environments, contributed to changing the situation for managers and tended to reduce their freedom. First of all, the WFD, which is based on ecological quality criteria for which the local stakeholders involved in management work had no real say, led the technical and financial partners of the local managers to stipulate more precisely their priorities in order to achieve a higher degree of work effectiveness and consistency, thus reducing the room for proposals by the managers and their local partners. However, as is shown by the work to physically restore rivers and to manage wetlands (key aspects in the WFD programmes of measures), the complexity of the measures and the difficulty in determining their precise impact on the status of environments, in conjunction with new engineering techniques and the necessarily limited feedback, provided local managers with a degree of freedom in the face of the increasing constraints imposed by their regulatory and financial partners.

In this context, one may raise serious questions concerning the future freedom of managers of aquatic environments. It would seem that they must increasingly orient their work toward projects targeting more ambitious restoration objectives, in more or less close conjunction with precise regulatory frameworks, as is already the case for ecological continuity of rivers and the restoration of wetlands. This shift will be one of the key factors in obtaining public financing, if only to ensure the continued existence of the entities managing aquatic environments. Under these conditions, what freedom remains, now and in the future, for managers in asserting their specific priorities and perceptions? An analysis of the situation reveals that they can exploit two main possibilities.

■ The first, essentially technical in nature, deals with an engineering field that is still far from having an established set of guidelines. As we noted in one of our recent studies on the physical restoration of rivers (Rhône-Méditerranée-Corse Water agency, 2014), restoration projects continue to raise a number of questions, notably concerning the desired or reference morphodynamic status, that are rarely expressed, notably in terms

of the related human issues, or the acknowledgement of "self-restoration" capabilities in the given environment, in conjunction with the deadlines and spatial scales adopted in view of achieving good ecological status. In defining the objective of good ecological status, there are no standards determining the scope of a project and the general organisation must be adapted each time to the local situation. In this context, local managers, thanks notably to the technical and practical expertise of their technical personnel, have a real advantage that can be used to express and implement non-standard approaches to the management of aquatic environments.

■ The second is essentially political in nature. Above and beyond the issues related to aquatic environments, restoration and management projects can be seen as landscape-development projects, generally initiated or managed by local governments, in conjunction with other stakeholders (local residents, socio-economic stakeholders, non-profit associations, etc.). This is because the perceptions and practices that the latter put into question, the socio-economic interests that they disturb and the investments that they request make it impossible not to seek different forms of approval throughout the area. Without falling into a parochial vision of the issues, it may be said that these projects should be the result of agreements between local stakeholders, who are directly confronted with the compromises between public and private interests, within which the inclusion of the needs of natural environments may be seen as less important. The capacity of local stakeholders to produce shared guidelines based on sufficient cohesion represents another manner of constructing and integrating original outlooks in environmental management. This capacity is generally based on the existence of stakeholder involvement (or rather co-construction) systems and groups, integrating the viewpoints of the stakeholders more or less directly concerned (see Figures b and c). This means that the local managers must be in a position to identify the issues requiring work in these fields and to sufficiently expand the debates so that they are not confined to a strictly technical approach that would not be sufficient to inject meaning into the collective action.

It is by taking simultaneous action in these two segments, the technical and the political, that the positions of the managers and local stakeholders will find a means of expression and that reasonable management projects will come into being.

