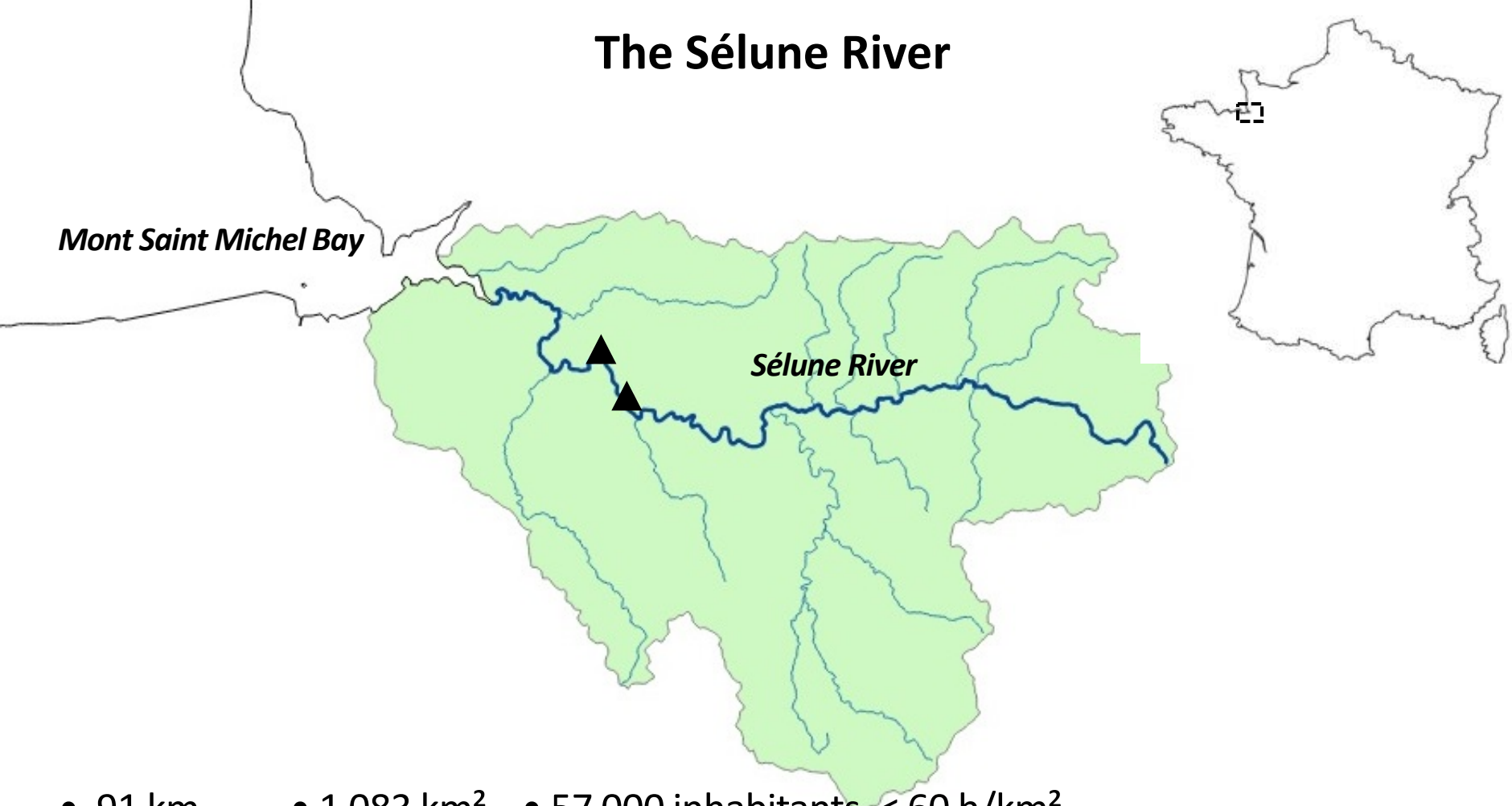


# **Dam removal on the Sélune River (France): Implementation of the ecological restoration project**

Stéphane Fraisse, Jean-Luc Baglinière & Jean-Marc Roussel

Ecology & Ecosystem health lab  
UMR 0985 INRA-Agrocampus Ouest,  
FRANCE

# The Sélune River



- 91 km
- 1 083 km<sup>2</sup>
- 57 000 inhabitants, < 60 h/km<sup>2</sup>
- rural watershed
- Mont Saint Michel Bay
- 7 diadromous species (Atlantic salmon, Sea Trout, European Eel, River and Sea Lamprey, Allis and Twait Shad)



