Degree of river fragmentation & flow regulation
2019: Worldwide more than 48,000 large dams (> 15 m high)

France 500 large Dams

Rate of Large Dam Construction

- Out of Europe (China not complete)
- Europe (continent)
- Renewal of concessions (licence)

Number of Dams

- <1900
- 1910s
- 1930s
- 1950s
- 1970s
- 1990s
Dam removal history

First Removals of large dams

1996-98 France
- Kemansquillec dam, Léguer River, Bretagne (Côte d'Armor), 15 m
- Saint Etienne de Vigan Dam 17m (Loire Allier)
- Maison rouge dam 5 m, 200m long (Loire Vienne)

1999 USA
Edwards Dam, Kennebec River, Maine
Ward Paper Mill Dam, Prairie River, Wisconsin

All of them for Salmon restauration and safety reasons
Dam Removal history in France Part 1

1986. Loire Vivante / Living Loire campaign. First appearance of the river restoration idea in France.

1994 in the framework of the « Plan Loire Grandeur nature », The new approach to manage a river basin (1/5 of the size of France), after the 7 year long powerful « Loire vivante » campaign, the French government decided to stop the construction of large dams and to remove 3 larger dams.

1996 - 1998 Removal of 3 large dams:
- **Kermansquillec dam**: First known large dam dismantling in Europe? Built in 1920 on the Léguer river, energy for a paper mill. 15 meters high, 110 m long. 12 ha of the Léguer valley drowned. 200,000 tons of mud behind the dam. 7 ha now used for organic agriculture (cattle). Steady return of the Salmon.
- **Maison Rouge dam**: 4 m high. Built in 1923. 35 km of rivers up the dam freed for migration, habitats, reproduction. Remarkable recovery of the shad, lamprey populations. 30,000 tons of sediments behind the dam slowly going downstream.
- **the Maisons Rouges dam**: Vienne and Creuse confluence. 4 m high. Built in 1923. 35 km of rivers up the dam freed for migration, habitats, reproduction. Remarkable recovery of the shad, lamprey populations. 30,000 tons of sediments behind the dam slowly going downstream.
- **the St Etienne du Vigan**, dam, Upper Allier 10 m. 2 GWh.
A severe artificialisation of the French Rivers,

**Fagmented hydrosystems.**
A national date base.
At least 80 000 structures, among them tens of thousands of small dams (mills), weirs and other works accross our watercourses.

- 10% : economical use.
- 4% : devices (fisladders) for fish migration
- 2500 hydrodams.

*Map by the Onema, Office National de l’Eau et des Milieux Aquatiques (National Agency for Water dans Aquatic Habitats):*

**Important biodiversity losses. E.g. migratory fishes.** On the Loire basin, from 100 000 salmor on the Loire in the XVIIIe century to 100 end of the eigthies.
2009  Setup of a french policy to establish the ecological continuity (PARCE Project, first step: 1200 obstacles)   including a legal and financial framework
2009  Official decision to remove the large dams on the Sélune river (37 m)

2010  Signature of the ‘Convention for sustainable Hydropower (including dam removal)
2012  Opposition against small dam removal starts to be organised
2015  ERN is Cofounding Dam Removal Europe
2017  Start of the partial removal of the Poutès dam (from 17 m down to 3.8 m with fully removable gates (open during 3 months/year)
2019  Removal of the 37 m high Vézin dam on the Sélune River (Normandie)

Today more than 2500 small and large obstacles has been removed in France
Restauration de la continuité écologique sur le bassin de l’ORNE (début 2020 : 40 effacements)

Bonn – Sept 2019  

Roberto Epple  ERN  

Renaturieren durch Rückbau
Restauration de la continuité écologique sur le bassin de l’ORNE (40 eff./ + 152 km)

Lineaire libre :
- 1980 : 24 km
- 2017 : 177 km
+ 152 km
Location of Removed large dams in the Loire river Basin 1996-2019

- Kermannquillec Dam
- Maisons rouge Dam
- Blois Dam
- Saint Etienne de Vigan Dam
- Fatouh and Brivees Charensac dam
- Poutès dam
1996, removal of the Kernansquillec dam, in Brittany
Saint Etienne de Vigan dam, Allier River (Loire tributary), Central Massiv in France, 17 m

Copyright SOS Loire Vivante
Saint Etienne de Vigan dam, 25 June 1997 17h00
6 months later
Liberté, Égalité, Dam Removalité!
Le projet Nouveau Poutès : une démarche collaborative

Un conflit de près de 20 ans, puis…
Post Grenelle de l’environnement, une concertation réussie entre l’État, les associations de protection de l’environnement, les élus locaux et EDF

Avec la participation de

pour un projet de reconfiguration qui concilie les enjeux environnementaux et la production d’hydroélectricité

avant / après
PROJET POUTES

Transparence par effacement complet de l'ouvrage
90 jours /an pour la montaison et en crue pour les sédiments

85% de production d'énergie préservée

Une retenue quasiment supprimée (vol. divisé par 25)

3 ans de travaux

Avec la participation de
Largest dam removal in Europe: the 36 m high Vézin dam (2019), Sélune River, Normandy
Vezin dam (Sélune River) September 2019
Good feeling, isn’t it?
Primary Reasons for Dam Removal

1) Ecological Restoration
   - Restoration of resident and migratory fish passage
   - Improved water quality (DO/temperature)
   - Natural sediment release and transport
   - Restoration of riverine vs. reservoir environment

2) Safety Concerns
   - Eliminate threat of dam failure
   - Eliminate potential loss of life

3) Economic Reasons
   - Eliminate dam owner liability  Cost-Effective
Five key ingredients for a successful dam removal

1) Legal trigger/leverage
2) Ecological and/or social benefits
3) Community support
4) Funding
5) Passion and perseverance