Contact

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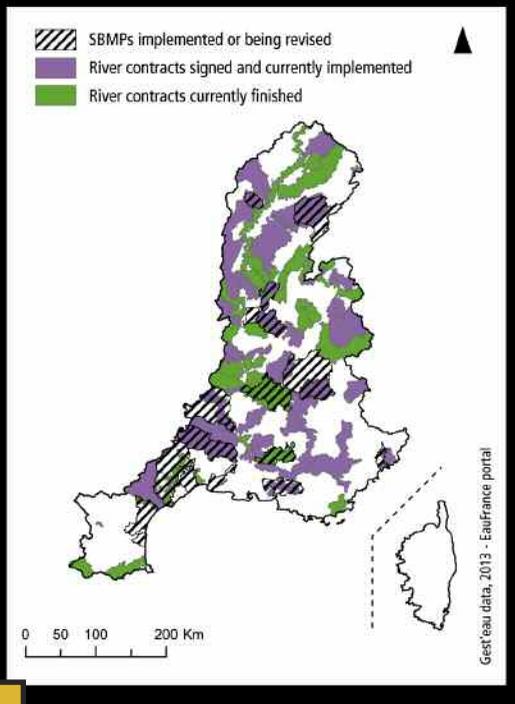
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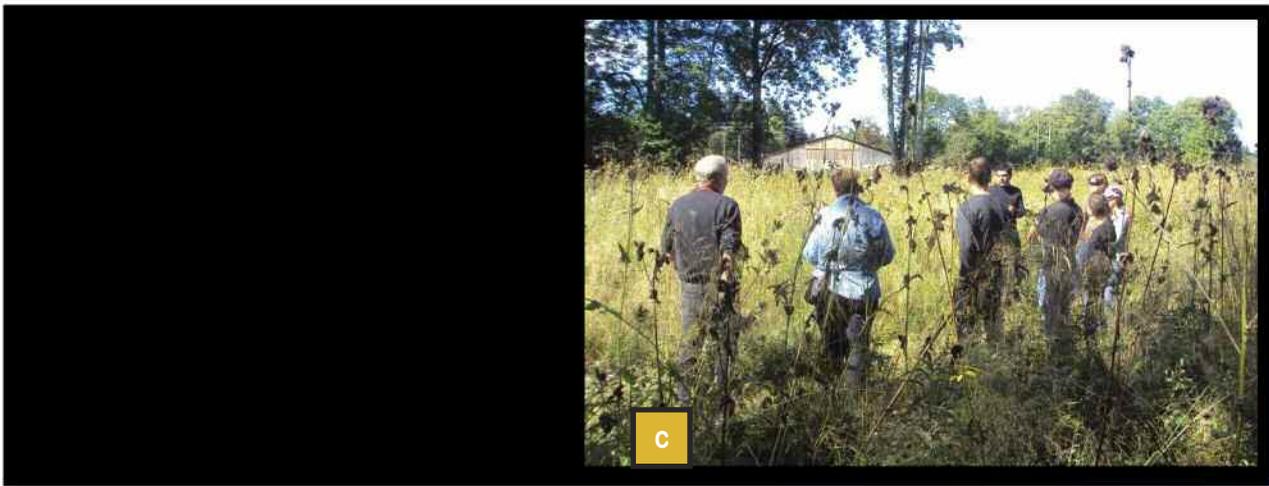
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Map of river contracts and SBMPs that are currently in progress or have finished in the Rhône-Méditerranée-Corse basin.