# Two hydroelectric dams

*Mont Saint Michel Bay*

*Sélune River*



*La Roche-Qui-Boit Dam*

Built in 1916,

height: 16 m, wide: 125m

Impoundment: 0,3 km<sup>2</sup>

Owned and run by EDF







© La Gazette de la Manche

**La Roche-qui-Boit Dam**



# Two hydroelectric dams

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*Vezins Dam*

Built in 1932,  
height = 36 m, wide: 278m  
Impoundment: 1,5 km<sup>2</sup>  
Owned by the State, run by EDF





**Vezins dams**



# Two hydroelectric dams

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Built in 1932,

height = 36 m, wide: 278m

Impoundment: 1,5 km<sup>2</sup>

Owned by the State, run by EDF

annual energy production: **27 GWh**  
~ **15,000 inhabitants**

# IMPLEMENTATION OF THE RESTORATION PROJECT

## Rebuilding paths of dialogues

*Germaine, M.A. and Lespez L. 2017. Water Alternative*

### Conceptual framework: ANT (actor network theory) approach

#### Methodology

##### Participant – observation

Workshop attending :

- local politicians and residents

- technicians

- technical and steering committee

- public meetings of the friends of the dams

##### Press analyses

##### Semi-structured interviews

(elected officials, NGO members, river managers and recreational infrastructure managers)





# IMPLEMENTATION OF THE RESTORATION PROJECT

## Rebuilding paths of dialogues

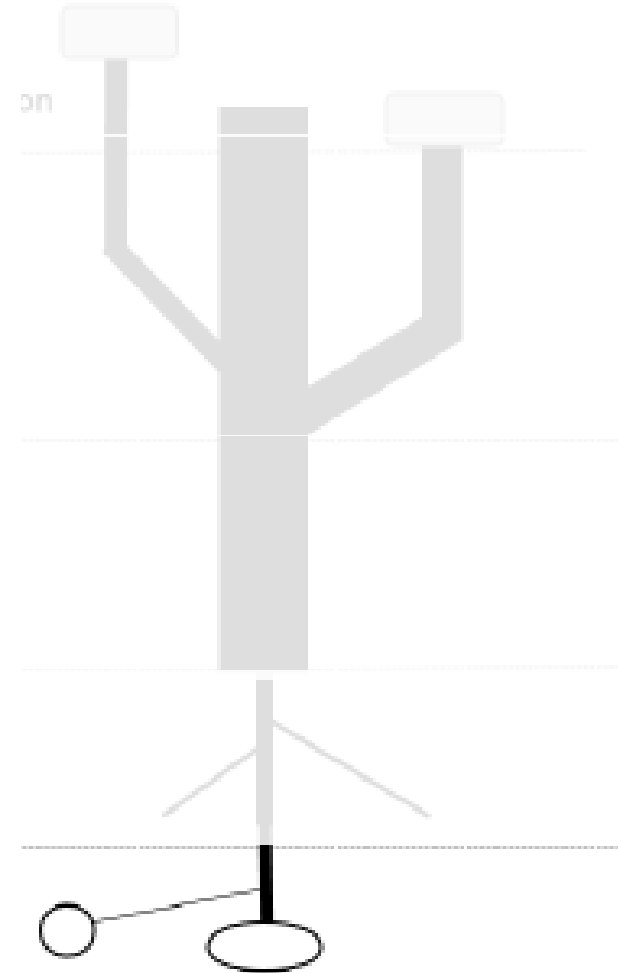
**The fruits** tangible results of the dialogue

**Branches** enlargement to other stakeholders

**The central trunk** reflecting an organized dialogue based on the identification of a common language and common values

