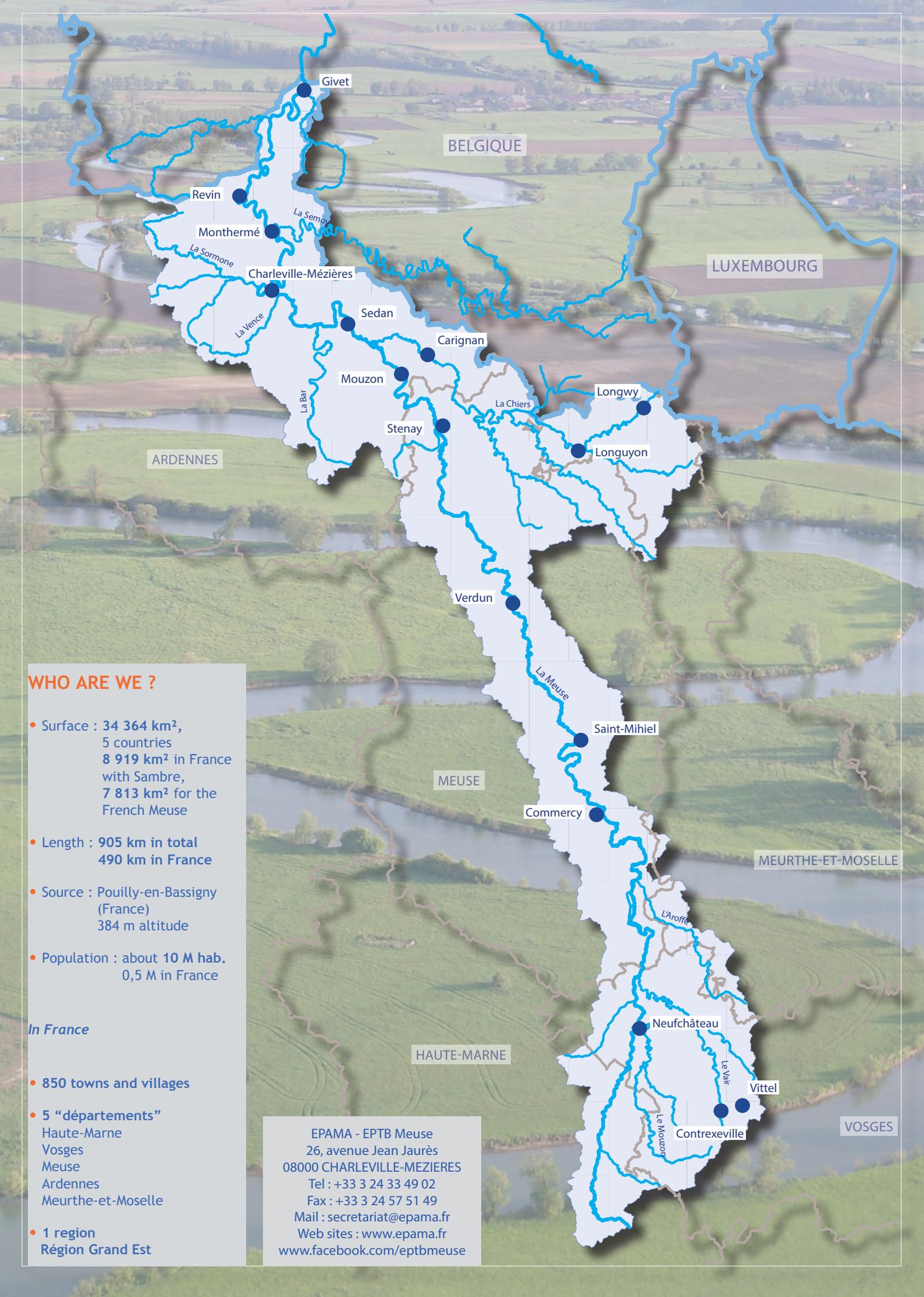


Établissement Public Territorial
du Bassin de la Meuse

FIELD VISIT - THE FLOOD DYNAMIC SLOWING AREA AT MOUZON, FRANCE

Tuesday, 10 September 2019





WHO ARE WE ?