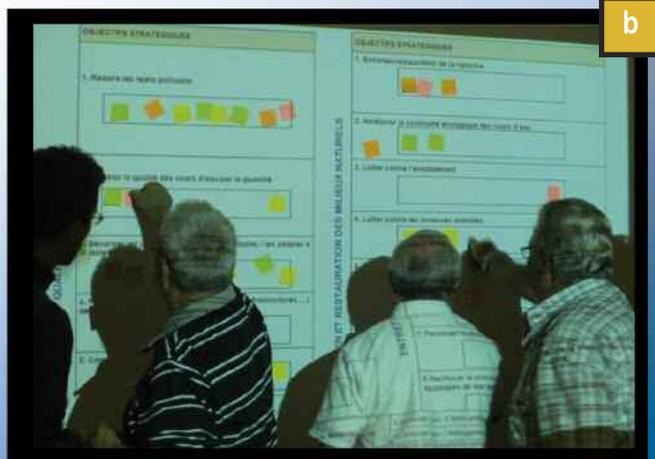
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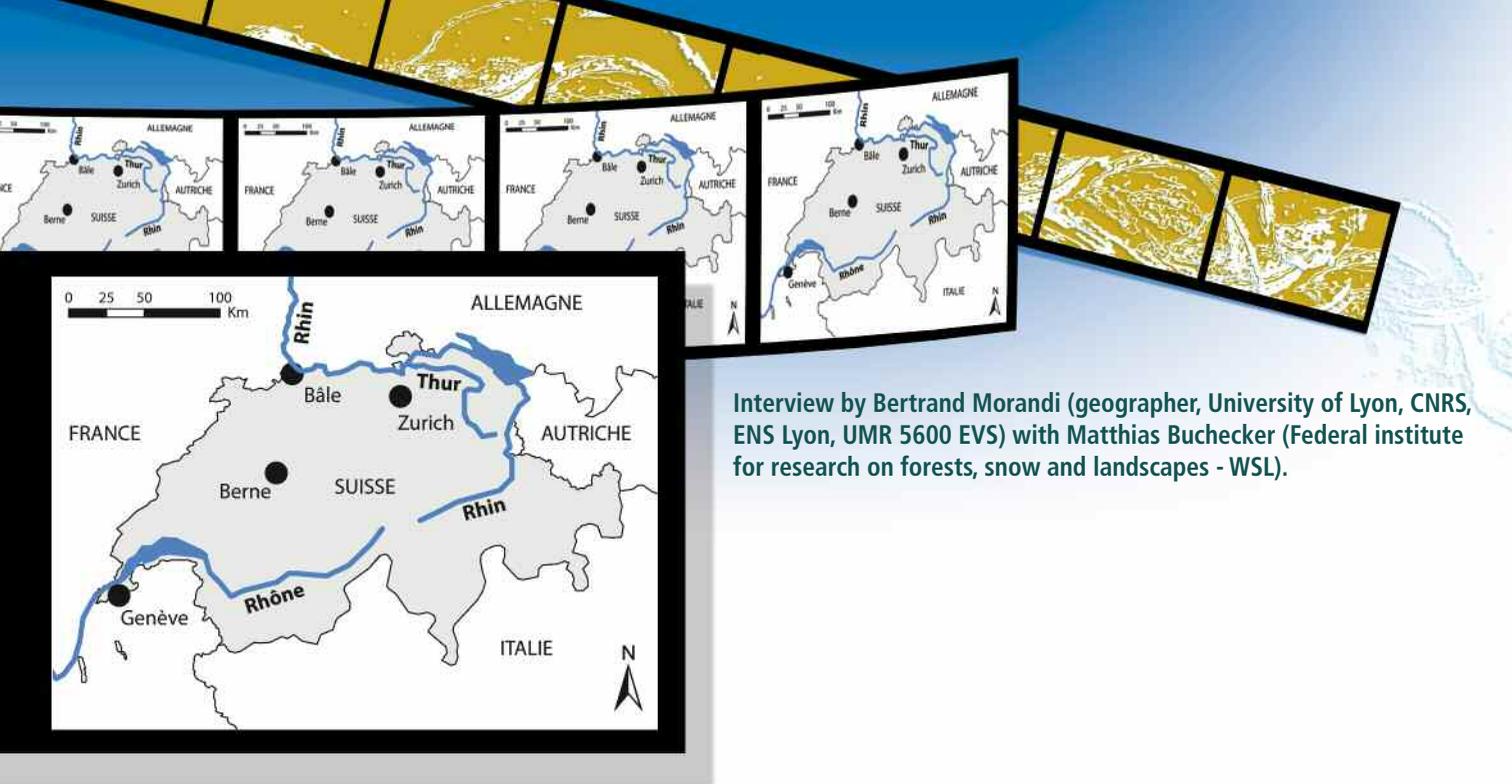
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▲
The capacity of local stakeholders to produce shared guidelines based on sufficient cohesion represents another manner of constructing and integrating respective perceptions in environmental management.



b

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Interview by Bertrand Morandi (geographer, University of Lyon, CNRS, ENS Lyon, UMR 5600 EVS) with Matthias Buchecker (Federal institute for research on forests, snow and landscapes - WSL).

Switzerland

The role played by local residents in river management, findings of empirical studies

Introduction

Since the end of the 1800s, river management in Switzerland and other parts of Europe was the exclusive domain of the engineers and public administrations working in the field of hydraulic engineering (Zaugg, 2002). Up until the 1980s, the main objective of river management consisted of structural measures targeting both flood protection and reclaiming land (Johnson & Priest, 2008).

During the 1990s, river management shifted toward an approach incorporating more river functions (ecology, recreational aspects, drinking water). The new, multi-disciplinary approach, expressly stipulated in Swiss water laws (the federal law on water protection, 1991) and in the European water framework directive (WFD, 2000), meant going beyond the technocratic approach implemented until then and greater involvement of the public. The new regulations explicitly call for the active participation of all the concerned stakeholders. However, they do not indicate which population groups must be consulted nor how they are to be involved. In Europe today, only the most powerful interest groups take part. Involvement is generally limited to setting up a procedure intended to acquire approval of the project (Höppner *et al.*, 2011). However, the scientific literature now recommends that the stakeholders use more "deliberative" participation procedures in order to improve projects and reinforce social learning processes (Muro & Jeffrey, 2008).