**The Roots** network involved in the dialogue

**The seed** event which triggers the consultation



1- Environnemental crisis and and creation  
of a local collective in favour to dam removals

Drawdown of the lakes (1993)  
Release of 200,000 tons of sediments  
in the riverbed and floodplain



Advisory opinion in favour  
of dam removal (2005)

Local water commission (1997)

*network*

Migratory fishermen  
Seine Normandy water agency  
Farmers    EDF

Local politicians

*seed*

Draining of the lake (1993)



2- National events

Friends of the Sélune River 2011



Dam removal announcement (2009)

Advisory opinion in favour of dam removal (2005)

Friends of the Sélune

Grenelle environnement forum (2007)

Local water commission (1997)

Environnemental NGO  
network

Migratory fishermen  
Seine Normandy water agency  
Farmers EDF

Local politicians

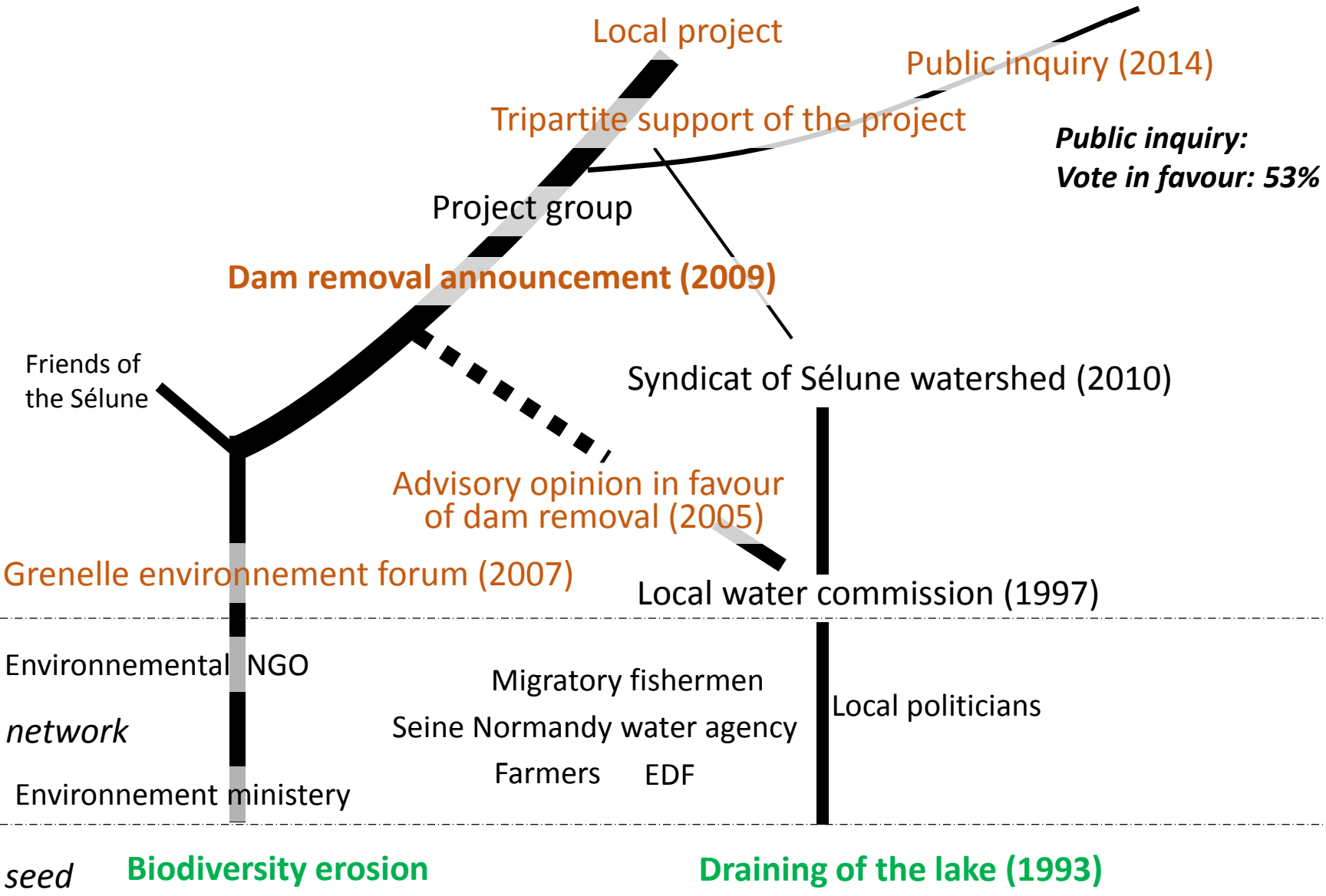
Environnement ministry

seed Biodiversity erosion Draining of the lake (1993)

3- Difficulties to remobilize the local actors

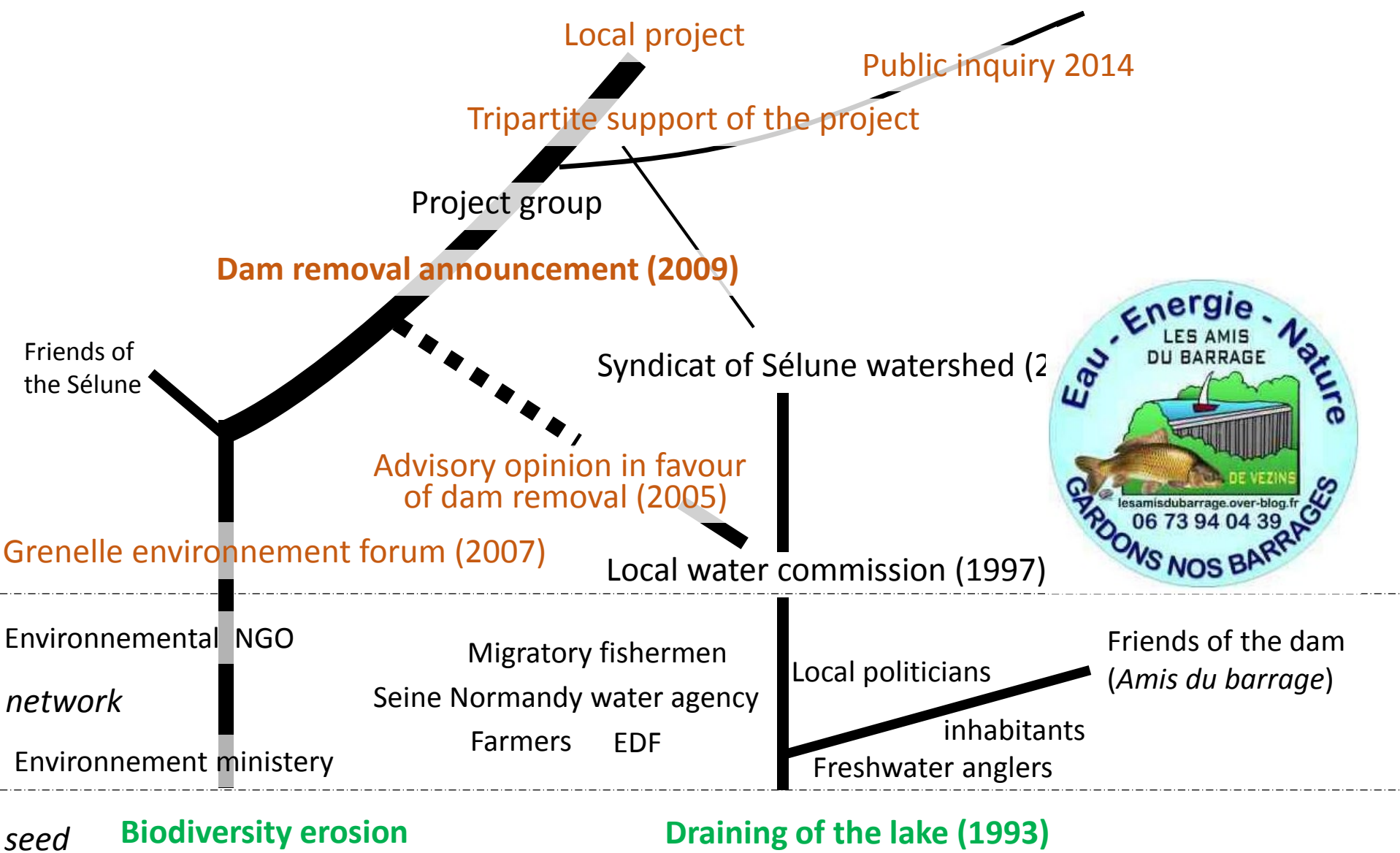
"environmental excellence"

