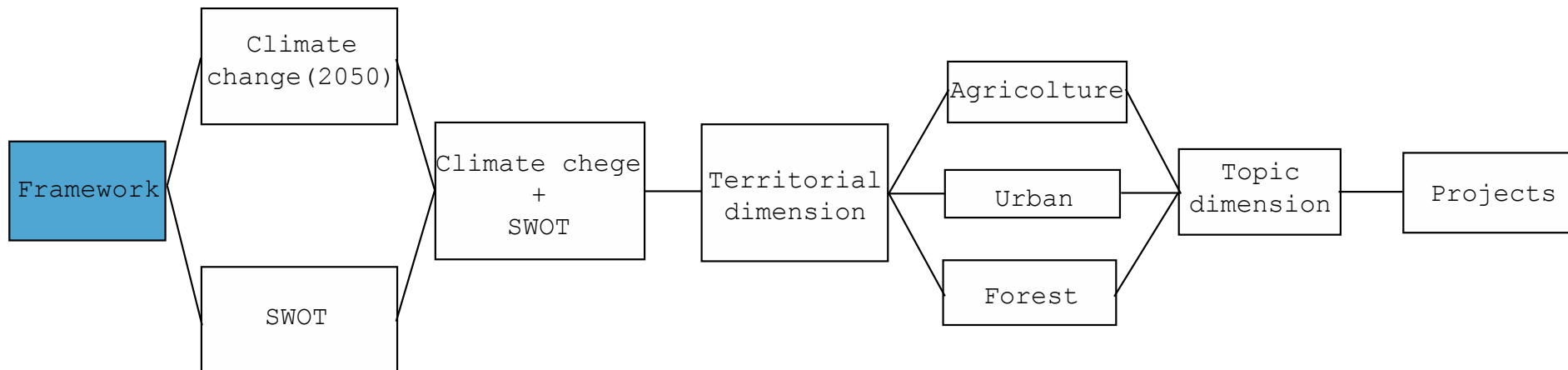
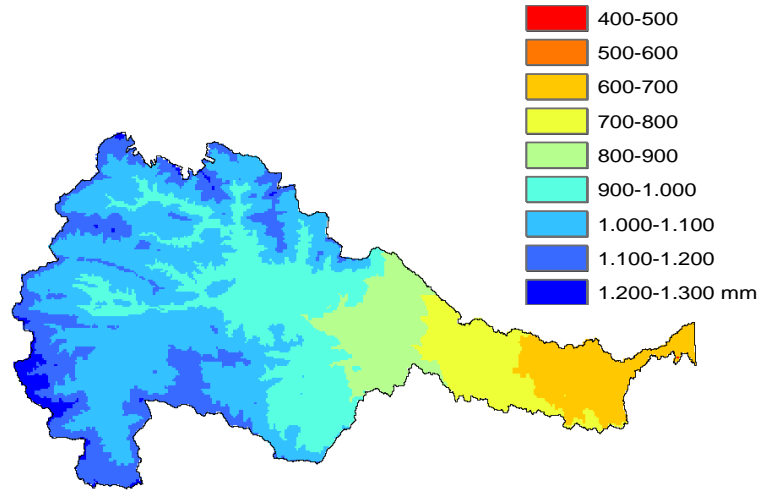




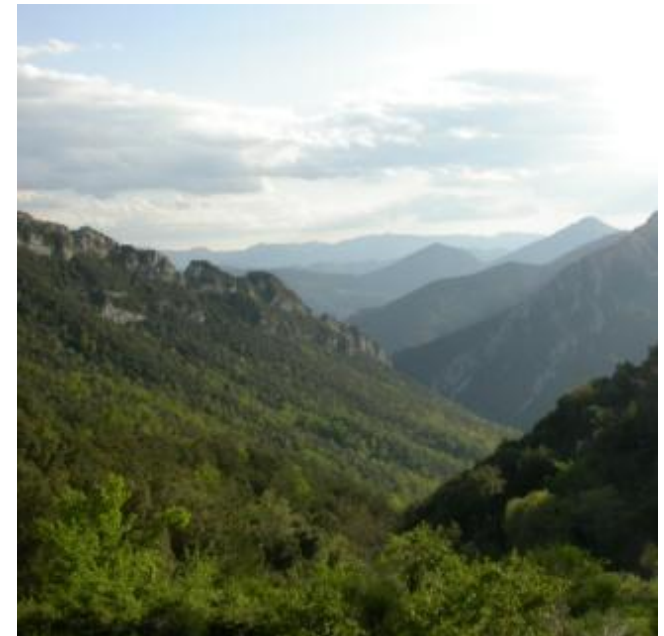
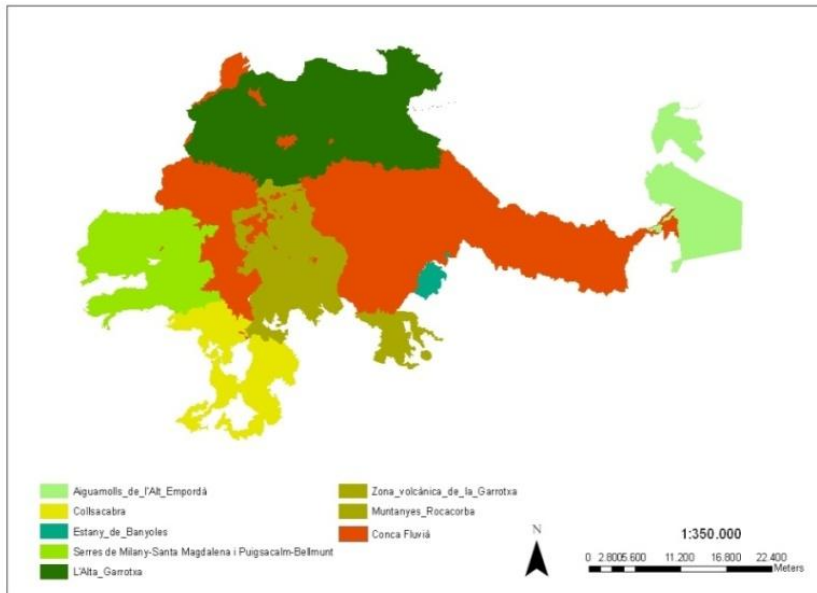
## Fluvià River: A Landscapes Connector