Matthias Buchecker, Ph.D in geography, project manager at the Federal institute for research on forests, snow and landscapes (WSL) in Switzerland. His work focusses in particular on public participation, the perception of natural hazards and social demands.

What are the results of the studies carried out on the perception of river-management projects in Switzerland?

A standardised survey of the Swiss population revealed that the people living near a river felt that its management was important to them and wished to participate in the planning process (Junker *et al.*, 2007). The persons polled see the rivers in the region where they live as recreational areas, as natural elements and familiar places and do not associate them with technological issues (canals), with successful engineering or with economic strategies (see Figure a). Consequently, they expressed a clear preference for the most natural river sites. A great majority declared that more space should be made available for rivers both in Switzerland as a whole and in their own region (Junker & Buchecker, 2008a). Concerning their role in river management, the study showed that the respondents wished to have a wide array of options, whether or not based on dialogue, putting them in a position to participate in planning river projects. Most of the people expressed a preference for the least interactive methods, e.g., information meetings and votes (see Figure b). In the list of stakeholder groups that could take part in project planning, the populations living near a river often wanted to be represented. This group of stakeholders placed fifth behind municipal authorities, environmental-protection groups, directly concerned farmers and property owners along the river, but ahead of cantonal authorities and fishing associations (Buchecker & Junker, 2013). Another study was conducted on a vast project to revitalise the Thur River. This project involved a number of interest groups and the residents living near the river. According to the study, the priority assigned to functional modifications by the project managers corresponded better to the priorities of the population than to those of the private interests (Hostmann *et al.*, 2005), notably in terms of reforestation, recreational areas and a reduction in agricultural activities. It thus appeared that the participation of people representing the population groups having an interest in the river could constitute a support base for broader implementation of projects.

In your opinion, what are the advantages of involving the population living near a river and other stakeholders?

Several empirical studies carried out in Switzerland have concluded that the involvement of both the local residents living near the river and the various stakeholders in river projects increases the positive reactions to river revitalisation and raises awareness concerning flood risks. An assessment was conducted on the advantages of involving residents living near a river in projects. It was based on the cross-sectional survey, mentioned above, of the Swiss population and addressed the revitalisation of rivers (Buchecker & Junker, 2013; Junker & Buchecker, 2008a). The results showed that the residents most satisfied by their involvement in a project were those who thought that river revitalisations were a particularly suitable solution for their region and who, consequently, actively support this type of management.

The residents who had a positive experience with a project also have stronger ties with the rivers in their region. They feel they are better informed on river management and are more aware of the advantages procured by revitalisation for flood protection. However, it is interesting to note that the residents most satisfied with the information received on past river-management projects are generally those who most benefited from the learning process. Another cross-sectional study was run on the Swiss population on the topic of projects to improve ecological conditions (Buchecker *et al.*, 2013b). It revealed that residents living near a river had a more favourable impression of river projects if they thought that the various stakeholders had been actively involved in planning the project.

There is also more empirical evidence of the positive effect that significant involvement of stakeholders has on the attitudes of participants. During recent studies in Switzerland, participatory management of projects on flooding were systematically assessed using quasi-experimental research models (Buchecker *et al.*, 2013a; Buchecker *et al.*, 2013b; Buchecker & Junker, 2013). The results repeatedly showed that the involvement of stakeholders, if it is correctly undertaken, produces advantages that go well beyond the acceptance of projects and a reduction in conflicts. The approval of stakeholders can even be increased for future river-management projects. Better yet, the essential values of participatory planning for a varied number of river-management projects produce effects in terms of social learning, particularly as concerns the importance of ecological improvements, in terms of raised awareness of flood risks and in terms of the confidence of stakeholders in collaborative planning (Buchecker *et al.*, 2013b).

In conclusion...

Legal frameworks in Switzerland and the EU require that the population be included in the management of water and aquatic environments, but do not clearly indicate which population groups should be involved nor how that should take place. The results of studies carried out by the Swiss federal institute (WSL) over the past ten years indicate that suitable involvement of interested local groups and of the people living near a river contribute to acceptance of the project and, over the longer term, to social learning processes that represent an indispensable basis for the sustainable development of regional natural resources.