"Integrating factors of local development"





4- The opposition to the removal of dams and lakes



# IMPLEMENTATION OF THE RESTORATION PROJECT

## The role of non human actors

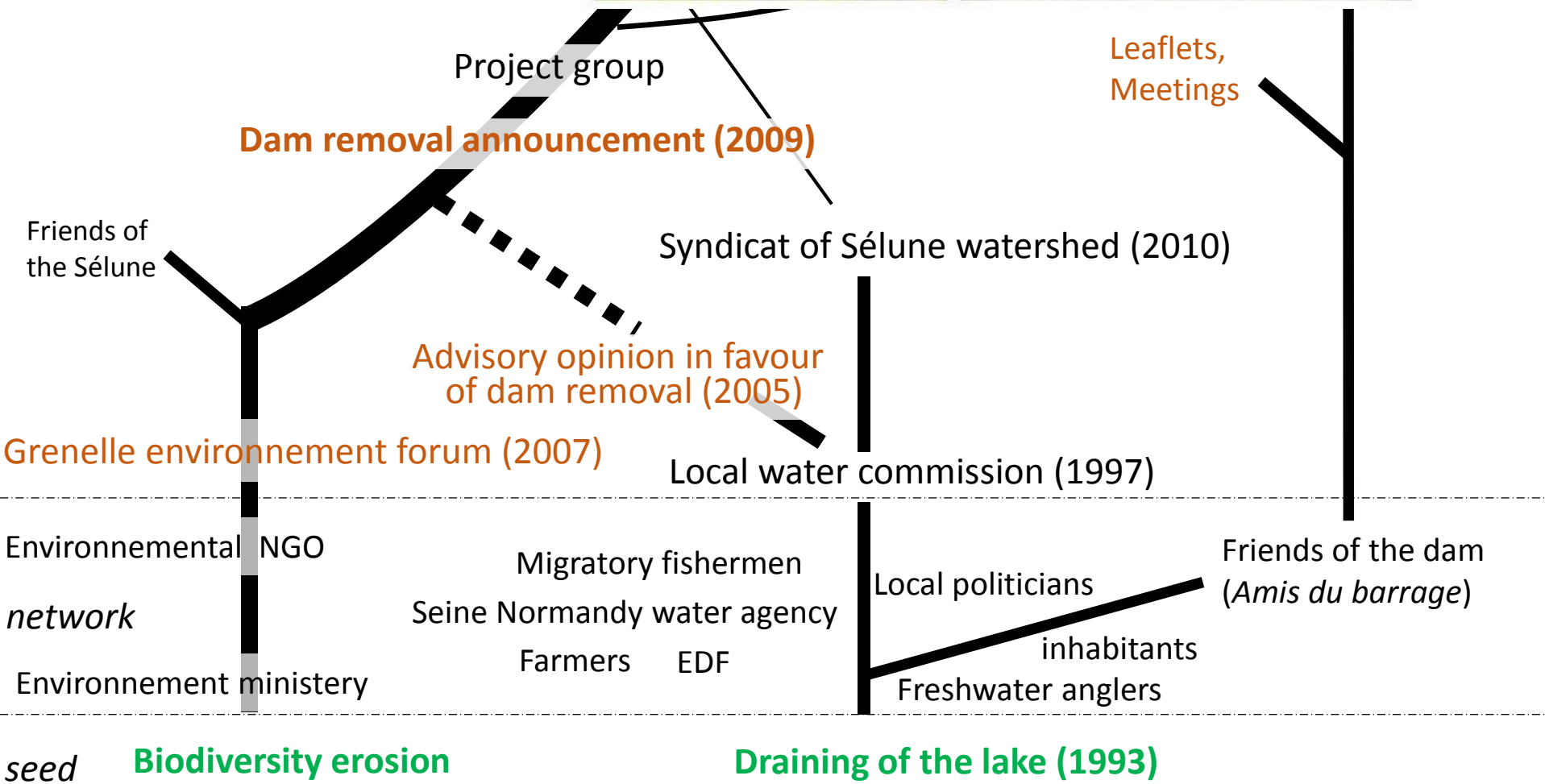
### Dams & lakes

- Recreational activities
- "Green energy"
- Size :
  - NGOs enrolments
  - studies by experts and scientists
  - high cost
  - experimental nature of the operation
- Ecologically friendly: prevent the pollution of the Mont Saint Michel Bay
- Flood protection