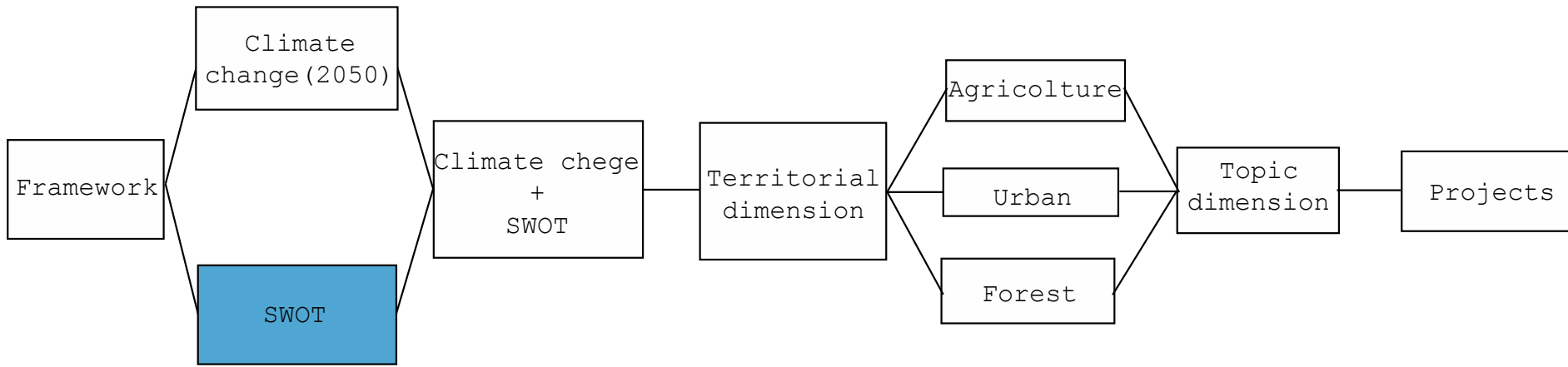


# STUDY AREA: Fluvià river basin



- 97.589,34ha
- Forest: 62,89%
- 977 mm 13°C
- Urban areas, industry and infrastructures: 2,16%
- 8 protected areas





# SWOT Analysis

## Opportunities (external)

- Variation of the global trend tourism (from beach tourism to nature tourism)
- Development of infrastructures that serve as connecting with the main centers of Catalunya
- European policies and incentives on the use of renewable resources
- Regional policies for the protection and development of agricultural land
- Action and policies inter-comarcali

## Threats (external)

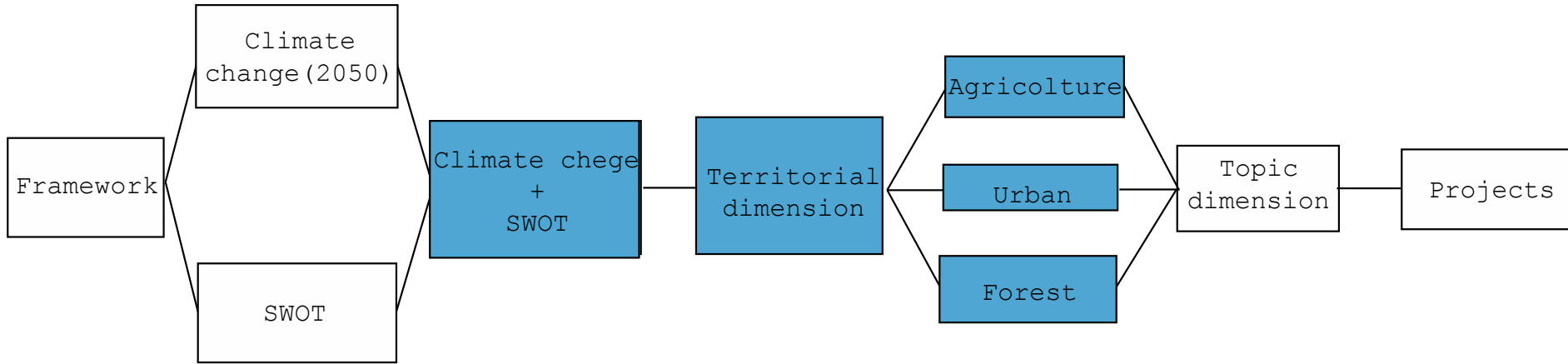
- Risk of failure to meet the energy needs
- European/Global economic crisis:
  - - Workforce emigration to other countries
  - - Abandonment of rural areas
- Regional marketing agency specializing in the coastal seaside tourism

## Strengths (internal)

- Ecological corridor (River Basin)
- The river system that serves as a connector between the "Garrotxa" and "Empordà" comarca (River Basin)
- The river system that serves as a connector between parks (River Basin)
- Low anthropic pressure
- Energy supply from renewable biomass and biogas

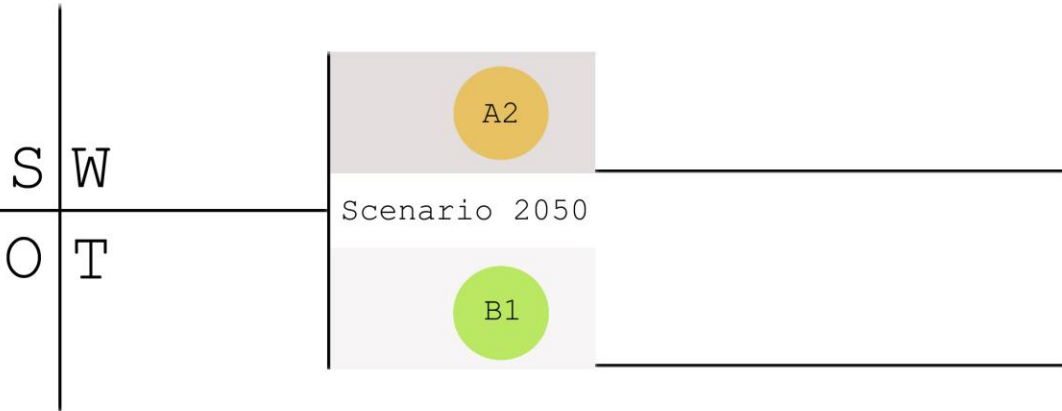
## Weaknesses (internal)

- Presence of hydrogeological risk
- Scarcity of fossil fuels, import compulsory
- Many urban/agricultural areas at flood risk
- Abandonment of industrial archaeological heritage
- Insufficient water supply to downstream (destabilized the relationship between river-lagoon-sea)
- Lack of connection between urban-river



**Severe Scenario (A2):**

Temperature: +1.2 C°  
Population growth: 20% increase  
Precepitations: - 12/15%  
Annual rainfall intensity  
variation:[+750 mm/year; + 1250 mm/year]  
Energy : +8/10% of energy demand



**Sustainable Scenario (B1):**

Temperature: +0.8 C°  
Population growth: 8% increase  
Precepitations: -5/7%  
Annual rainfall intensity variation:  
[+500 mm/year; + 1700 mm/year]  
Energy: +4/5%

**TERRITORIAL POLICIES**

**Opportunities**

- European policies and incentives
- Regional policies for the protection and development of agriculture/forestry context
- Policies inter-comarcali
- The river system that serves as a connector between th "Garrotxa" and "Empordà" comarca and between the park system

**Threats**

- Risk of failure to meet the energy needs
- Workforce emigration
- Abandonment of rural areas

**Politiche**

- Use of renewable resources in industrial-archaeological situations recovering rural areas

**3 PROJECT AREAS**

**Strengths**

- River as a territorial springboard to socio economic
- River as a landscape element for the cultural system (school of landscape painting Olot)

**Weaknesses**

- Presence of hydrogeological risk
- Hydro-Power irrelevant
- Many urban/agricultural areas at flood risk
- Abandonment of industrial archaeological heritage
- Insufficient water supply to downstream (destabilized the relationship between river-lagoon-sea)

