

# Ecology of Fresh Water in a Museographic Perspective

**Bruna Gumiero**

*University of  
Bologna  
Italy*



**Michele Lazinger**

*Muse NHM of Trento  
Italy*



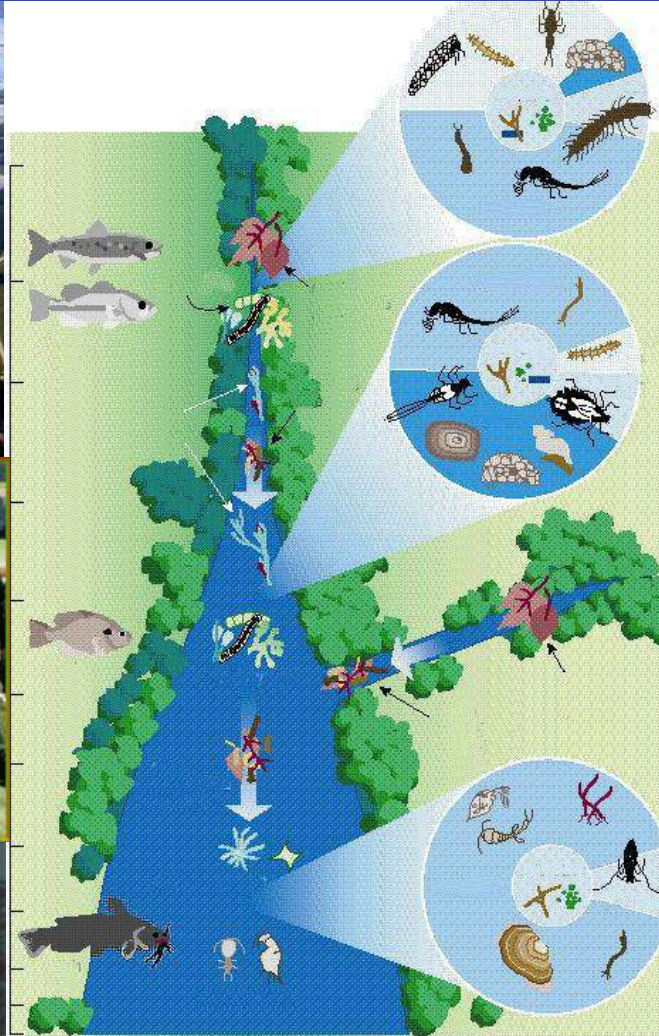
2nd International Conference  
Town Hall, 's-Hertogenbosch, Netherlands  
14-18 May 2018







# RIVERS ecosystems



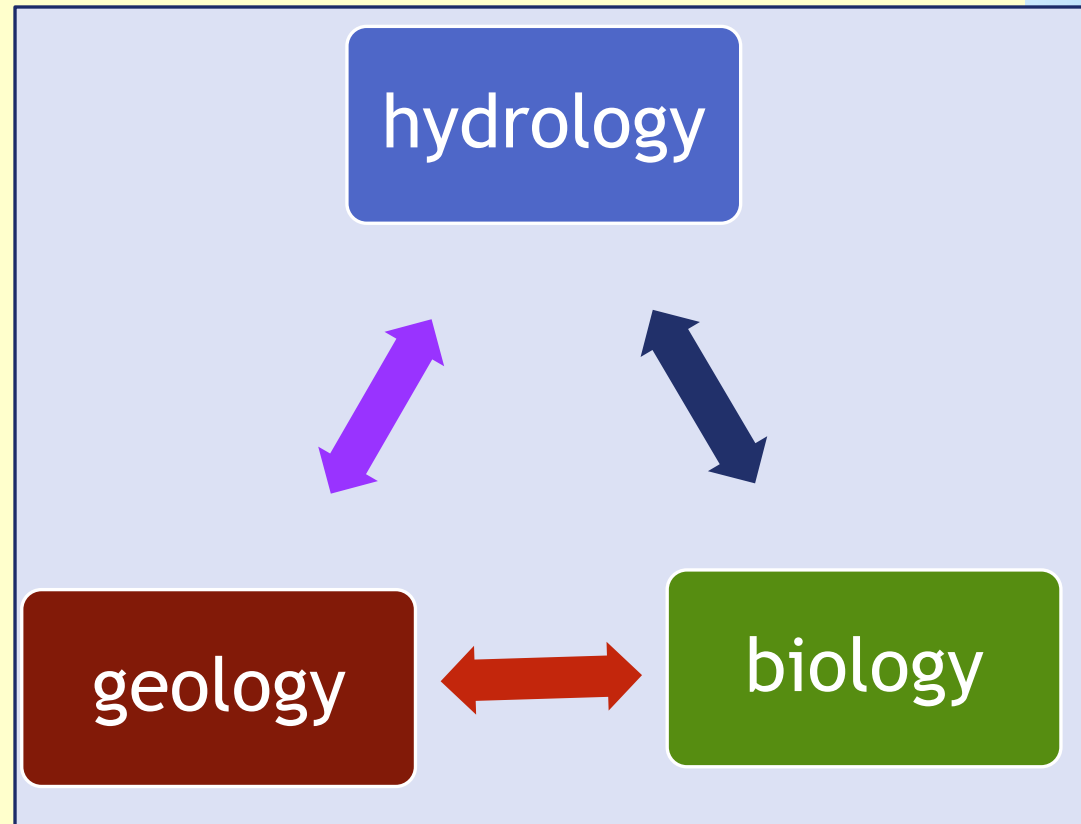
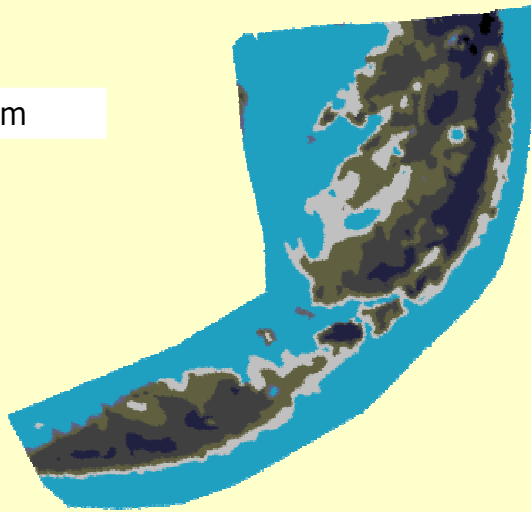