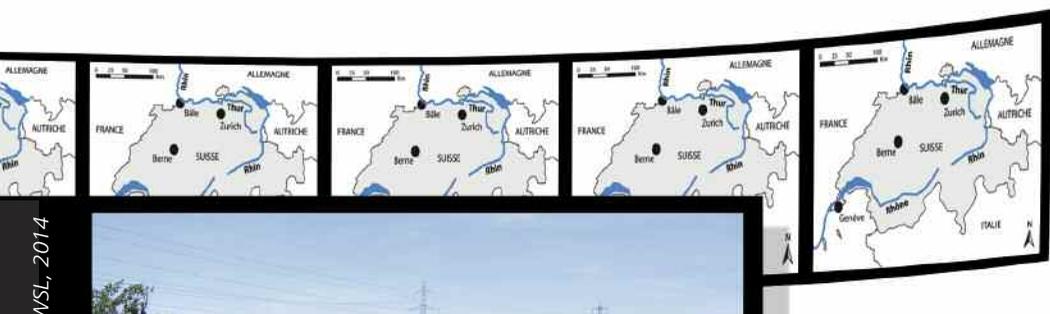
Information meetings should be organised for local residents so that the teams managing the project can provide detailed explanations and the public can immediately respond. Any interested person should have access to a number of tools enabling him or her to react to the project. To ensure successful project implementation, it is particularly recommended to include in the participatory planning process representatives of the people living near the river (an important interest group, but that often remains silent). In order to involve the local interest groups in the planning process, it is important that the overall approach include the long-term objectives. That requires early and regular integration of these groups throughout the planning process to enable discussions.

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A study carried out on the Swiss population revealed that rivers are more closely associated with the notion of nature than with that of technological prowess as symbolised by canals.

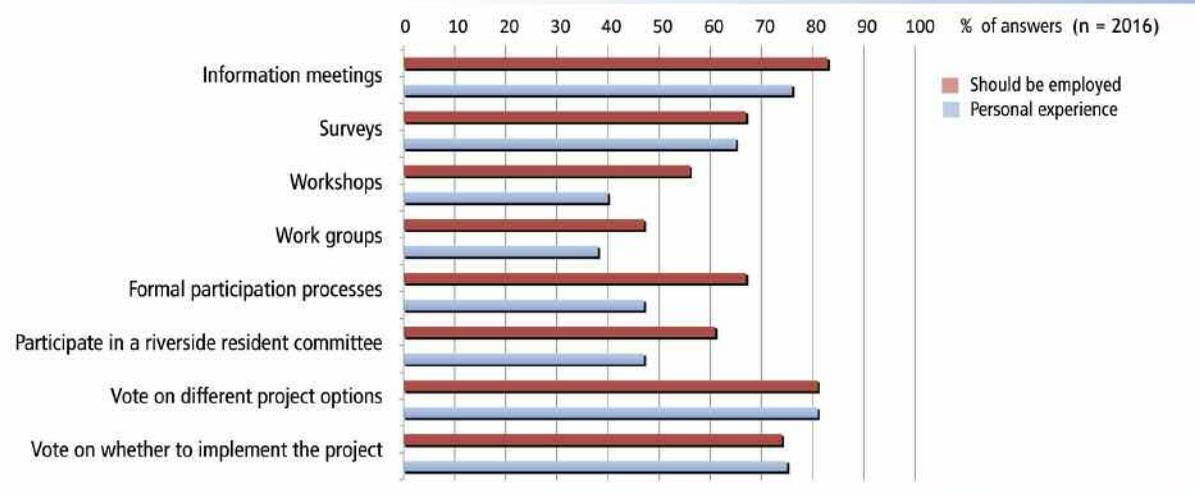
How important to you are the following characteristics of rivers?