**Agriculture**

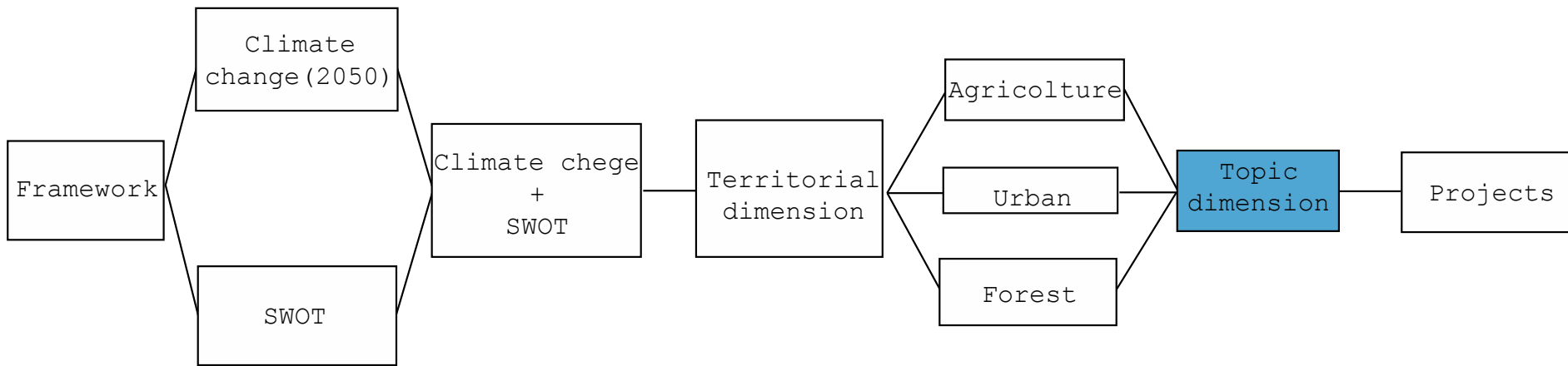
- Controlled flooding by channeling funds and expansion crates

**Urban**

- Designing and retrieve dynamic structures respect to the flood system (industrial and archaeological heritage)
- Suitable infrastructure for water runoff
- Planning connections between urban and river

**Forest**

- Controlled flooding
- Redevelopment of industrial and archaeol.heritage and multifunctional conversion



- Water demand
- Hydro-Geologic Risk
- River-Population relationship
- Hydro-power production

# Topic 1: Water extraction and use

Water demand	Volume capture	Percent of total
	m <sup>3</sup> /year	%
Total Urban	8.762.647	75
Total Agricultural	2.995.254	25
<b>TOTAL</b>	<b>11.757.901</b>	<b>100</b>

Water use	Volume of water	Percent of total
	m <sup>3</sup> /year	%
Total Urban	7.366.007	71
Total Agricultural	2.995.254	29
<b>TOTAL</b>	<b>10.361.261</b>	<b>100</b>

## Conclusions

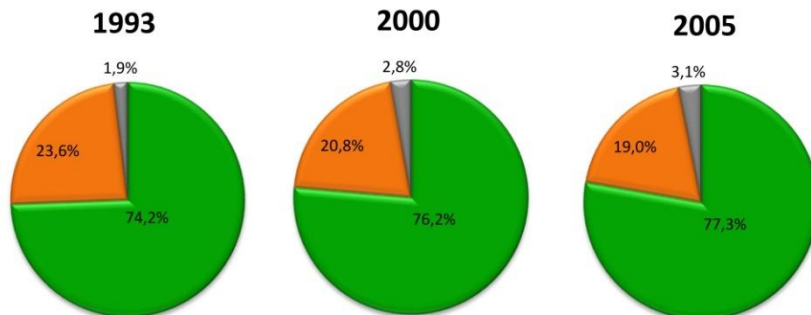
Most of the consumption of water takes place at the urban level;

Water use in agriculture is declining in consequence of the reduction of the surface of soil destined to this sector;

Future trends show an increase in water consumption both for the urban sector and in the agricultural as shown by the scenarios for 2015 and 2030.

Municipality	TOTAL USE	
	m <sup>3</sup> /year	%
Olot	3.587.910	35
Vall d'en Bas, la	1.783.826	17,2

Source: SIGMA 2010



■ Forest ■ Corneus ■ Artificial

Source: ACCUA-CREAF

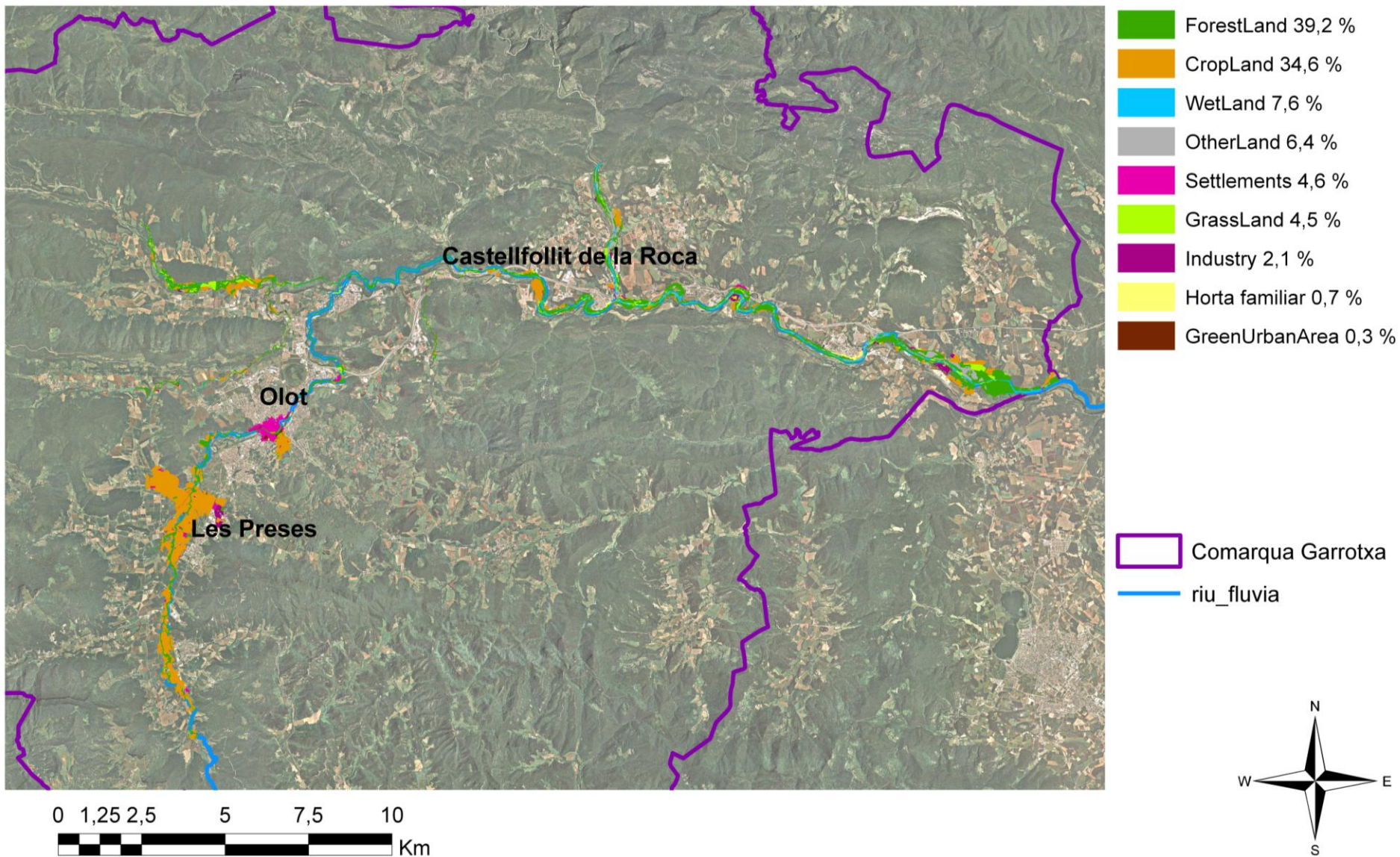
## Vision

Will require policies that aim to reduce water consumption in the various sectors and better use of the same.