# Flood pulse concept



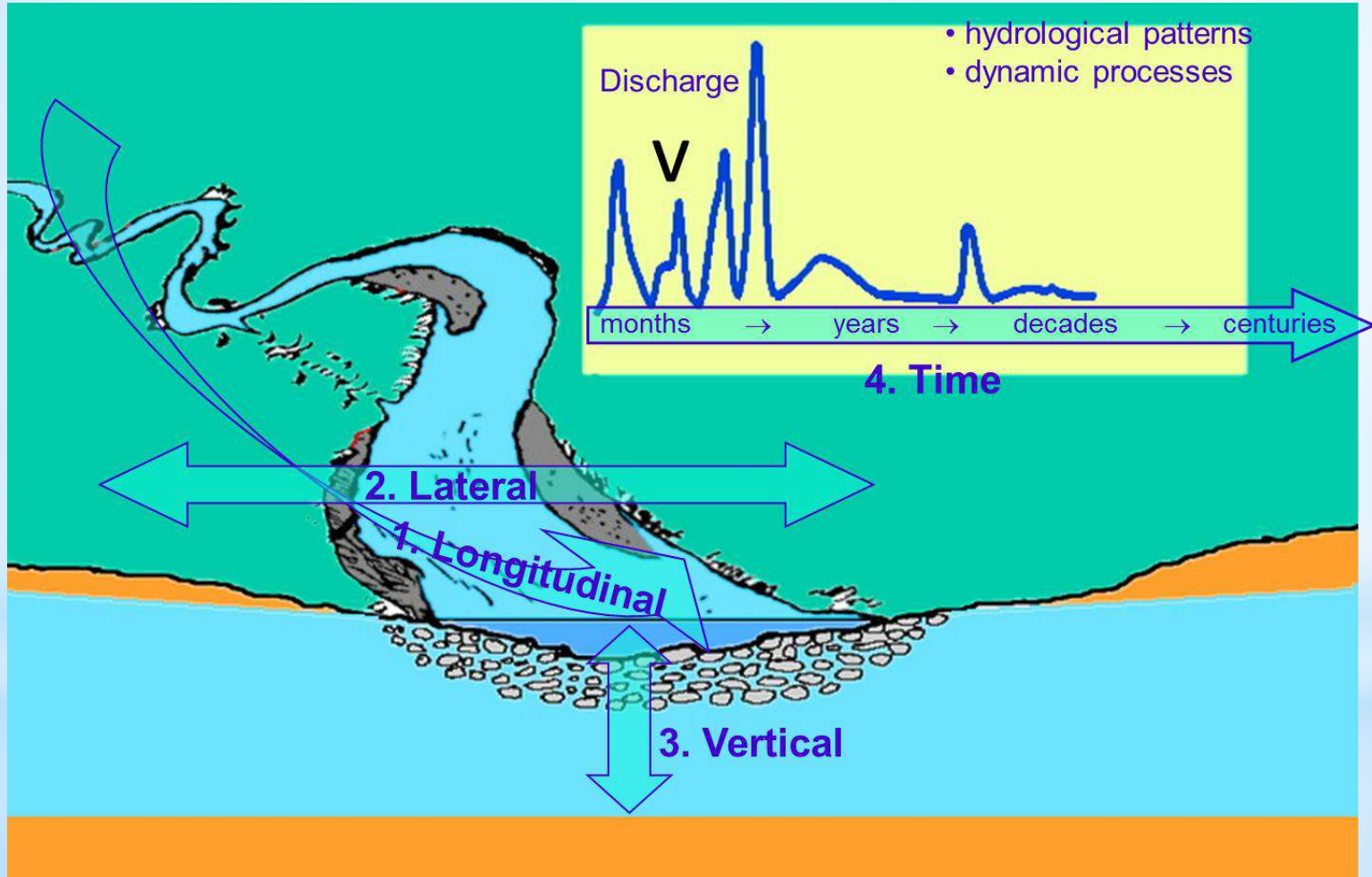
Rivers are the most dynamic and resilient ecosystems in the planet