- Surface : 34 364 km²,
5 countries
8 919 km² in France
with Sambre,
7 813 km² for the
French Meuse
- Length : 905 km in total
490 km in France
- Source : Pouilly-en-Bassigny
(France)
384 m altitude
- Population : about 10 M hab.
0,5 M in France

In France

- 850 towns and villages
- 5 “départements”
Haute-Marne
Vosges
Meuse
Ardennes
Meurthe-et-Moselle
- 1 region
Région Grand Est

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L'EPAMA-EPTB MEUSE, AN ACTOR FOR FLOODS PREVENTION AND PRESERVATION OF AQUATIC ENVIRONMENTS

EPAMA is a public organization that studies, defines and implements concerted flood prevention actions in the whole French watershed of the river Meuse. Our mission is to bring together the local authorities concerned by this problem. The sustainable management of the water resource and the preservation of aquatic environment and biodiversity are also very important missions.

Solidarity between the actors is the basis for our work. From the beginning in 1996 the importance of connecting with all the countries bordering the Meuse and fostering exchange at European level is part of EPAMA's identity.



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The stakes :

- ◆ maintenance and restoration of Meuse and tributaries
- ◆ preservation of aquatic environments and wetlands
- ◆ reducing the risk of flooding
- ◆ federation of stakeholders in the catchment area around projects to preserve aquatic environments and prevent flooding
- ◆ information, awareness building and communication with elected officials, technicians and the general public
- ◆ implementation of enhanced governance
- ◆ improving water and aquatic environments quality

Our missions :

- ◆ conduct studies to improve knowledge of the hydrological and hydraulic functioning of rivers and their associated aquatic environments
- ◆ reduce the risk of flooding and improving aquatic environment
- ◆ improve flood forecasting in association with government services
- ◆ develop actions to prevent floods and raise awareness concerning integrated water management
- ◆ advise and provide technical assistance to members and stakeholders
- ◆ develop a technical network
- ◆ contribute to the sustainable development of the international basin