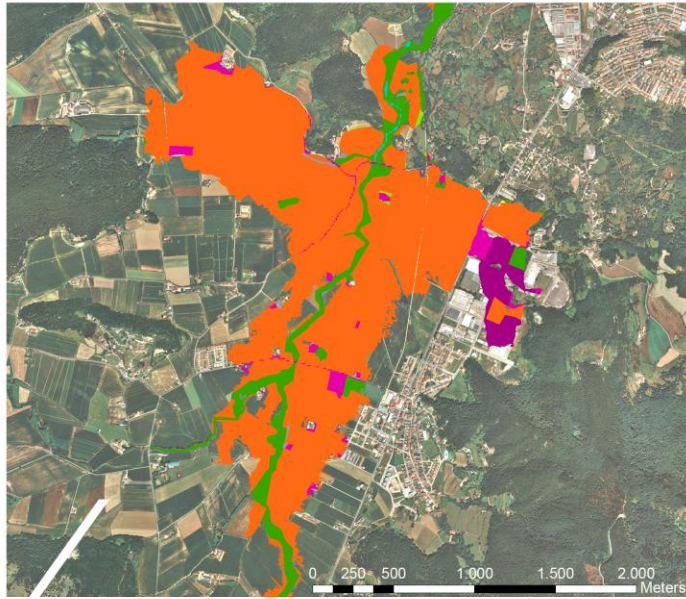
## Topic 2: Hydro-Geologic Risk

### COVER LAND USE in the EXTREME FLOOD EVENT AREA

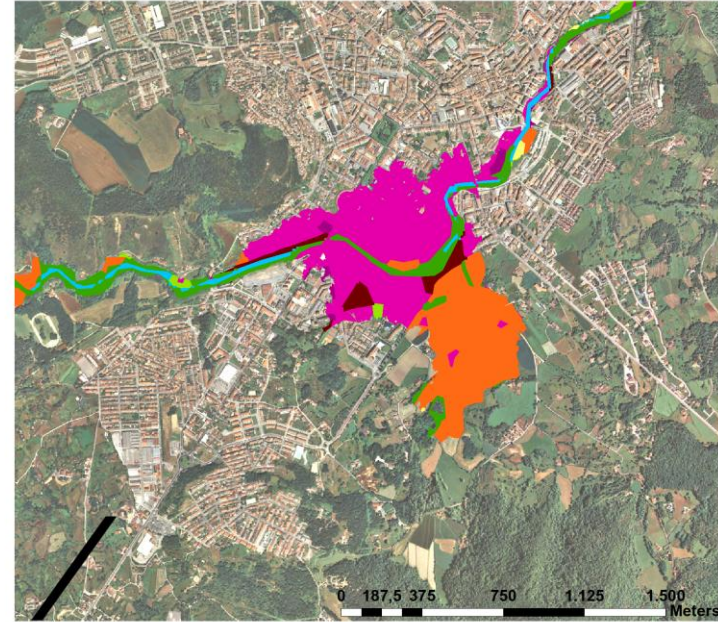


# Topic 2: Hydro-Geologic Risk

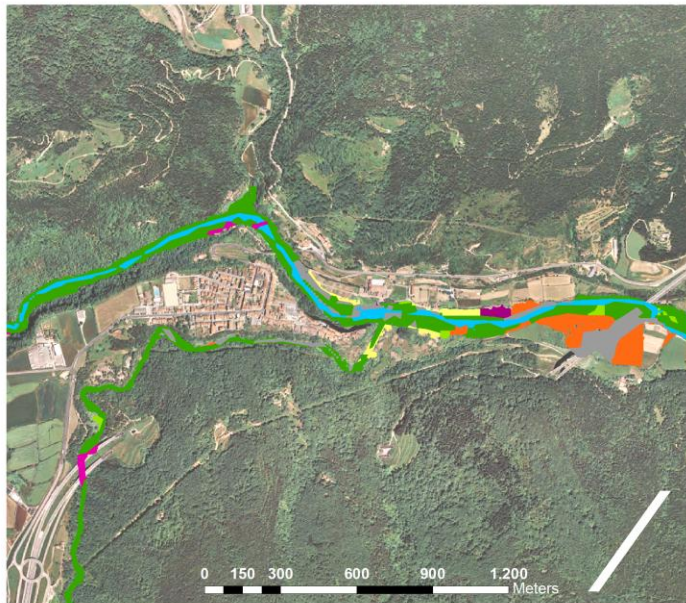
## Agriculture Context - Les Preses



## Urban Context - Olot



## Forest Context - Castellfollit



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# Topic 3: Hydro-power Production



### Topic 3: Hydro-power Production

**File number:** 1

**Element type:**

mills and  
factories

**Denomination:** Can  
Sabata

**Property:** private

**Description:**

turbine Francis  
with open chamber  
with a power of 25  
kw that runs with  
a jump of 6  
meters.

**Actual use:** the  
factory has  
several workshops:  
three of knitwear,  
a plastic and a  
workshop of  
artist. The  
central continues  
to operate with a  
hydroelectric  
function.

**File number:** 2

**Element type:**

mills and  
factories

**Denomination:**

Molí d'en Daina

**Property:** private

**Description:**

turbine Francis  
with a power of  
10-15 kw/h. The  
jump is 7 meters.

**Actual use:**

hydroelectric and  
housing

**File number:** 3

**Element type:**

mills and  
factories

**Denomination:**

Central de Can  
Gridó, Central  
del Colt

**Property:** private

**Description:** has  
two main turbines  
Francis with  
horizontal axis.  
The maximum  
output is 300  
kw/h between the  
two (100-150 kw  
each one).the  
jump is 18-19  
meters.

**Actual use:**

hydroelectric

**File number:** 4

**Element type:**

mills and  
factories

**Denomination:**

Can Guissiñé

**Property:**

private

**Description:**

turbine Flyt  
that runs with  
a jump of 9.75  
meters.