+ 1.2 m



# Rivers are open ecosystems

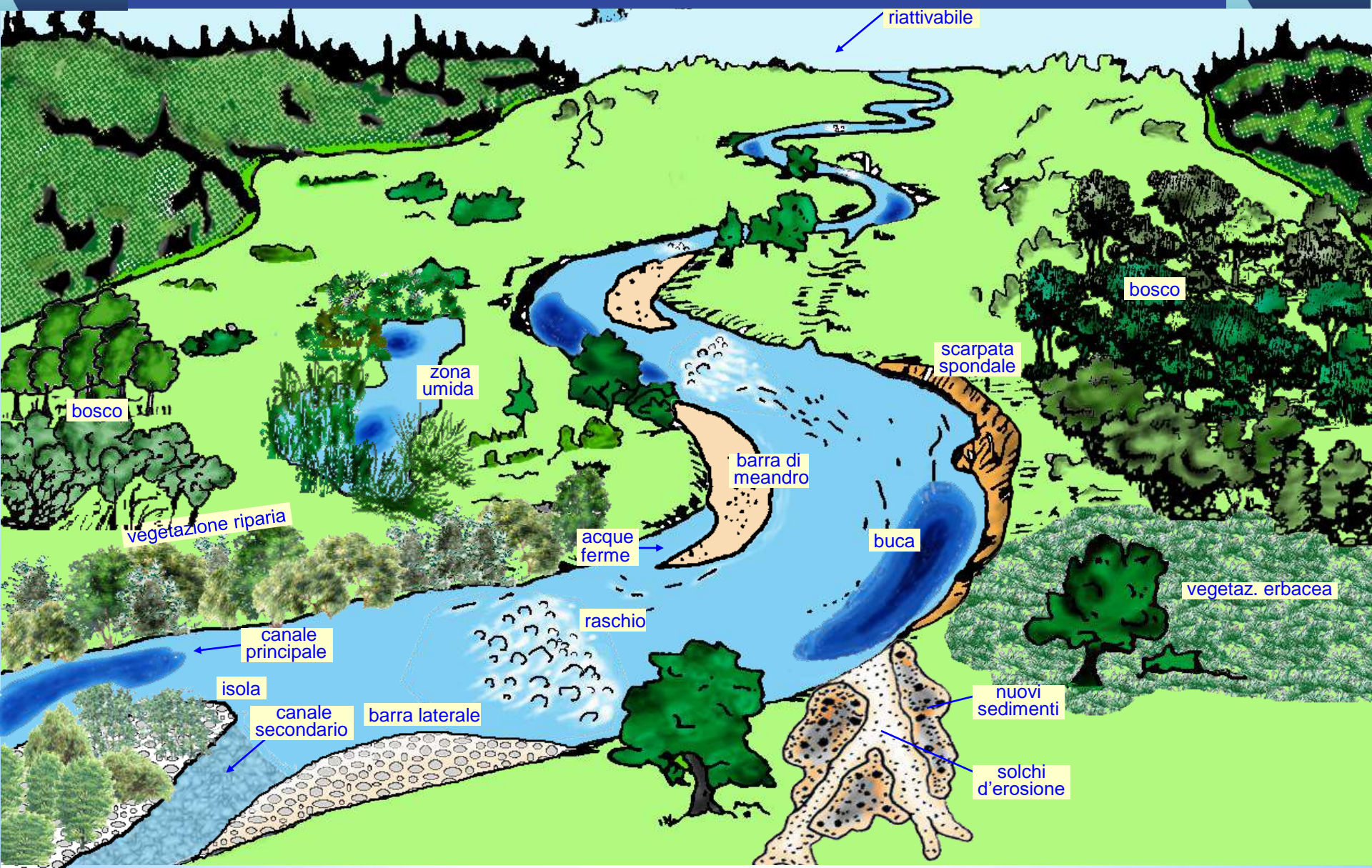
Strongly connected with their surrounding