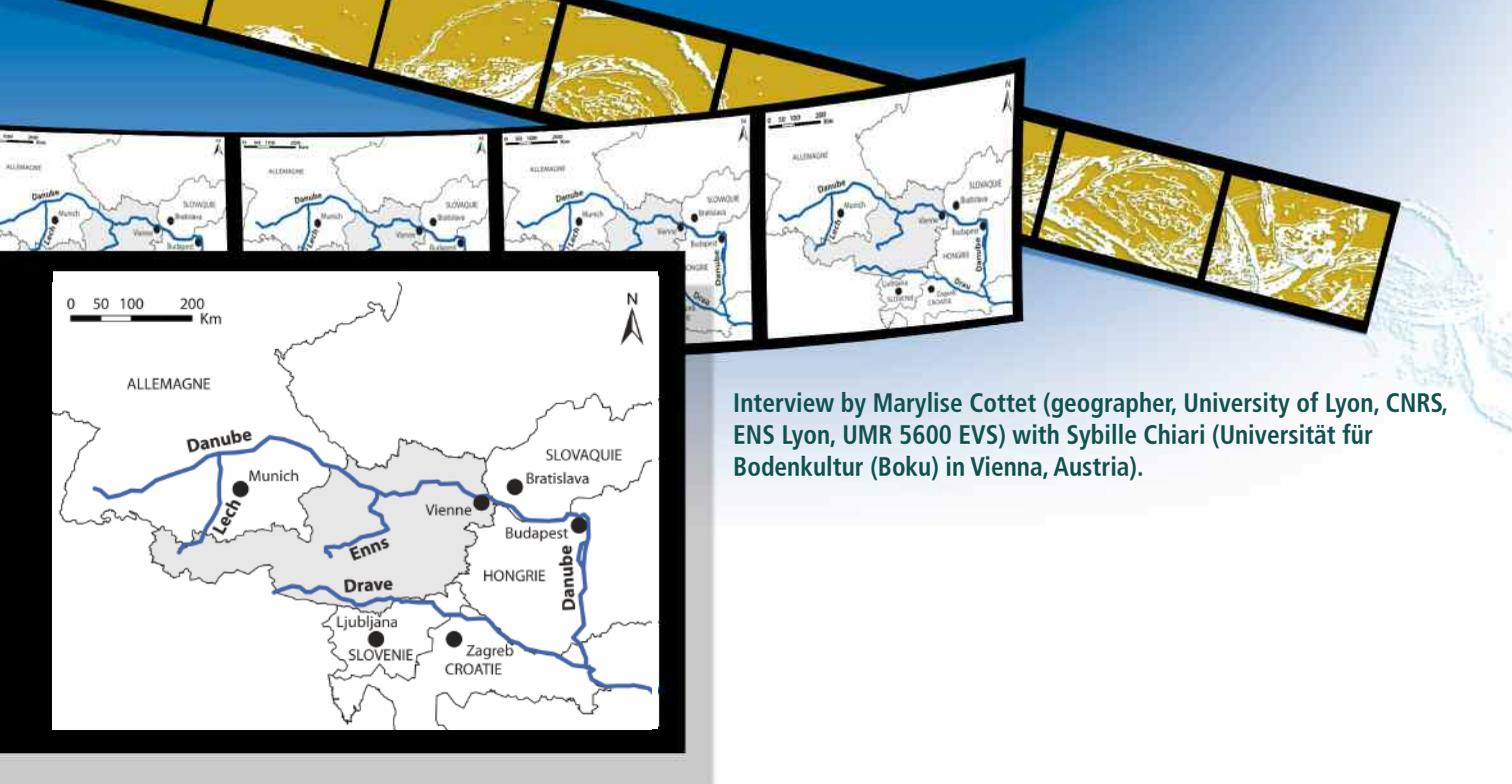


1. Very little importance, 2. Some importance, 3. Moderate importance, 4. Fairly high importance, 5. High importance

The study results show that the people living near a river wish to participate in planning projects in different manners ranging from information meetings to votes.

b





Interview by Marylise Cottet (geographer, University of Lyon, CNRS, ENS Lyon, UMR 5600 EVS) with Sybille Chiari (Universität für Bodenkultur (Boku) in Vienna, Austria).

Austria

The scenic value of Alpine rivers

Introduction

River recreation would appear to be an issue that has been neglected in river-management policies. Traditionally in Austria and in a number of other European countries, river management has included flood prevention, energy generation, fishing, reclamation of farm and building land, and more recently, ecological integrity. Recreational aspects were often neglected by river managers. They were seen as a secondary effect, i.e. the result of measures to preserve other essential aspects of rivers, for example the result of policy for ecological restoration.

However, recent programmes have acknowledged that rivers are essential for recreation, tourism and general well-being, and that the integration of recreational issues in planning work is indispensable if the negative ecological effects of those issues are to be avoided. What is more, the creation of recreational areas along rivers produces increasing awareness concerning the good status of rivers and reinforces the support and commitment of the public for conservation and restoration efforts. To take these issues into account in integrated management, studies on the preferences and needs of the people partaking in the recreational activities are required in view of developing suitable recreational infrastructure and planned tourism management that do not counteract the ecological objectives.

Sybillie Chiari, Ph.D, researcher at the Universität für Bodenkultur – Boku, in Vienna, Austria.

What makes river banks attractive to people?