**Actual use:**

hydroelectric

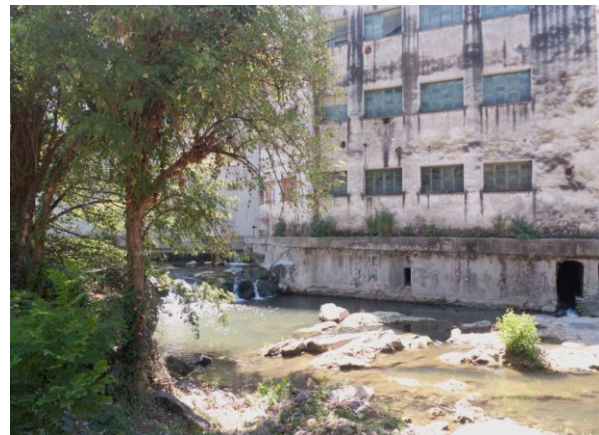
# Topic 4: River-Population relationship

## Historic Facts

In the 50s Fluviá River attracted many sports and nature lovers



Sports practice development in Olot



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## Topic 4: River-Population relationship

### Current Analysis:

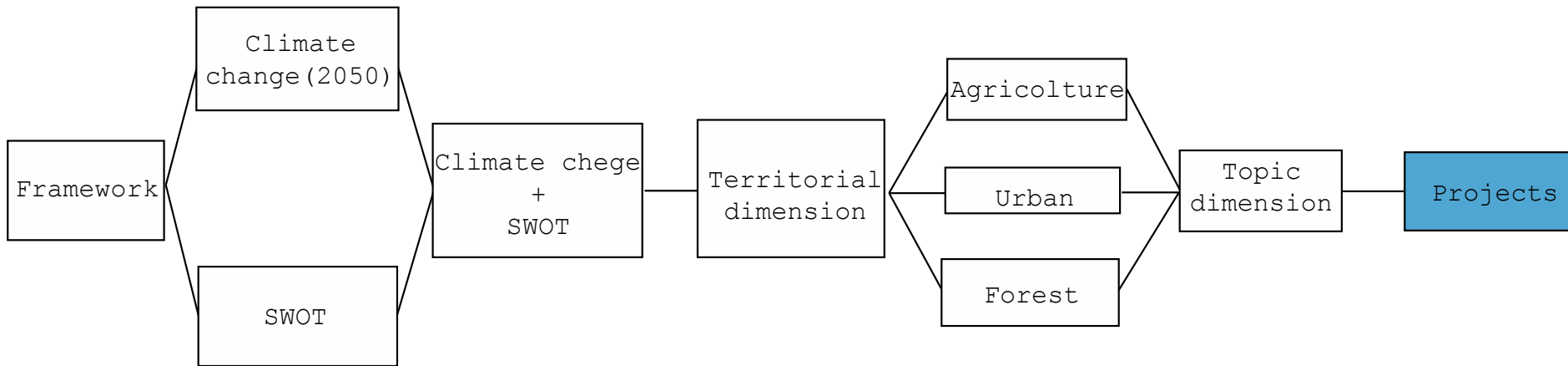
- **Inexistent link between population and river;**
- presence of abandoned industrial buildings;
- residential buildings give their back to the river;
- messy and careless vegetation;
- lack of consistency along the margins: resulting from a range of individualized constructions (inexistent visual uniformity);
- untreated water;
- desorganized urban riverfront.

### Intervention Objectives:

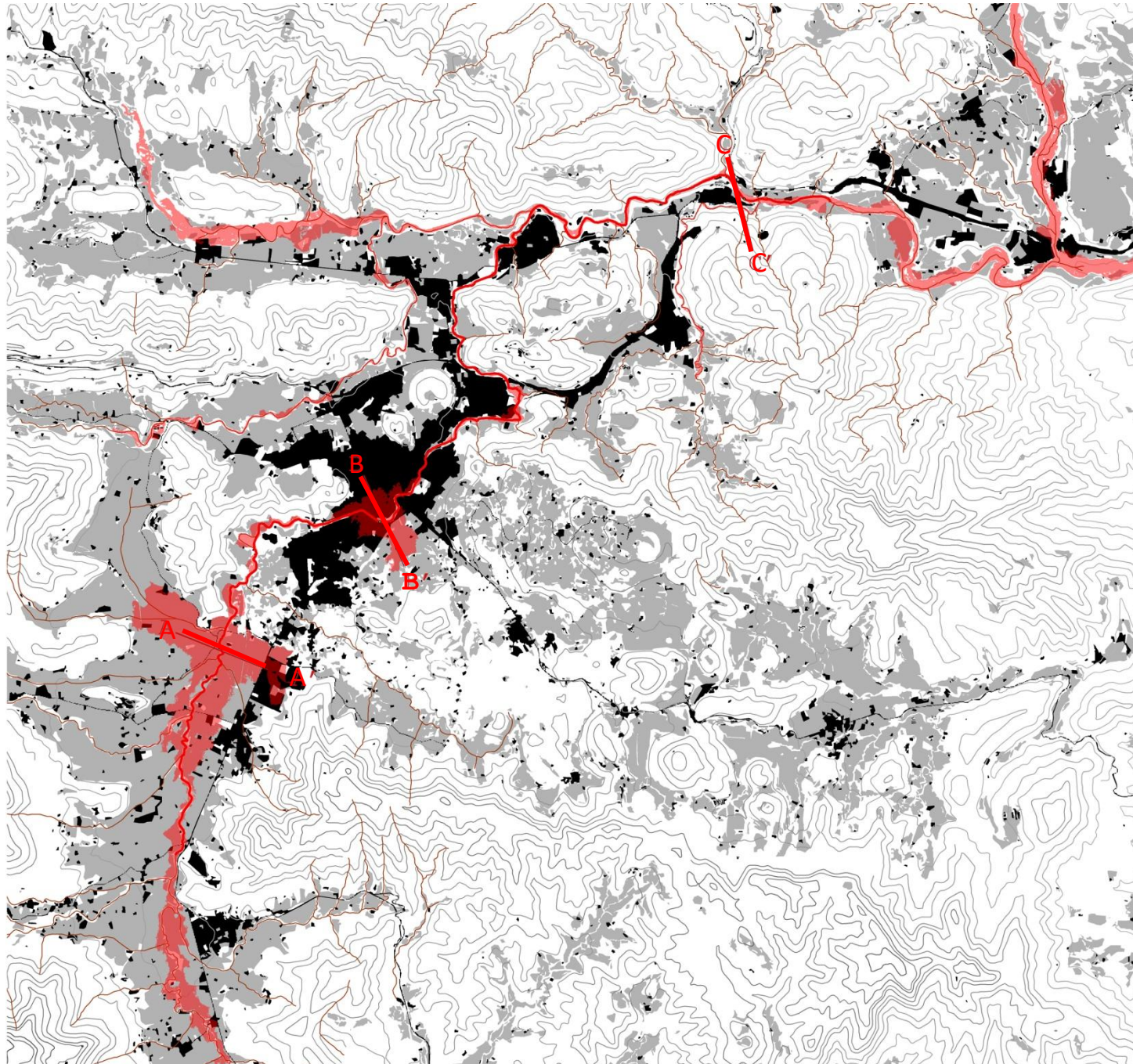
#### RIVER

#### BACK SIDE vs FRONT SIDE

- **bring back people to the river banks;**
- requalify the riverfront;
- qualification of water;
- improvement of sewage system;
- cleaning and rehabilitation of vegetation;
- visual uniformity;
- provide better physical and visual access;
- requalify dikes to retain the presence of water.