ARDENNES FLOOD CONTROL PROGRAM

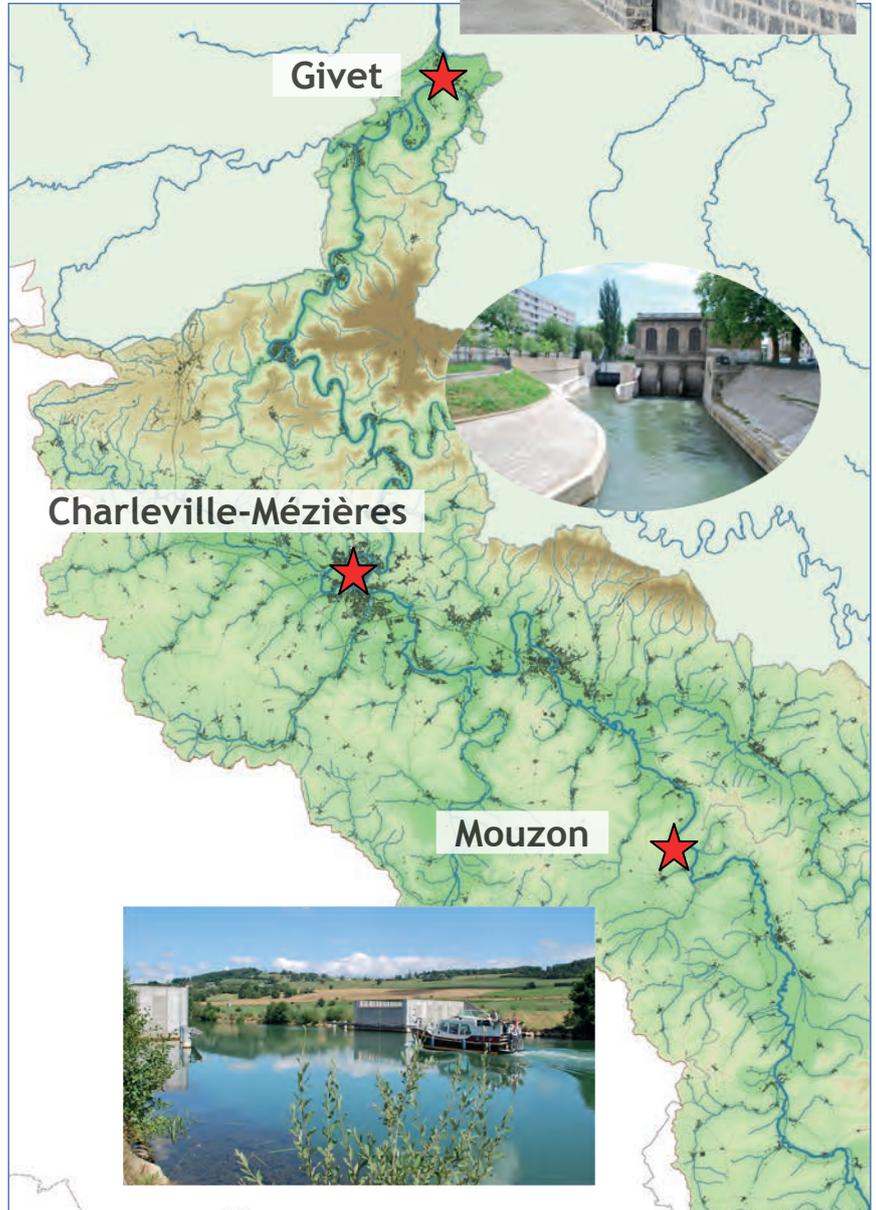


Development of a global flood management strategy for the French Meuse

First step : realization of the strategy concerns the building of local protections in Charleville-Mézières and Givet as well as the construction of a dynamic flood slowing area upstreams at Mouzon.

Choice of location and size of the dam are the results of several local constraints.

The dam had to be as close as possible to the city Mouzon in order to obtain a maximum of storage capacity and thus a maximum of efficiency. But also minimize effects on fauna, flora and economic activities inside the storage area.



| Operation | Cost (M€) |
|-----------------------------|-----------|
| ZRDC de Mouzon | 8.9 |
| Charleville-Mézières, Warcq | 31 |
| Givet | 33 |

