



Meetings

Accompanying implementation of French ecological networks dans les territoires

Symposium organised by the Ecology ministry and the Agriculture and forestry ministry, with support from Irstea and Onema, members of the TVB resource centre.

The symposium titled “Mobilising public entities for ecological networks” took place in March 2015 in Paris. The day-long meeting, with an array of speakers, enabled researchers, elected officials, local governments, State services, developers, managers of natural areas and associations to trade thoughts on the issues, techniques and measures involved in promoting biodiversity and ecological continuity. The operational phase in network implementation has raised a number of questions.

Human activities often result in degradation and fragmentation of natural environments, and consequently in a loss of biodiversity. The system of French ecological networks (called *Trame verte et bleue* – TVB – in French, and *Green and blue infrastructure* in English) was created by the Grenelle II environmental law in 2010 to counter the loss of plant and animal biodiversity by preserving and restoring ecological continuity. In light of the ten regional ecological-continuity plans (SRCE) already approved in March 2015 and the others still being prepared, it may be said that TVB implementation is now under way on the regional and local levels. However, it is no easy task to create ecological continuity and functional areas within the existing social fabric and areas already used for multiple purposes. This is particularly true given that TVB comprises ecological-continuity objectives spanning different spatial and administrative



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scales, involving elected officials, managers of natural areas, economic players, associations, the general public, etc. Given the complexity of the concepts, the different local contexts and the multiplicity of stakeholders, TVB mainstreaming in sector policies is a major issue that has not been significantly addressed to date.

The purpose of the TVB symposium was to inform on advances in scientific research related to the expectations of local stakeholders and to pinpoint any gaps in current knowledge in view of suggesting future topics for research. The meeting, divided into sessions ranging from understanding the issues to assessing project results, served to identify a number of aspects of interest to both stakeholders and researchers. That was precisely the point for the TVB resource centre (see the box) in view of enhancing procedures to accompany implementation and provide fully operational tools.

TVB resources centre



The centre may be accessed via www.trameverteetbleue.fr and offers various resources including documents, tools, methods, project feedback, training courses, coming events, news, etc. Under the guidance of the Ecology ministry, the site is managed on the day-to-day basis by ATEN, with the Federation of Regional Nature Parks ensuring the organisation of meetings and drafting of the news bulletin. Irstea, the National museum of natural history and Onema are scientific and technical contributors that regularly produce monitoring reports and analyses on methods intended to assist the regions in TVB implementation.

Joint preparation to facilitate approval of TVB projects

Implementation of a TVB project requires the acceptance of all stakeholders in order to plan effective measures. The concepts of biodiversity reservoirs and of ecological continuity, to say nothing of TVB, are however difficult to grasp for elected officials, economic players and the general

public. In addition, TVB cannot be defined exclusively in physical terms, a number of related functions must be included. *"During the 'Life's corridors' project in the Isère department, only 20% of the people polled were familiar with the term 'Trame verte et bleue', meaning that a great deal of communication is required"*, noted David Chevallier, director of the Lyon social observatory (OSL), adding that *"we need to find new words and rediscover older words"* to facilitate understanding and approval of projects, for example, by replacing the term *"toad conduit"* with *"small-animal passageway"*.



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This observatory, a sociological consulting firm, participated in assessing the "Life's corridors" project to preserve and restore biological corridors in the Grésivaudan valley, including a diagnosis of the situation and a work programme for the years 2008 to 2014. In addition to scientific aspects, the assessment comprised a sociological section where a number of people were contacted to learn about their impressions. The 441 questionnaires collected and the 60 in-depth interviews, notably with farmers, revealed that even if 40% of the persons were not familiar with the terminology used, 97% nonetheless supported the project. *"This broad-based support was generated largely through the early involvement of all the concerned stakeholders, particularly hunters, fishers and naturalists"*, noted David Chevallier.