# Project Areas Framework

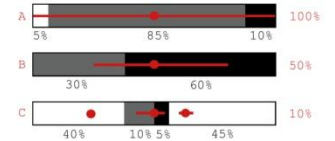


## Water Framework

- Flood Area
- Fluvià River
- Idrography

## Land Use

- ForestLand
- CropLand
- Settlements

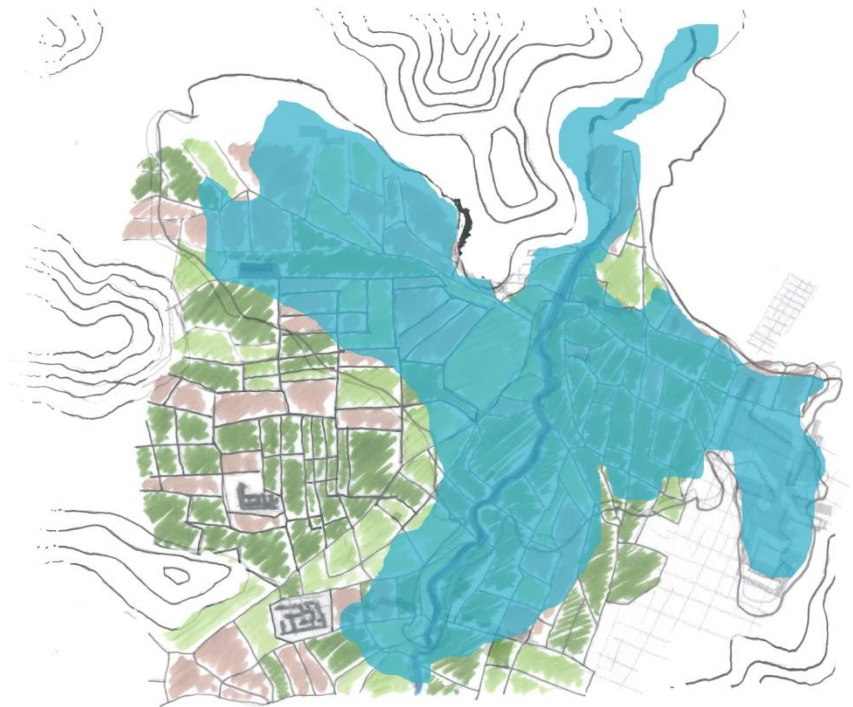




# Agriculture Study Area: Controlled Flood



**Croplands**

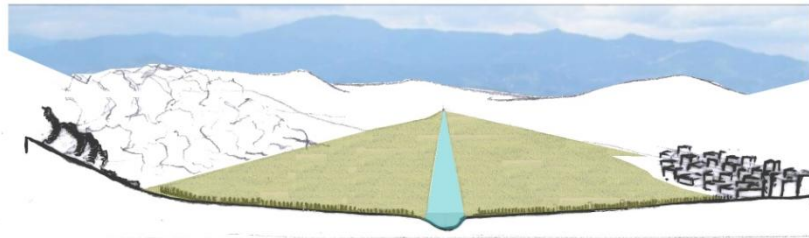


**Actual flood area**

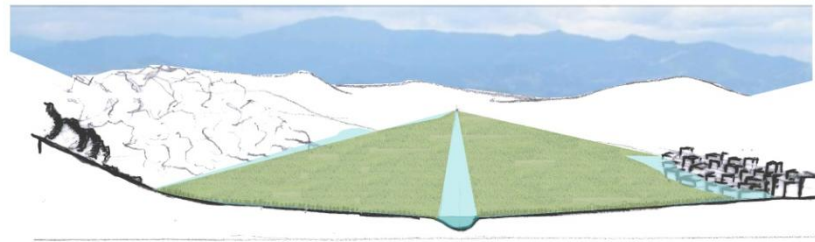
500 years flood return

# Agriculture Study Area: Controlled Flood

Actual state of the river:

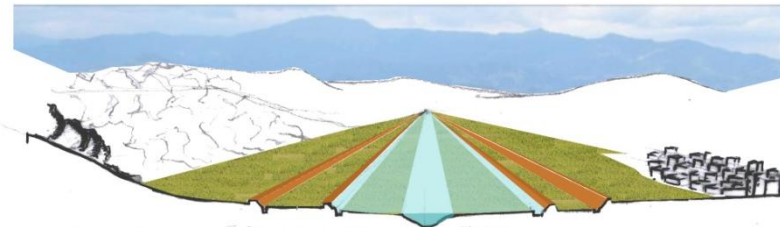
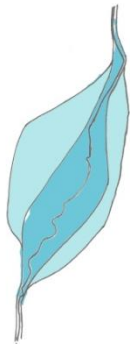


→ Dry Period

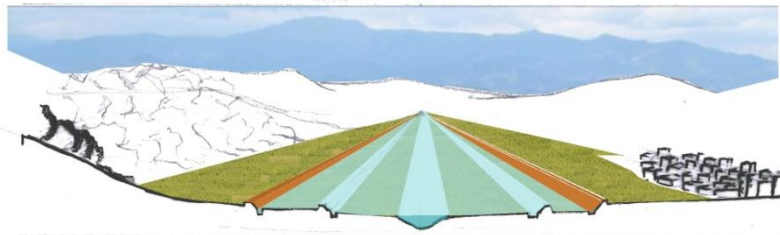


→ Flood Period

Controlled Flood

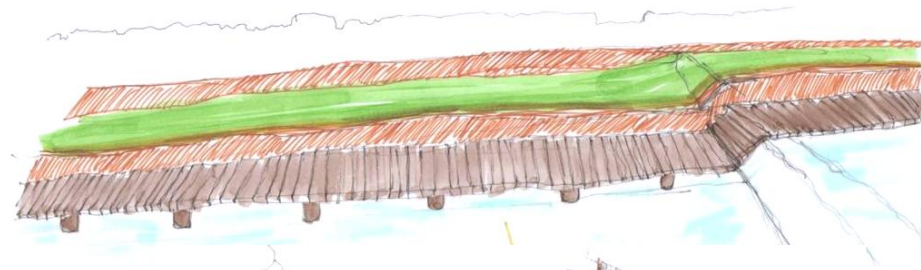
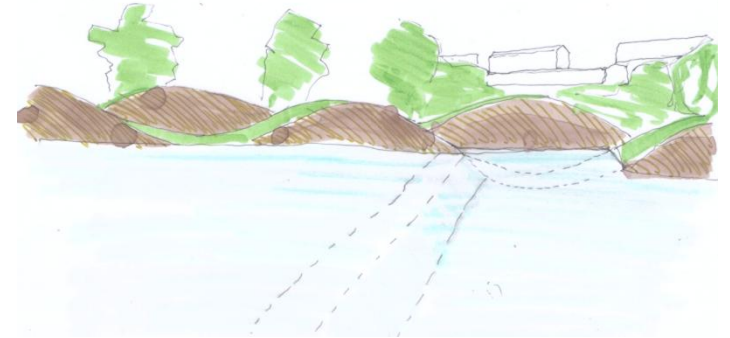