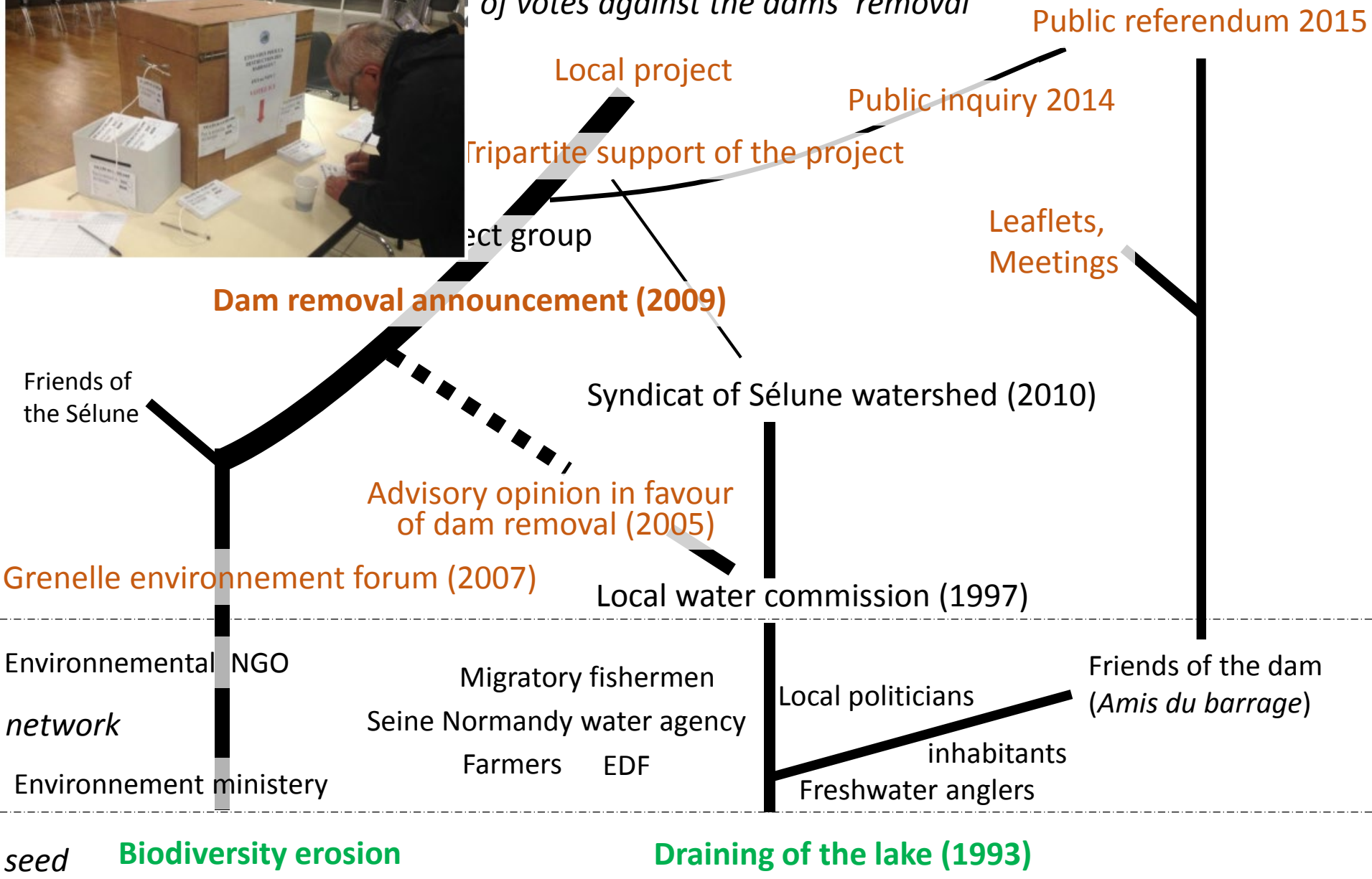
4- The opposition to the removal of