These efforts to involve stakeholders are a means to create a solid foundation for a territorial project. These efforts also facilitate approval of the TVB project by eliciting shared objectives and can limit conflicts concerning land use with people in the field. For some people, TVB is seen above all as a hindrance that adds new zoning rules to the existing schemes, e.g. Natura 2000 and natural zones with high

ecological value (ZNIEFF). In the Val-de-Marne department, a participatory system was established between 2006 and 2009 to set up the Blue Plan, a sustainable-development project for water and sanitation. Approximately 40 inhabitants, associations, companies and local governments worked both separately and collectively to confront their opinions, address all the issues and, in the end, effectively set up a joint project. *"The role of elected officials in the participatory system is a fundamental aspect. Strong political willpower was required to launch the Blue Plan and to implement the measures"*, said Adèle Colvez, manager of the Blue Plan for the Val-de-Marne departmental council. A monitoring committee meets every year to assess the situation and decide on the main projects for which true needs have been identified, notably the Blue Plan biodiversity project. In this framework, *"an outstanding operation was launched in 2014 with the organisation of a joint study, comprising a series of meetings, on a departmental TVB project"*, noted Adèle Colvez with pleasure.

Identifying network components and mapping them over the territory

After having raised awareness and mobilised the stakeholders, TVB implementation depends on having the regional ecological-continuity plan (SRCE) integrated in zoning rules and planning documents. But before a TVB can be set up, it is necessary to first identify the areas that are important for biodiversity.

For a number of years, the Seine-Saint-Denis departmental council has worked with the National museum of natural history (MNHN) on ecological connectivity in urban environments. To assess connectivity within a city, they studied the hypothesis that a greater amount of vegetation in an urban area is conducive to the movement of species. *"This assumption is promising because the vegetation in a city can be more or less automatically measured using satellite images. The result is a quantified measurement that can be repeated over time and used in a number of different situations"*, noted Colin Fontaine (MNHN). A second aspect of the study was the decision to work on communities of grass species managed only slightly or not at

all, gathering presence data and devising dispersion models based on empirical knowledge. The analysis from five pilot sites showed that *“integration of this information in urban environments tended to improve the estimation of connectivity”*, said Colin Fontaine.

When mapping a network for a territory, there is never a single, unique solution. The primary task is to *“determine the best territorial scale and the solution for governance. That means working to make individual and collective opinions converge in the public interest and to institute biodiversity as a common good”*, underscored Gaëlle Aggeri from the National centre for local government. *“It should be possible to create local TVB projects taking into account the local conditions and stakeholders”*, added Sébastien Nageleisen from the University of Bordeaux, who participated in the AMELI programme as part of the DIVA¹ call for projects. The purpose of the AMELI programme is to run a multi-scalar study on the ecological functions of the farm land characterised by hedgerows in the Poitou-Charentes region and particularly the Bressuire area. In the study, it was decided to initially mediate landscapes *via* photographs, an easier medium for elected officials and inhabitants, rather than using maps, a more complex form where the results depend heavily on the initial data (notably the date of images and quality of databases) and on the processing techniques. Several workshops were then the occasion to transcribe the collected data and to jointly produce maps by first going through the novel step of decontextualised maps, i.e. maps without any spatial indications. Using the latter is a means to short-circuit knowledge of the local area and personal wishes. The return to maps following the landscape mediation is very important because it is a means to confront the results with TVB maps, which are a more standard form. Landscape approaches are of course not the only ones used. For Sébastien Nageleisen, it is important not to use a single approach and he notes that the *“objective is to implement a number of methods in parallel in order to propose new solutions for the TVB project”*.

¹ The AMELI research project is supported by the DIVA 3 programme titled “Public policy, agriculture and biodiversity”, proposed in response to the 2011 call for research topics by the Ecology ministry titled “Ecological continuities in rural areas and the interfaces”.