→ Medium Flood



→ Extreme Flood

# Urban Study Area: River as a Social Connector

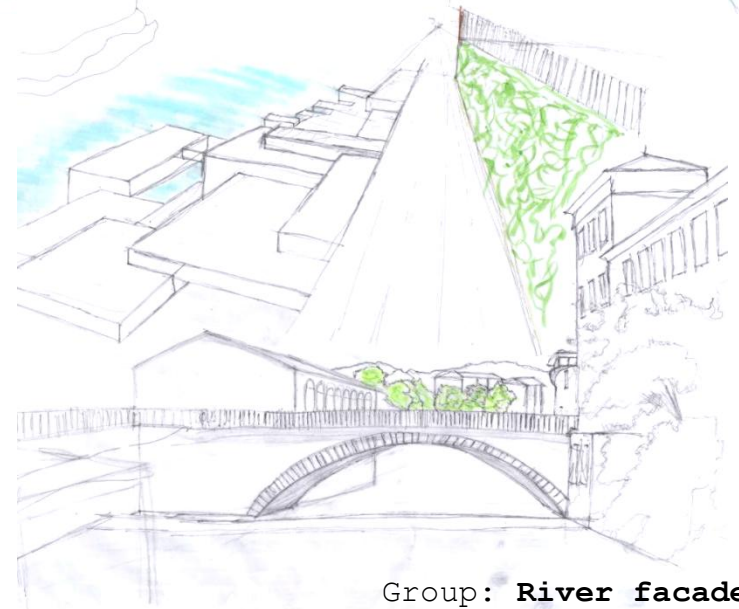


Levels

Climate Change

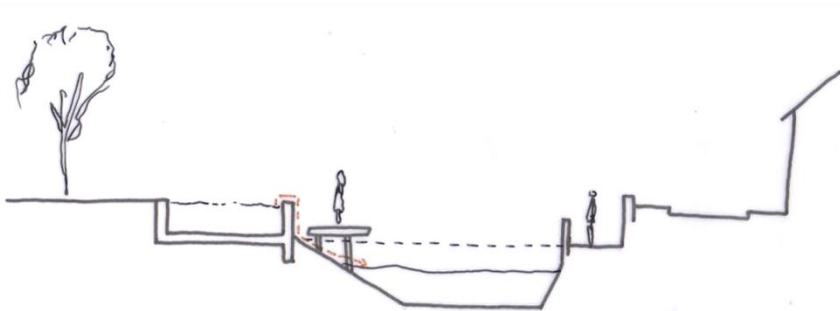
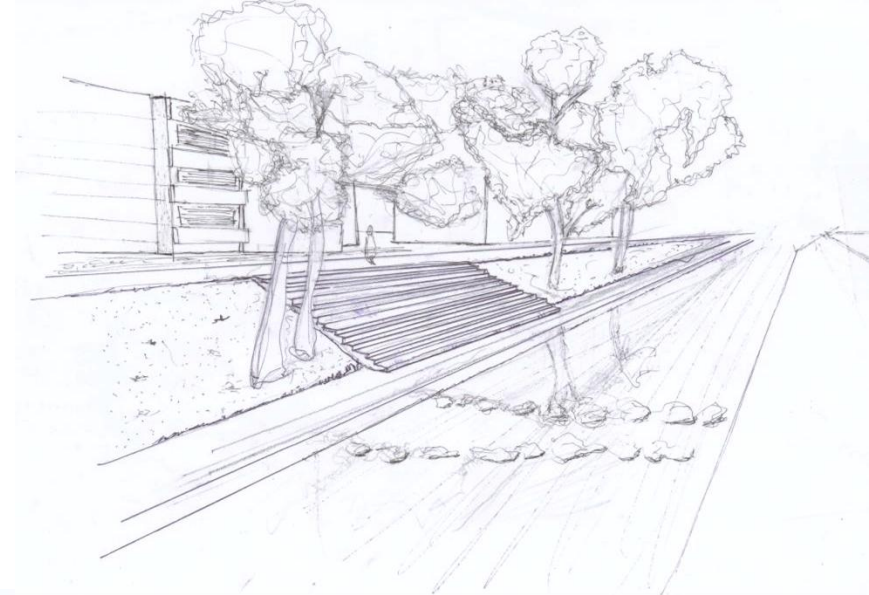
Historical

Requalification

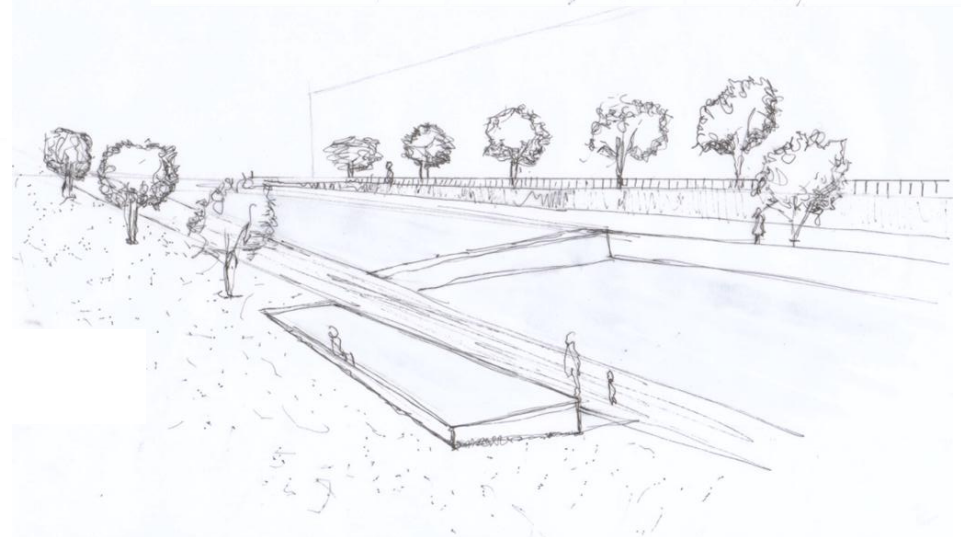


Group: River facades

# Urban Study Area: River as a Social Connector



Section AA



Group: River facades

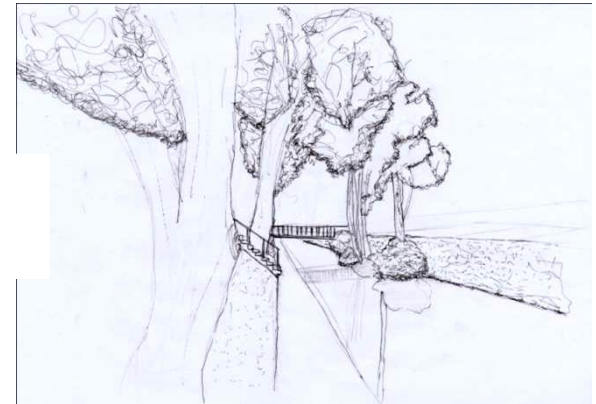
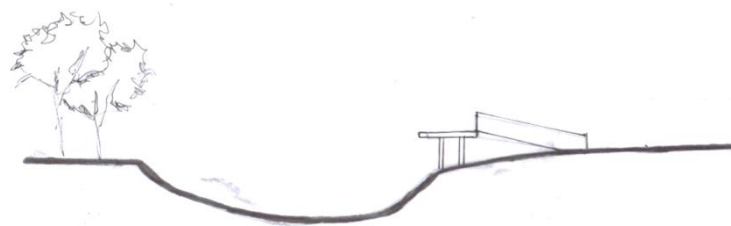
# Forestral Study Area: River as a Land Mark