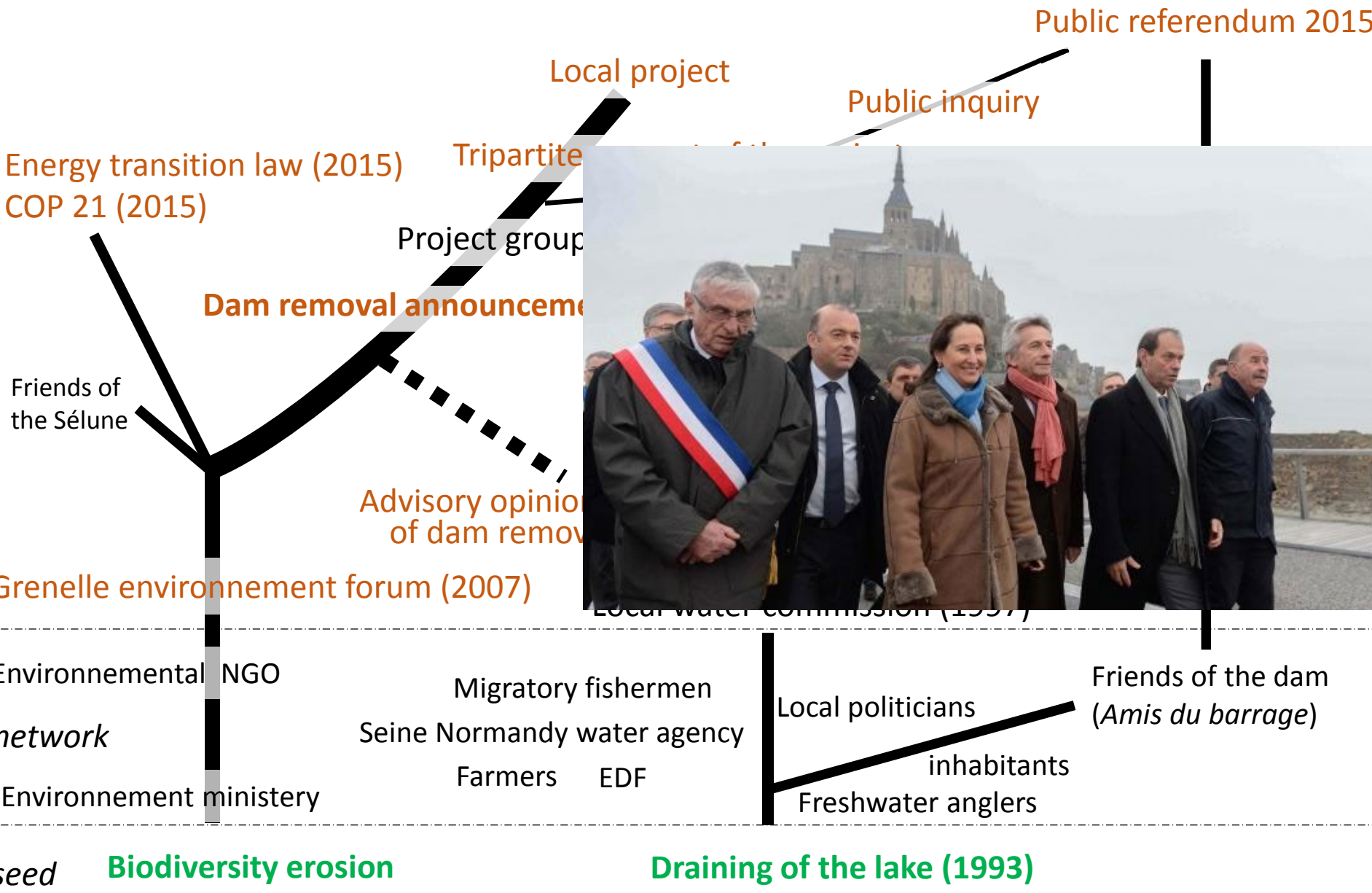
4- The opposition to the removal of dams and lakes