Rivers have exceptional recreational potential in that they stimulate in different ways the senses of the people seeking recreation. Visual aspects, e.g., the beauty of the site and the surrounding nature, obviously enhance the experience (Junker & Buchecker, 2008; Kaplan, 1977). The acoustic environment, notably the lapping of the water, is particularly important for people wishing to relax. The haptic experience is also a central feature during activities along rivers, for example when people enter the water or when the water becomes a wild, manipulable and adaptable playground (Tunstall *et al.*, 2004; Tapsell *et al.*, 2001; Nicholson, 1971).

Among the various aspects characterising rivers, the biophysical qualities are a particularly important factor in the attractiveness of rivers. The clearness and the colour of the water are of course decisive elements (Smith *et al.*, 1995; Asakawa *et al.*, 2004). The morphology, discharge and corresponding quantity of visible sediment also play a role in the visual perception that people have of a river (Pflüger *et al.*, 2011; Brown & Daniel, 1991). However, preferences in terms of the discharge vary depending on the size of the river, an aspect that certainly has to do with safety issues. Pflüger *et al.* discovered that higher discharges are seen as more attractive for smaller rivers whereas more moderate to lower discharges are favoured for larger rivers (Pflüger *et al.*, 2011). These results concur with those concerning another fundamental biophysical component for healthy rivers, namely woody debris. In an international study involving students, the sites where wood was present were considered more natural, even if less aesthetic and more dangerous (Piégay *et al.*, 2005). It should also be noted that safety issues, for example perceived flood risks, considerably influence our perception of the scenic beauty of a site (Asawaka *et al.*, 2004). It would appear that there is also an innate "preference" for sites where trees and vegetation offer shelter, compared to sites where there is no vegetation (Asawaka *et al.*, 2004; Ulrich 1986; Kaplan & Kaplan 1989).

In short, an attractive riverscape must generate a feeling of safety, be sufficiently "legible" and organised, while retaining elements that satisfy our sense of mystery and involvement (Bulut *et al.*, 2009; Kaplan & Kaplan, 1989; Kaplan, 1977). In addition, it must be suitable for a wide range of activities (boating, fishing, bathing, picnics and sun bathing, among others).

On the basis of the studies that you have conducted on Austrian rivers, what is the landscape value of Alpine rivers?

A three-year study served to assess the landscape and recreational value of three Alpine rivers in Austria (the Drave, Enns and Lech Rivers) in view of analysing the synergies and any conflicts between the ecological and social functions of rivers (Chiari, 2010). The case studies covered an array of morphological sites, ranging from the vestiges of natural, braided rivers to restored sites and sites with highly regulated reaches. In addition to observations of the recreational activities along the rivers on days of heavy use, questionnaires were also submitted to 664 users. The survey included questions on their use of the site, their recreational and aesthetic preferences, and an assessment of photographs showing six different rivers, ranging from virtually natural to restored sites.

Over 90% of the people surveyed found the first set of natural scenes very attractive for recreational uses (see Figure a), whereas the second set of natural scenes was judged positively by only 50% (see Figure b). The judgements varied significantly among the users in the three case studies.

An analysis of the factors guiding these decisions showed that the perceived naturalness, combined with the potential for recreational activities, was the decisive element during the assessment. Other, more ambivalent landscape preferences for "wild" characteristics were identified among users, such as dead wood or gravel bars prevalent in the landscape. On the basis of the statements concerning naturalness, we assumed that a vast majority of users, particularly tourists, appreciate maintained, or rather regulated river sites. The study also showed

that the experience of users is considerably enhanced by factors concerning their own liberty of movement and an absence of restrictions. Most people confirmed that access to the water is an essential condition for recreational activities.

Concerning the recreational infrastructure (e.g. paths, seating, waste baskets), needs vary enormously depending on the questioned group. Older people appreciate standard equipment, namely picnic tables in order to take in the beauty of the landscape, whereas younger people particularly want safe access to the water, because their activities take place along the banks (skipping stones, wading, splashing in the water), and loose materials, e.g. sand, stones, vegetation, wood and water (see Figure c).

A spatial analysis of the usage-monitoring results revealed that the most heavily used sites were those that had been restored or were close to a natural state because they enabled access to the water and offered shallow areas and the presence of natural materials. What is more, we demonstrated a high, positive correlation between the number of recreational users and the presence of gravel. Even though large gravel bars are not seen as particularly aesthetic, they are well suited to most activities along a river. The distribution and intensity of activities depends to a large degree on the road and path networks linked to the site. The networks are a very effective means of guiding the public and steering recreational activities along rivers. The road and path networks must be taken into account as a whole when planning restoration measures in order to avoid any later conflicts with the ecological objectives.