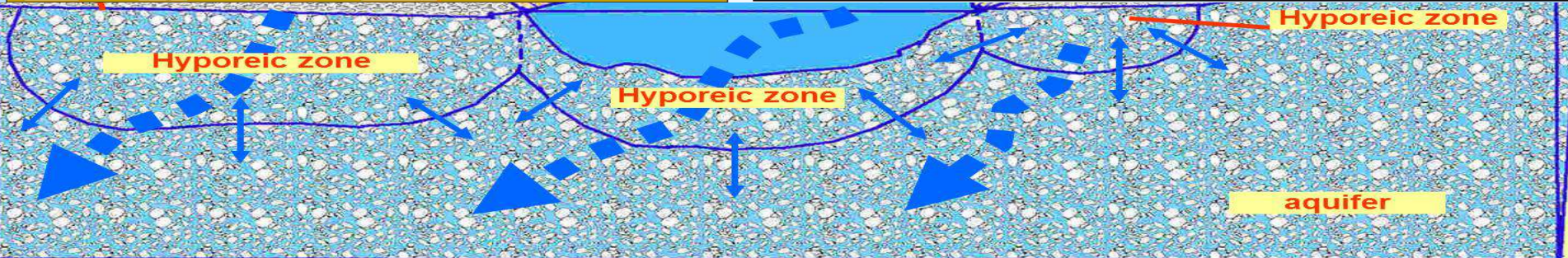
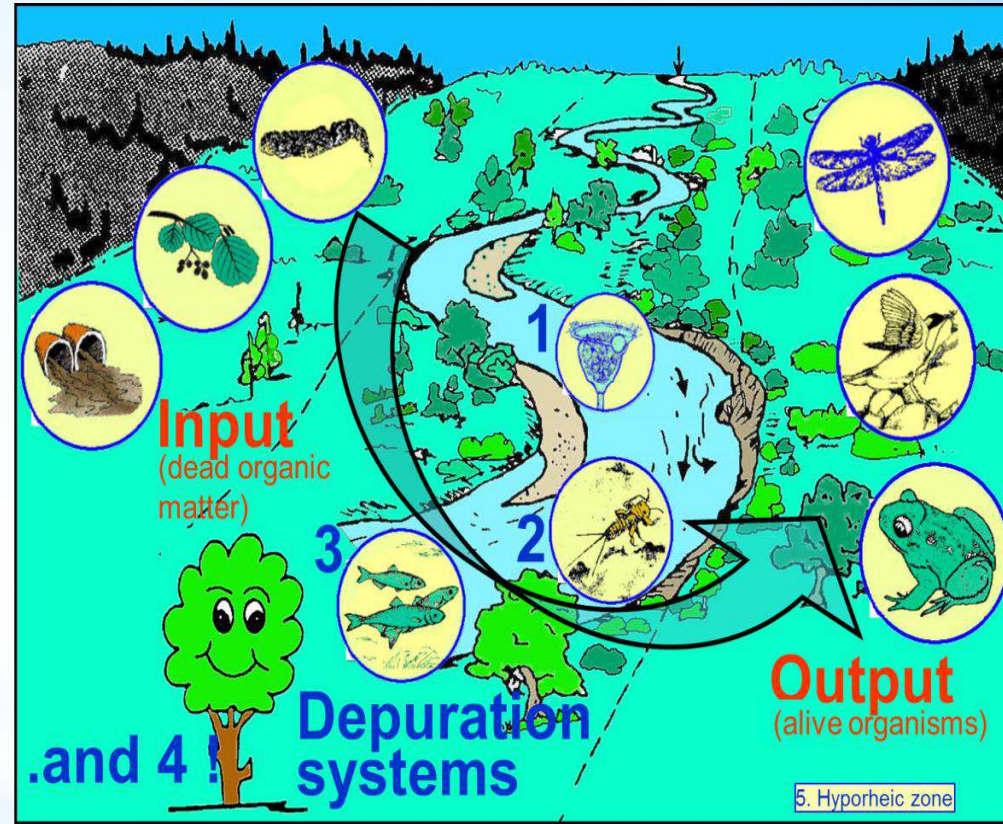
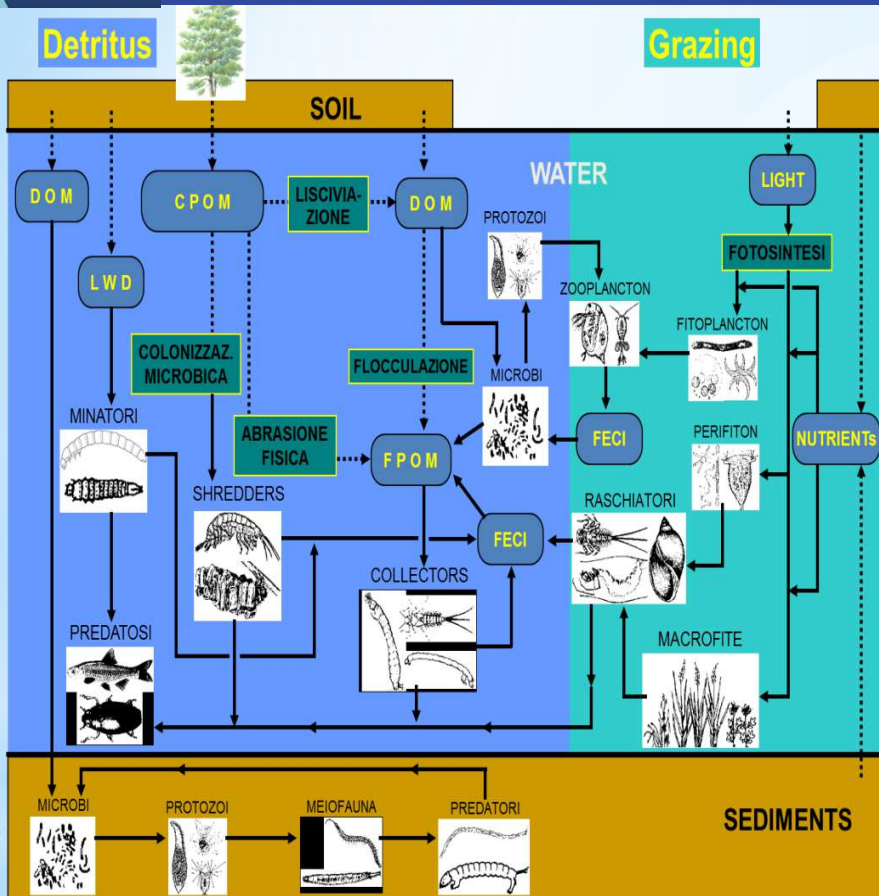
# Rivers and their corridors:

## Dynamic processes vs high diversity

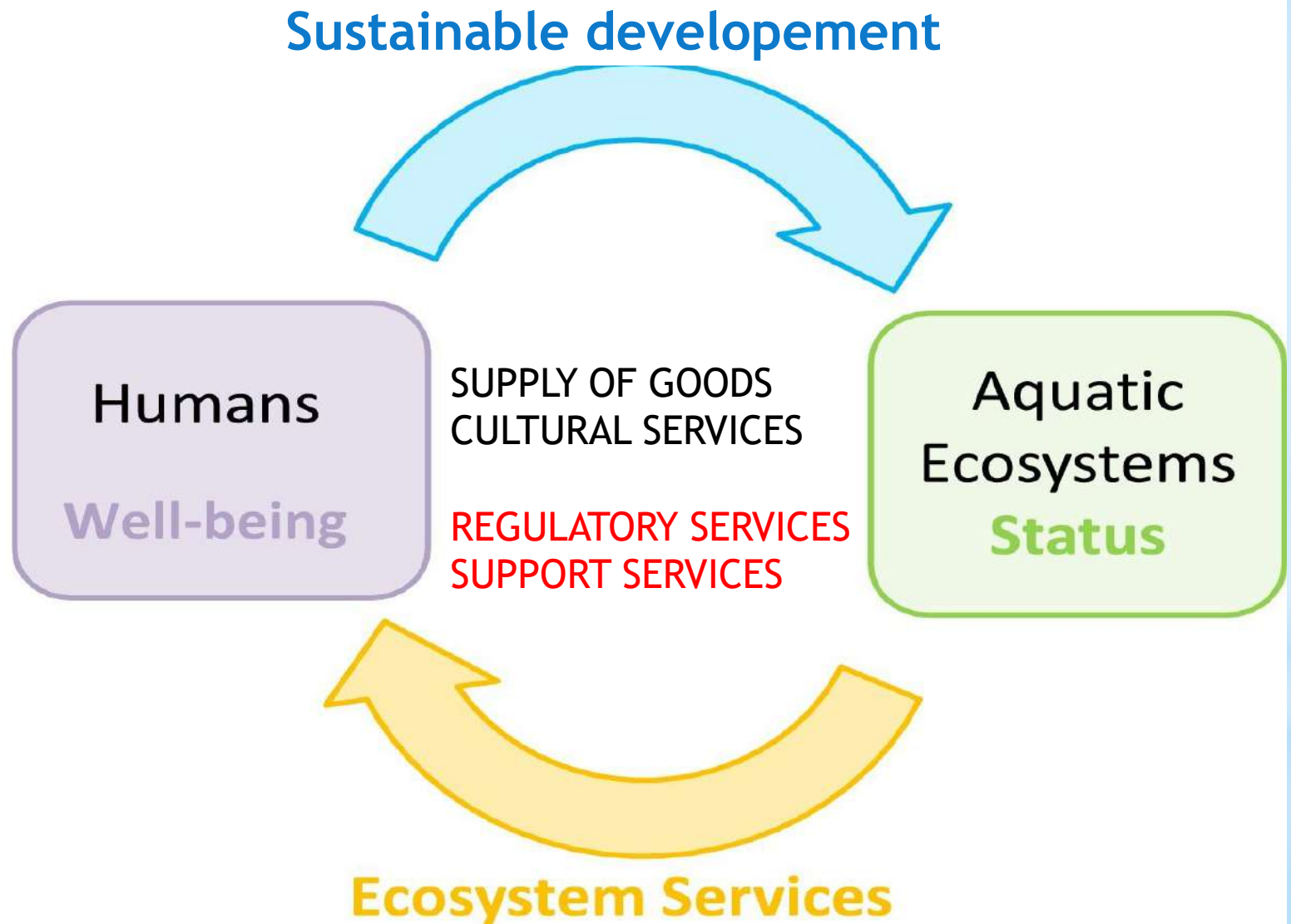




# Specialized food web: Self-depuration



# Healthy water ecosystems give to the humanity essential good services for free