19,276 people had voted with 98.89% of votes against the dams' removal



4- The opposition to the removal of dams and lakes









Nov. 2017, N. Hulot :  
**DAM REMOVAL**

Draining of the lake  
Prefectorial order 2016

Public referendum 2015

Public inquiry 2014

Local project

Tripartite support of the project

Project group

Leaflets,  
Meetings

**Dam removal announcement (2009)**

Syndicat of Sélune watershed (2010)

Advisory opinion in favour  
of dam removal (2005)

Local water commission (1997)

Friends of  
the Sélune

Energy transition law (2015)  
COP 21 (2015)

Grenelle environnement forum (2007)

Environnemental NGO

*network*

Environnement ministry

Migratory fishermen

Seine Normandy water agency

Farmers EDF

Local politicians

Friends of the dam  
(*Amis du barrage*)

inhabitants

Freshwater anglers

*seed*

**Biodiversity erosion**

**Draining of the lake (1993)**

# IMPLEMENTATION OF THE RESTORATION PROJECT

## Social failure: why?

State inaction for 4 years → pro-dam campaign strengthened it self

No clear timescale for the project

Salmon: Overemphasized argument:

- Emblem used from people from outside the territory
- Local political leaders needed

Sélune project: too technical and too technocratic

*"In a debate which can't be restricted to one between expertise and local knowledge, translators are necessary"*





# The scientific program

## Main goals:

- ✓ *Restoration success*
- ✓ *Physical, chemical, biological & social processes*

## How?

- ✓ Long-term studies pre- & post removal
- ✓ Interdisciplinarity (4 research groups & a coordination group)

2012

-

2016

**BEFORE**  
**Initial state**

2017

-

2020

**Progressive drawdown  
(sediment management) &  
DAM REMOVAL**

2021

-

2027

**AFTER**



# The scientific program

- 100 scientists involved (21 labs)
- ~ 4,5M€ (funded by national agencies and institutions)

*Coordination group (National institute for agricultural research)*



*Human Sciences*



- 1) Social acceptance
- 2) Land and river uses and perceptions

*Landscape & Riparian vegetation*



- 1) Landscape/agriculture & biodiversity interactions
- 2) Recolonization of river banks

*Hydrogeology and Geomorphology*



- 1) fluxes
- 2) impacts on geomorphology and aquatic habitats

*Aquatic communities*



- 1) aquatic communities
- 2) trophic web

# The scientific program

**Steering comitee**  
(INRA, EDF, Water Agency, State,  
Fishing national federation)

**Scientific comitee**  
(External scientists)

*Coordination group (National institute for agricultural research)*



*Human Sciences*

*Landscape &  
Riparian vegetation*

*Hydrogeology and  
Geomorphology*

*Aquatic communities*



- 1) Social acceptance
- 2) Land and river uses and perceptions

- 1) Landscape/agriculture & biodiversity interactions
- 2) Recolonization of river banks

- 1) fluxes
- 2) impacts on geomorphology and aquatic habitats

- 1) aquatic communities
- 2) trophic web



# The scientific program

## Implementation of an observatory: monitoring of environmental parameters

- Diadromous fish
- Crayfish (invasive and native sp)
- Macroinvertebrates
- Riparian vegetation
- Chemical parameters
- Sediment fluxes





Thank you for your attention



<http://selune-river-restoration.inra.fr/?lang=fr>