Carole Barthélémy, Population Environment Development Lab at University Aix-Marseille

Via the various TVBs in a city like Marseille, we study the ecological aspects of the projects, urban dynamics, local practices and the social representations of the inhabitants concerning nature in their city. One of our unexpected discoveries was that artists have proposed original relationships with nature and more specifically with the networks. Using knowledge drawn from naturalist studies, the artists propose urban walks along networks, thus re-establishing links between inhabitants and their quarter. They provide information on unused plant species on idle land or along the Marseille canal. The walks are a chance to gather edible plants and then to cook them, thus using all five senses to learn about nature in the city.

Integrating TVB in territorial planning and sector policies

Stakeholder participation in designing and approval of TVB mapping is not sufficient to ensure effective implementation in the field. Ecological-continuity issues must be hard-wired into territorial-planning systems and sector policies. *“All public policies must be mobilised to bring ecological networks to life. A TVB project must be ecologically functional in areas where stakeholders are present, but must also be economically feasible if it is to last”*, noted Arnaud de Lajartre, assistant professor at the University of Angers.

The first step is to integrate TVB issues in zoning documents, notably the local development plans (SCOTs) and the local urbanisation plans (PLUs). In the Volcans d’Auvergne Regional Nature Park (PNRVA), almost one-third of the

150 towns has not yet set up a SCOT, a PLU or a PLUi (intermunicipal plan). That is why, in preparing the new park charter (2013-2025), great importance was placed on accompanying urbanisation projects in order to ensure the inclusion of TVB issues. To that end, the Rural zoning workshop (ARU) was created in 2012 and is now a technical partnership with some fifteen members. *“The objective of ARU is to participate as early as possible in the preparation of SCOTs and PLUs with elected officials and to make as much progress as possible in diagnosing ecological continuity”*, stated Jérémy Papin, policy officer at the PNRVA. In addition to ARU, the Park also prepared two important instruments, a guide drafted with the elected officials and informational guidelines titled “The Park’s Point of View”. The latter, prepared whenever zoning documents are drafted or revised, present the ecological and landscape issues *via* analysis and maps.



Correct TVB implementation requires that the local governments, but also the economic players accompany the process. In the Mauges area, the SW part of Anjou, the greater part of the TVB-designated land is used by farmers. The Mauges intermunicipal board and a number of partners have set up projects in the field in addition to their communication efforts. A diagnosis, offered to volunteering farmers, is drafted jointly to take into account the farmer's operating methods and constraints. *"On the basis of this diagnosis, a number of proposals are made, including some concerning the relation between trees, agricultural production and biodiversity"*, mentioned Yves Gabory, director of the Hedgerow project and former president of AFAC-Agroforesterie (French association for agroforestry). The proposals (planting and restoration of hedgerows, agroforestry, creation of ponds) must then be accepted by the farmer. A number of lessons may be drawn from this approach, notably that among the proposals, those concerning trees are well received by farmers, *"but the diagnosis, carried out for the entire farm, results in actual change only in very limited areas. There is very little modification in the farmer's work habits"*, observed Yves Gabory.

For the economic stakeholders, certification is a further means to gain approval and implementation of TVB-related measures. *"The landscape attracted the attention of the industrial companies, but they were more familiar with the idea of certification, notably for ISO 14001², than with the concept of biodiversity"*, said Vincent Daön, director of the management board of the Salaise-Sablons port, which manages INSPIRA³. On the 340-hectare site in the Isère department, an ecological corridor was listed in the SRCE and had to be taken into account in the future development of the zone. *"Inspira will be certified ISO 14001 and/or EMAS⁴ in order to work on the measures and their follow-up. There also need to be discussions so that the stakeholders, involved in this with us since the drafting of the SRCE, stick together so we can make progress on reconciling industrial development with the environment"*, explained Vincent Daön during the symposium.

² ISO 14001 is an international standard for environmental management.
³ INSPIRA, Multimodal and responsible industrial area.
⁴ Eco-Management and Audit Scheme (EMAS) is a voluntary environmental-management scheme developed by the EU.