- Canals
- ... Secondary Canals
- ▧ Crop Land
- ▨ Agricultural Infraestructures
- Small Waterfall

**Climate Change**

**Rearrange**



Group: **River facades**

# Forestral Study Area: A multifunctional network

**Recovery of industrial heritage in a multifunctional way**

**Element type:** mills and factories

**Denomination:** Can Xaudiera, Fàbrica Vella o Filatura Vella

**Property:** private

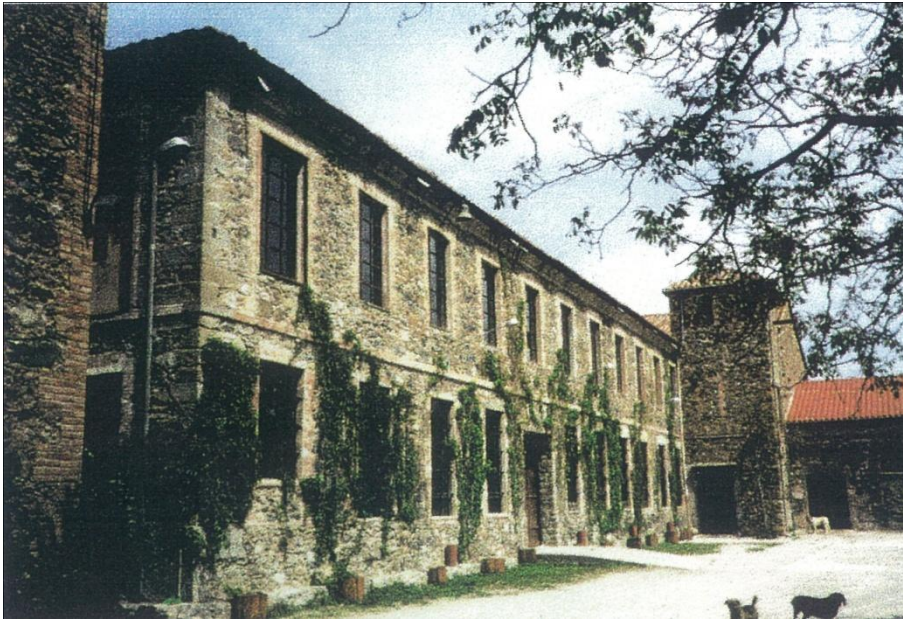
**Description:** turbine Francis with a power of 60/70 kw that runs with a jump of 11.27 meters

**Previous use:** hydroelectric, Disco

**Actual use:** none (closed)



## Forestral Study Area: A multifunctional network



With the climate change the old disabled centrals can assume new functions

### 2050 scenario:

Energy production = 60-70 kw

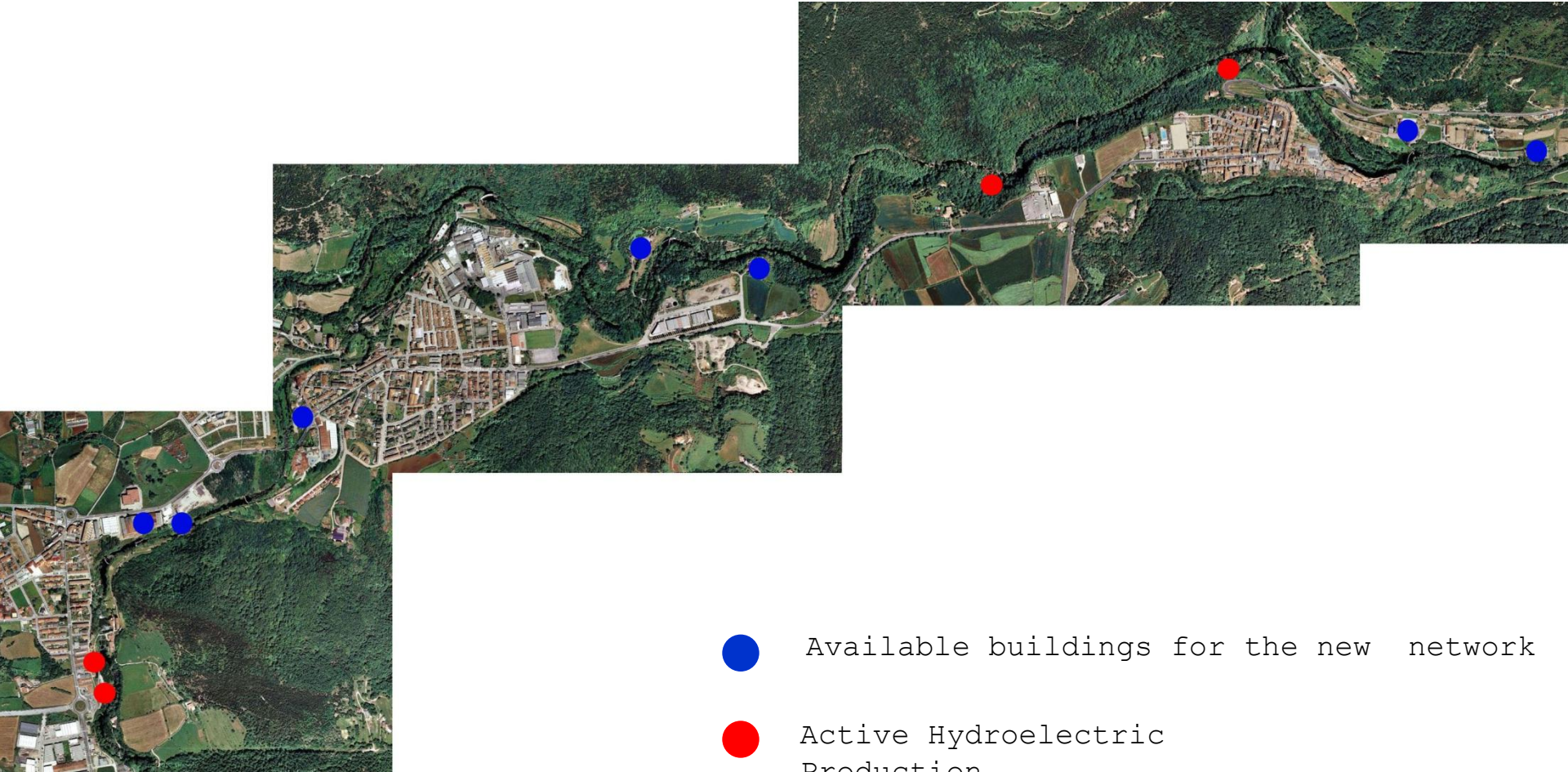
(the river flow reduction is matched by an improvement of production technologies)

The recovery of the structure takes place in a multifunctional way:

- Business accommodation;
- Recreation;
- Production activities related to km 0;
- Health tourism;
- Educational farms;
- Cultural tourism and activities;
- Landscape painting.

Storage tanks, where permitted, may be used to recover the water used for the production for irrigation.

## Forestal Study Area: A multifunctional network



This model can be applied in a similar way to other structures, located along the river Fluvia, according to the characteristics of each of them. They can constitute a network that develops on the territory.



o.0 Thanks for the attention

Group: River facades

Salvatore Cambilargiu  
Denis Cuccu  
Massimiliano Granceri  
Inês Carvalho  
Mafalda Matos



Les Baigneuses, Ivo Pascual