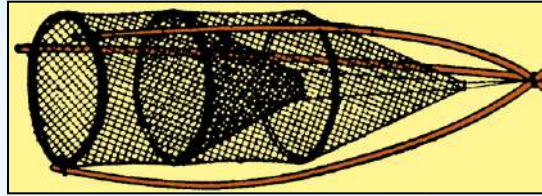
# Water uses and conflicts



**drinking**



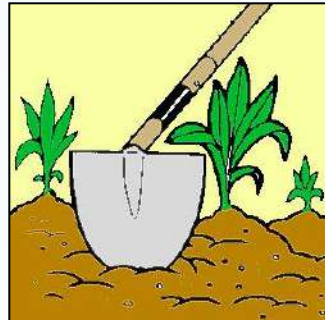
**Waste water**



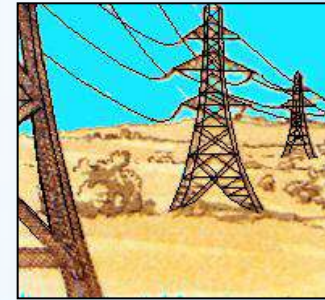
**Food**



**mining**



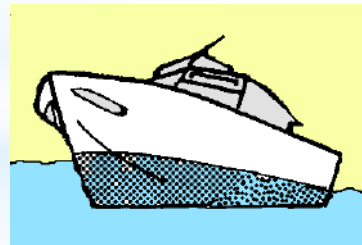
**irrigation**



**hydroelectric**



**urbanization**



**Navigation**



**Recreational**



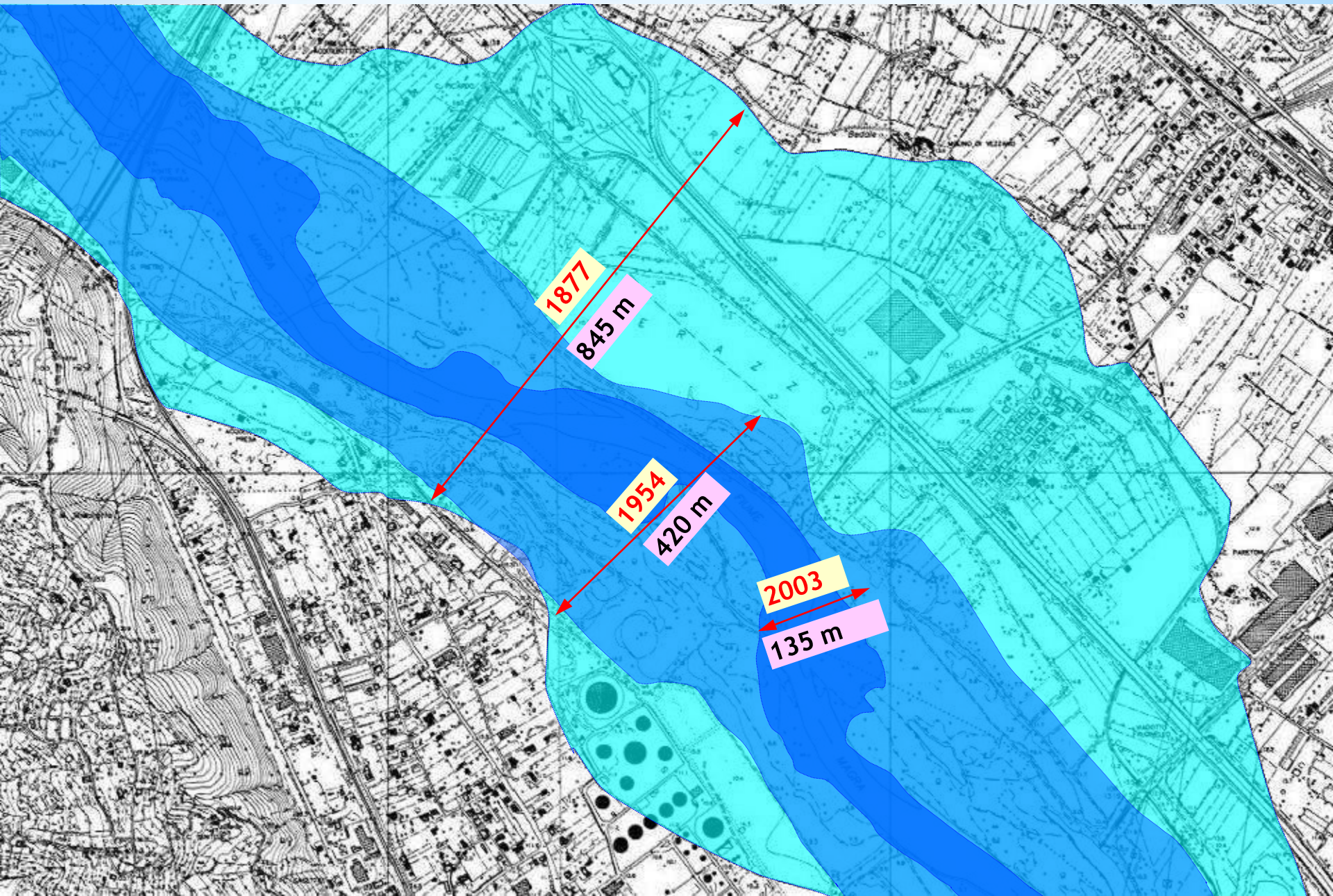
**cultural**



**reclamation**

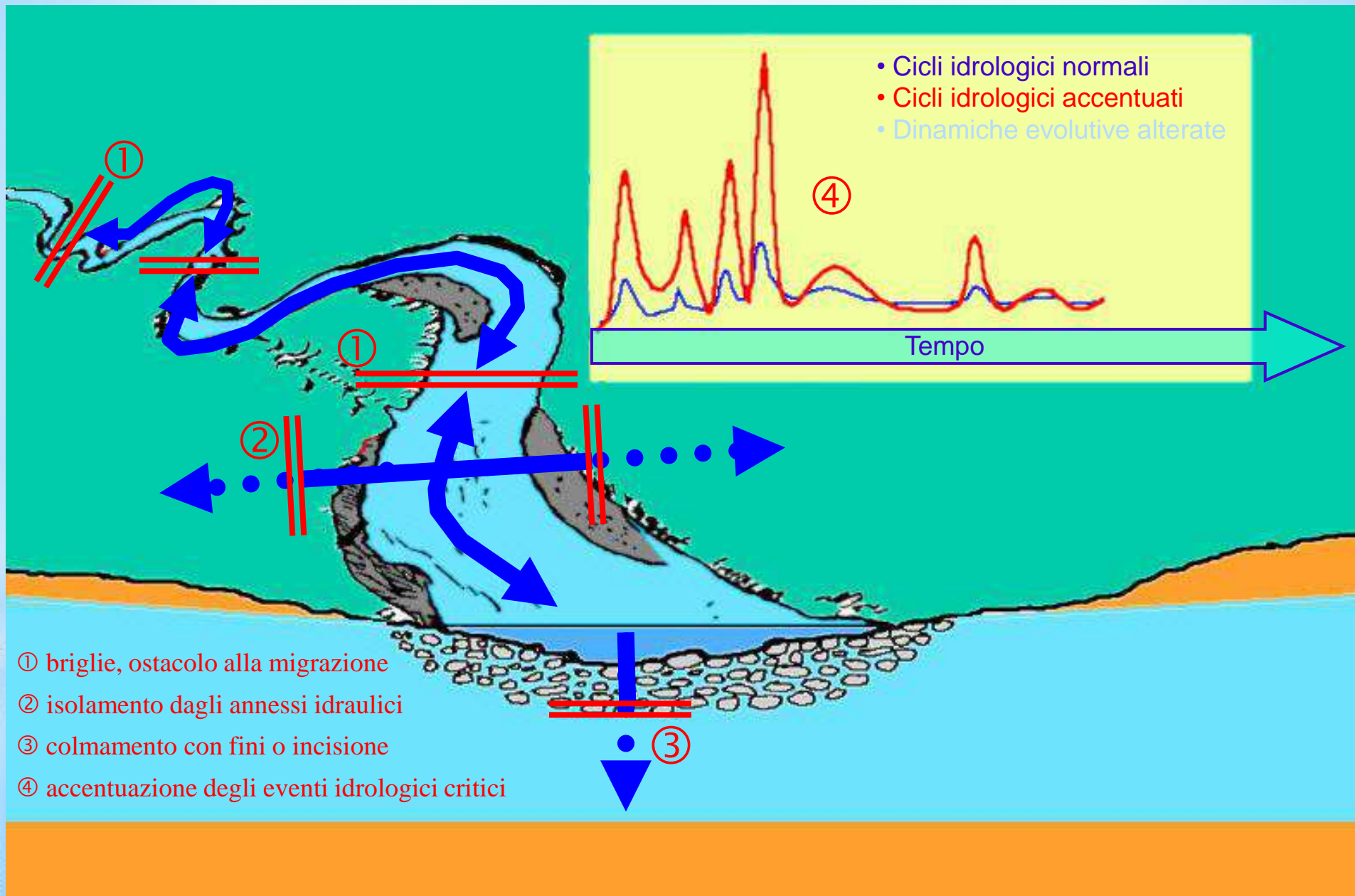