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Using all available means to make TVB viable

To ensure the success of TVB, the full range of existing instruments must be employed. For example, the network can be set up on the basis of a contract where commitments are voluntary (agri-environmental measures)

Yves Gabory, director of the Hedgerow project and former president of AFAC-Agroforesterie (French association for agroforestry)

Today, there are not enough TVB-assessment tools intended for farmers, such as the ECB tool (protected wooded areas). We must develop tools that are both flexible and protective of nature, and devise them with farmers. The latter see TVB projects as a cost in terms of time, money and work. There are also benefits, but they are more difficult to assess and to make tangible. For example, maintaining hedgerows contributes to protecting cattle from spring storms, thus limiting respiratory illnesses in the herd. But how can that benefit be calculated and how can the farmer check the data? What we do know is that each increase in biodiversity provides greater benefits for farms and for the bottom line.

or land purchases. Each instrument corresponds to a specific type of issue, but they may be combined to make the most of the TVB network. In the Seine-et-Marne department, several instruments were mobilised for the TVB network, including the natural areas managed by the department and the towns, the departmental plan for walking and hiking trails (PDIPR) intended to preserve rural paths (6 000 kilometres registered in the Seine-et-Marne PDIPR) and ecological-management techniques (late mowing and no plant-protection products) along the 4 500 kilometres of departmental roads. *"In the framework of the PDIPR, voted in 2013, the department provides the volunteer local governments with subsidies that depend on ecological criteria to promote biodiversity"*, noted Olivier Renault, from the Seine-et-Marne department. A number of cross-cutting measures are also implemented, thanks to an *"analysis of almost 280 PLUs over the past three years in view of incorporating more biodiversity in general and more TVB in particular"*, added Olivier Renault.

Farther to the west, the Angers-Loire-Métropole urban area decided to use an Agenda 21 for biodiversity, a new instrument voted in 2014, to mobilise energies. *"The agenda, prepared with an array of partners, is linked to several public policies, including territorial development, higher education, land management, economic development, research, etc."*, explained Elisa Payen, policy officer for sustainable development at Angers-Loire-Métropole. It comprises 60 measures in a wide range of fields, including four that



refer specifically to TVB, such as mapping and informing on fragile TVB areas, and preserving and restoring the main plant communities in the local area. Finally, a further example was presented during the symposium, namely the Landscape and biodiversity plan. The plan was developed during the revision of the Haute Vallée de Chevreuse Regional Nature Park charter. It is above all a planning instrument designed to assist towns in taking into account landscape and biodiversity issues. It is based on the diagnosis established by the Park that was also used in drafting the SRCE. *“On the scale of each landscape unit, a number of map showing various components (nature, farming, urban areas, travel, etc.) are compared to other*

maps focussing on the issues involved for aspects that must be preserved or restored. Then on the cadastral-unit level, guideline maps present the resulting issues and propose realistic development plans”, indicated Marion Doubre, from the Haute Vallée de Chevreuse Regional Nature Park.

Establishing monitoring and assessment indicators

Whether they are promoted by planning documents, contractual management or subsidies, measures in favour of TVB

networks must be assessed, notably to make adjustments while ensuring the continued approval of stakeholders. The assessment must not only check the consistency and effectiveness of the procedures, it must also assist in later making strategic decisions and in clarifying responsibilities. However, the effort to assess the specific effects of the public policy raises a number of difficulties in terms of the techniques and methods employed, particularly given that the task of isolating the economic, social and cultural benefits is complex. In addition, in that TVB policy is relatively recent, any analysis on its effects currently addresses the relevance and consistency of the measures rather than their effectiveness. *“The difficulty in mixing time horizons must also be taken into account. An elected official is in office for six years, a tree is not yet adult even after 30 years”*, added Emmanuel Cau, VP for territorial, environmental and climate planning in the

Dominique Vollet, Science and technology research institute for the environment and agriculture (Irstea)

An assessment of public policy is generally based on four main criteria, namely relevance, consistency (internal and external), effectiveness and efficiency. For example, an analysis of the coordination between TVB and other policies attempts to determine the external consistency. There are three main steps in an assessment, where the first concerns organisational factors. Why should the assessment be carried out and for whom? What resources are employed? Secondly, it is necessary to clarify the effects to be assessed, by limiting the field of observation and/or by comparing data. Finally, it is strategically worthwhile to communicate, thus ensuring dissemination and awareness of the assessment on the part of the beneficiaries, policy makers and the general public.