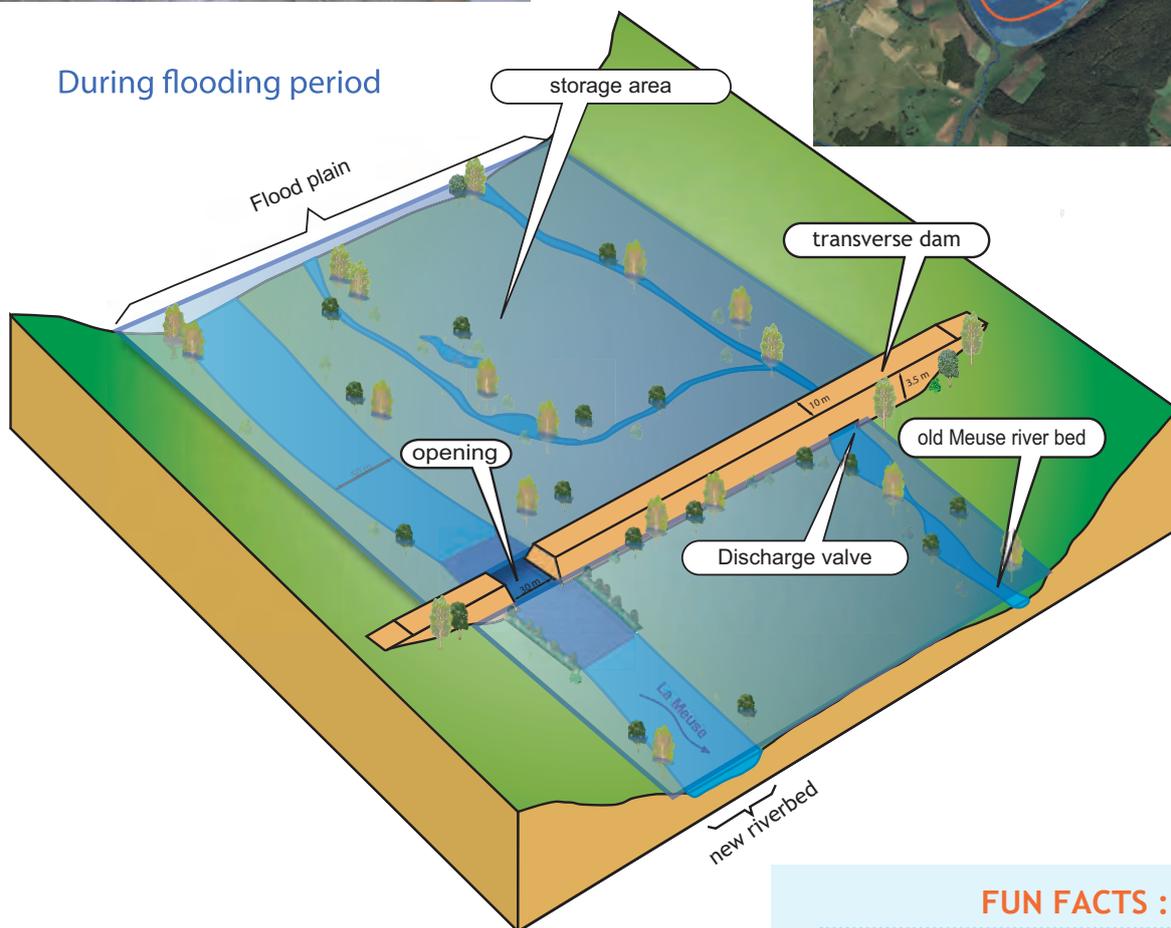
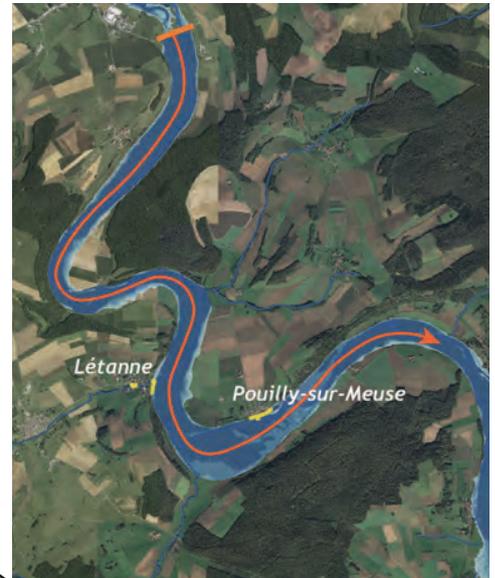
In 1995, heavy rainfalls were the reason for an exceptional flood event along the Meuse. In only 18 days the equivalent to the usual rainfall of December + January arrived at the ground (200 mm). The return period of this flood was 10 years in Saint Mihiel, 20 years in Stenay, between 50 and 70 years in the Ardennes.

The estimated flood damage on the French Meuse was 230 million euros (today this would be 320 million euros).

For comparison : the flood on the river Seine in June 2016 was 1.2 billion euros.



FLOOD DYNAMIC SLOWING AREA



During low flow and normal hydraulics conditions, the river will only flow in the minor bed, through the opening, without impacting the upstream water level.

For frequent floods, the main flow will remain in the minor bed through the opening while another one will outflow in the old Meuse river through the discharge valve.

For rare events, up to a 100-year floodplain, the valve will be closed and the river will only be allowed to go through the opening. This will allow our hydraulic structure to store up to 3 Mm³ of water.

For extreme events, beyond the 100-year floodplain, the water will spill over the dam without damaging it thanks to the riprap downstream, hidden under the vegetative cover.

FUN FACTS :

- 1 Length : 530 m
- 2 Height : 4.1 m from the ground, 6 m from the lowest river point
- 3 Width : 15 m on the ground, 10 m on the top of the dam
- 4 Volume : 5700 m³ of soil and 16200 m³ of rock
- 5 Overstock capacity : 3 million m³ of water
- 6 Frequency of operation : between a 2-year and 10-year flood
- 7 Influence : 11 km upstream