In conclusion...

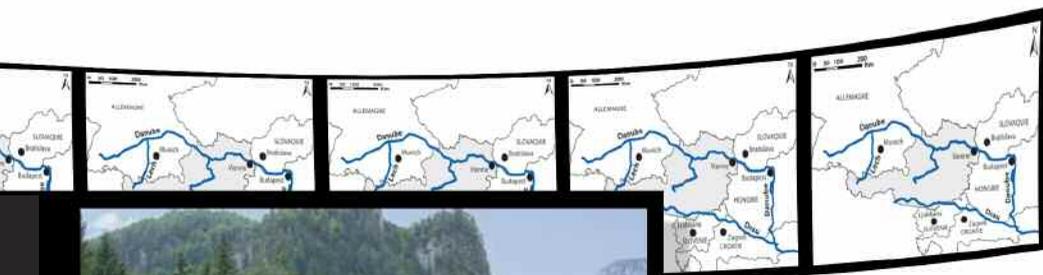
It is important to include recreational aspects in management processes. On the basis of these case studies, we have identified a rather high potential for synergy between the aesthetic and recreational values and the ecological needs. Balanced integration of these three issues over the long term depends on the integrated-management practices implemented and on the space available along damaged river reaches. Sufficient space is required to restore rivers, to make them more attractive, and to preserve the essential functions, including the ecological habitat functions, while avoiding any conflicts between the various issues.

It is necessary to implement integrated-management procedures that take into account, right from the start of the planning stage, both the ecological and socio-economic aspects. For example, listing the values and services that a river has to offer, including not only the ecological, but also the scenic and recreational elements, and then determining the priorities in a participatory manner for the river basin as a whole, could help in improving the values and services offered by rivers over the long term.

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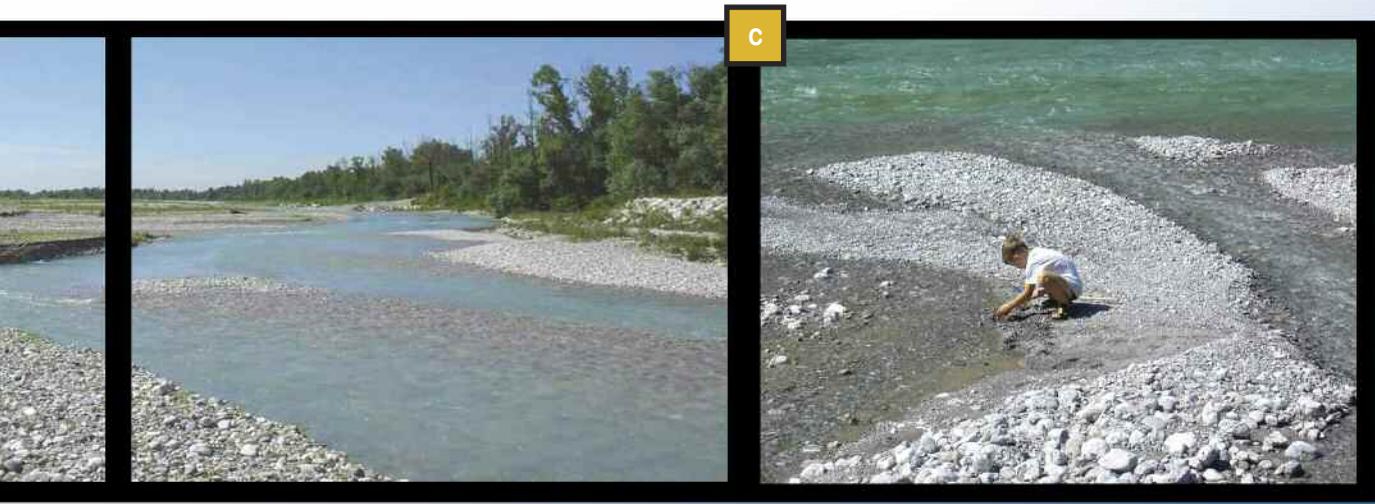
A natural site on the Enns River in the Gesäuse national park, in the Austrian Alps.



b

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One of the last braided river reaches in Austria, on the Lech River.



c

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Large gravel surfaces are well suited to most activities along a river.