TVB, an element in the ITTECOP research programme

TVB is a topic in a number of research projects targeting applied and operational results. In the framework of the ITTECOP (Infrastructure of land transportation, ecosystems and landscapes) programme, approximately 30 projects addressing the relations between landscapes, infrastructure and biodiversity were selected. Among these projects, Graphab run by the THEMA lab (Theory and models for development) in Besançon, produced a method and open software used to estimate the impact of large transportation infrastructure projects on species distribution. Depending on the infrastructure impacting continuities, *“it is important to establish the hierarchy of the entire ecological system in order to detect the fundamental connection nodes in the networks and work on them. These decision-aid tools are of use for analysis and for discussions among stakeholders”*, explained Yannick Autret, from the Research and innovation directorate of the Ecology ministry.

Nord-Pas-de-Calais region. Because a TVB comprises different measures and spatial units, it is essential to correctly identify and select the indicators. "Approximately 60 national indicators published by ONB currently cover the vast policy area of the National biodiversity strategy. But each region has its territorial issues and specific aspects", noted Luc Mauchamp, project manager at the National biodiversity observatory (ONB). It is therefore indispensable to precisely list the monitoring and assessment objectives, before selecting an indicator among the existing or creating new ones. For example, one ONB indicator has revealed that outlays in favour of biodiversity have continuously increased, particularly in the regions, a fact that is not widely known. "However,

Patrick Moquay, National higher school for landscape (ENSP) Versailles-Marseille

Several lessons may be drawn from this day of discussions. We note increasing awareness of elected officials concerning biodiversity and the environment, but a great deal remains to be done. Awareness levels vary significantly among elected officials. Very often, it is through an indirect approach that we can initiate the process and a discussion on TVB and biodiversity. References to the landscape and living conditions can incite our contacts to look into these issues. Finally, we must convince elected officials and the best way to convince is through examples. The dissemination of good practices, project feedback and reference data is indispensable to obtain their commitment.

our knowledge has not progressed sufficiently, contrary to management and engineering aspects", indicated Luc Mauchamp.

Facilitate transfer of research results

It is essential that policy makers bring researchers into the process as early as possible. "Decisions in environmental matters, whether on the national or local level, must be based on scientific knowledge. That is fundamental because it is the only way to justify decisions and avoid refusals", said H el ene Soubelet, head of the Biodiversity and environmental sustainable management mission at the Research and innovation directorate of the Ecology ministry. But, "if elected officials must open up to research, the reverse is also true", indicated Emmanuel Cau, adding that research teams must become more multi-disciplinary and cross-cutting in order to enhance discussions between scientists and elected officials. What is more, in that scientific results are not always easy to understand, there is a real need for relays. For example, naturalist associations can provide the necessary mediation by presenting and illustrating the research topics and the possible applications to economic stakeholders and elected officials.

Efforts must still be made to improve knowledge and transfer the results to the field, in the framework of multi-disciplinary processes. Because, as underscored throughout the discussions, establishing TVB networks and instilling biodiversity around the country requires the cross-cutting involvement of all stakeholders. ■



(c) Thomas Schwab - Onema

For more information

TVB resource center:
www.trameverteetbleue.fr

Presentations pertaining of the workshop:
<http://www.trameverteetbleue.fr/vie-tvb/agenda/seminaire-comment-mobiliser-action-publique-pour-mise-oeuvre-trame-verte-bleue>

Onema MEETINGS



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