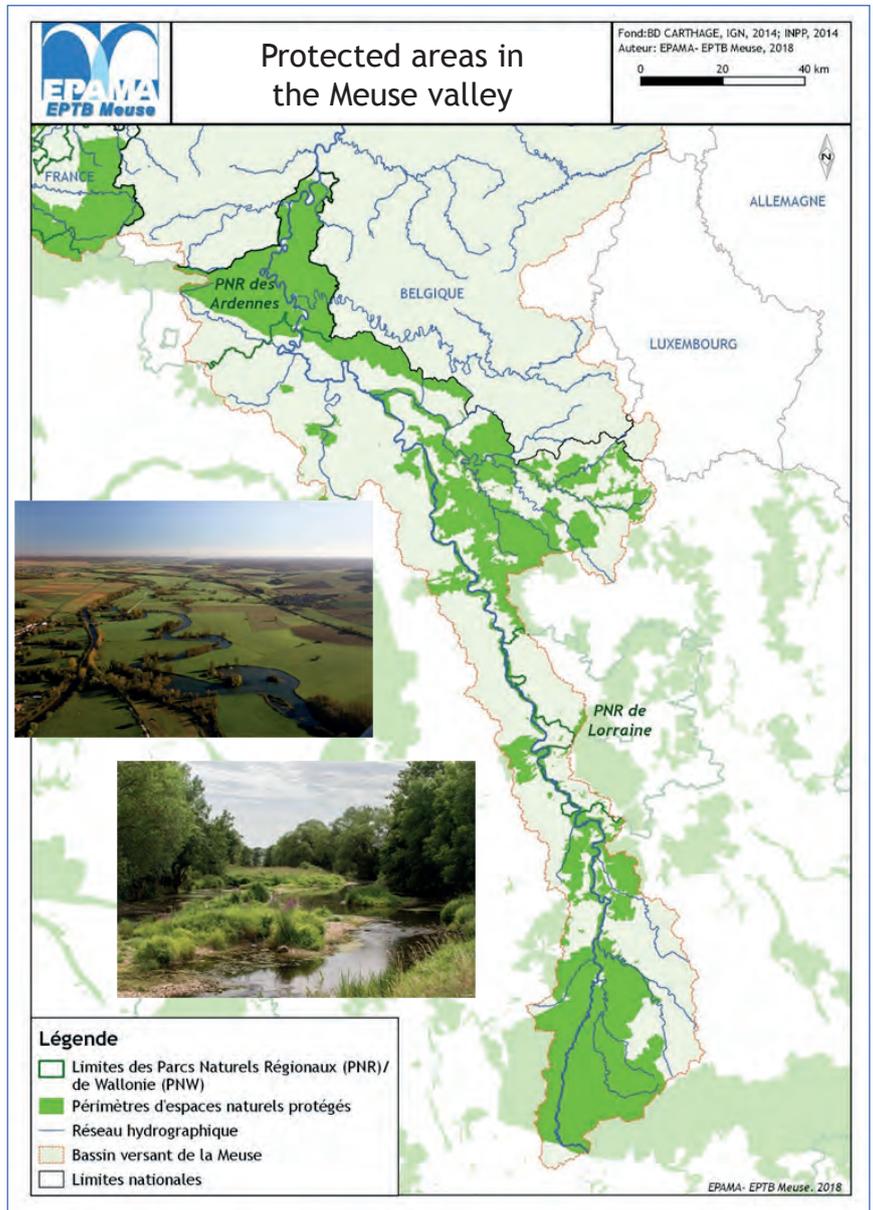
ENVIRONMENTAL MONITORING



Environmental monitoring

The French Meuse remained partly wild and the Meuse valley presents a large diversity of landscapes. For example, 200 species of birds live here like Royal Milan and European Kingfisher. As many others, they are living in these areas of meadows, hedges and wetlands. Many other rare, threatened or fragile species live along or in the river, such as the European Beaver, Pond Loche or the Tree Frog. But the flora of the Meuse valley is also particularly extraordinary. Many of these plants are protected, some grow only in wetlands (Stellaire officinale or Mint pouliot).

With the construction of the slowing area, EPAMA started monitoring the environmental impacts of this development on biodiversity. Today this is an opportunity to know more about biodiversity.



Did you know it? Biodiversity at all times!

Meuse is the second oldest river in the world! It would be 320 to 340 million years old. It cuts the «Ardennes massif», a chain of mountains that was formed with the appearance of Pangea. There are also fossils of Mosasaurus, literally Lizard of the Meuse, a marine carnivorous reptile 8 to 15 meters long that occupied the valley 70 million years ago.



CONSTRUCTION IN PROGRESS



SOME PICTURES OF THE ACHIEVEMENTS