# We reduce the river space



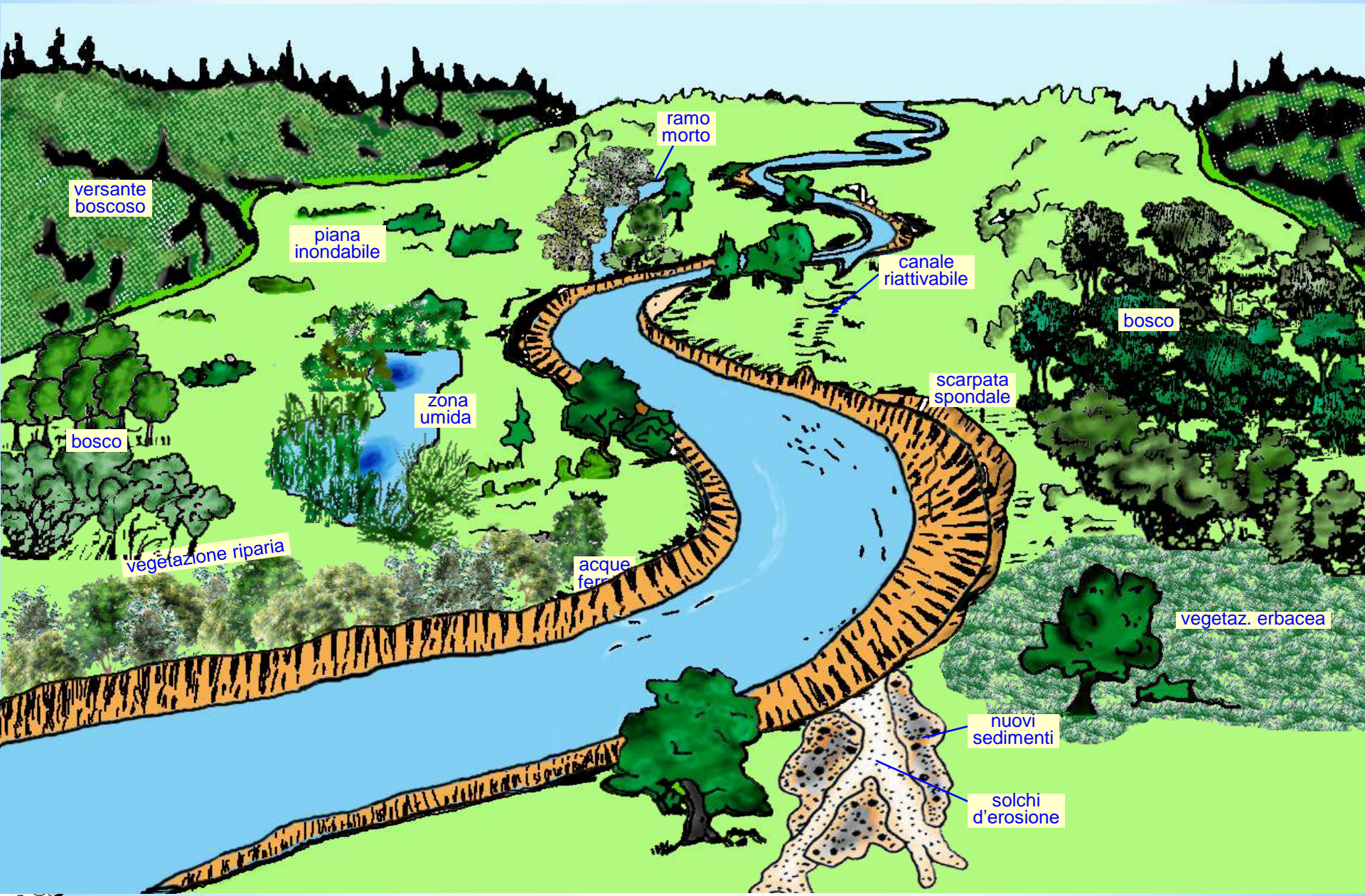


# We disconnect river from surrounding



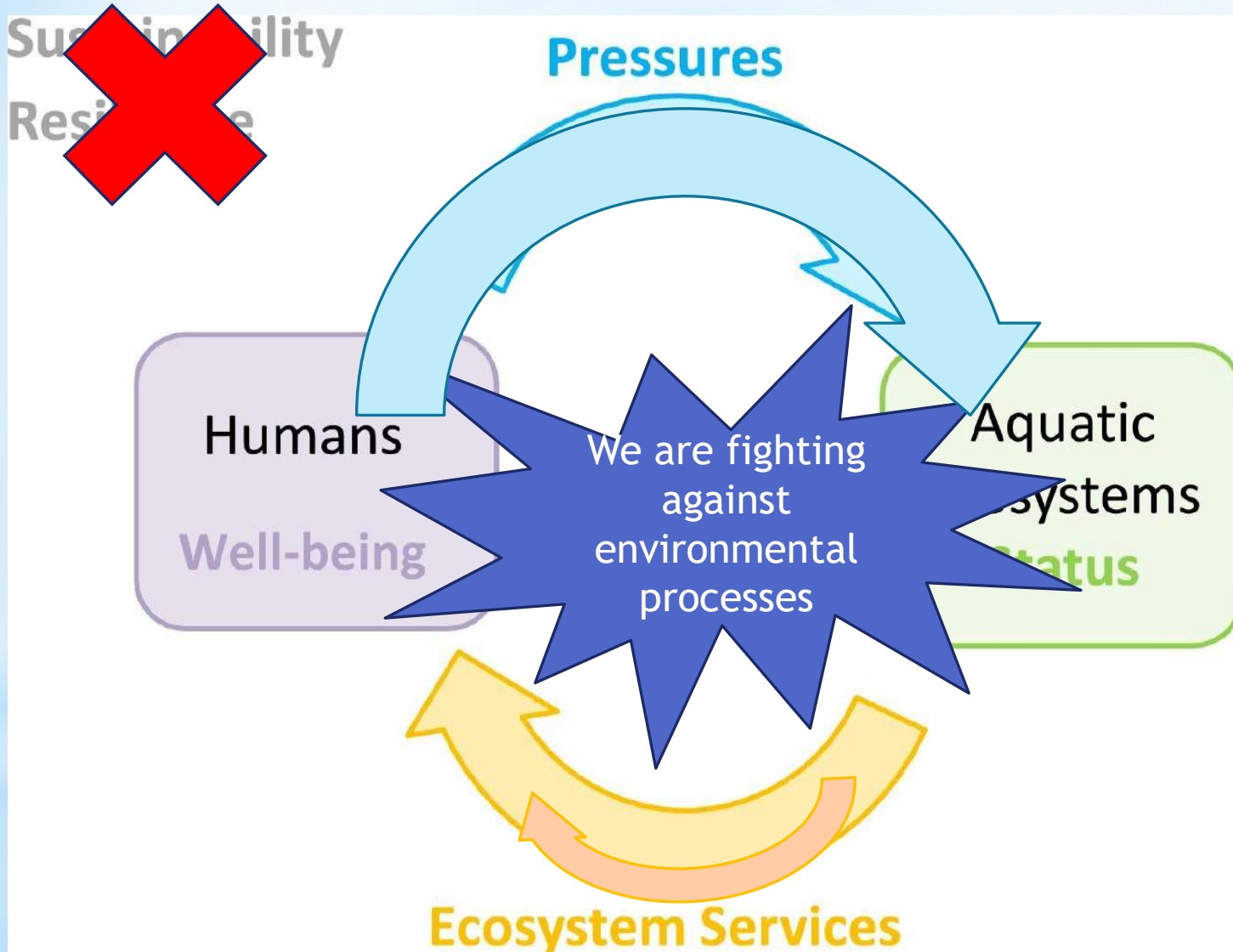


# Human impact effects





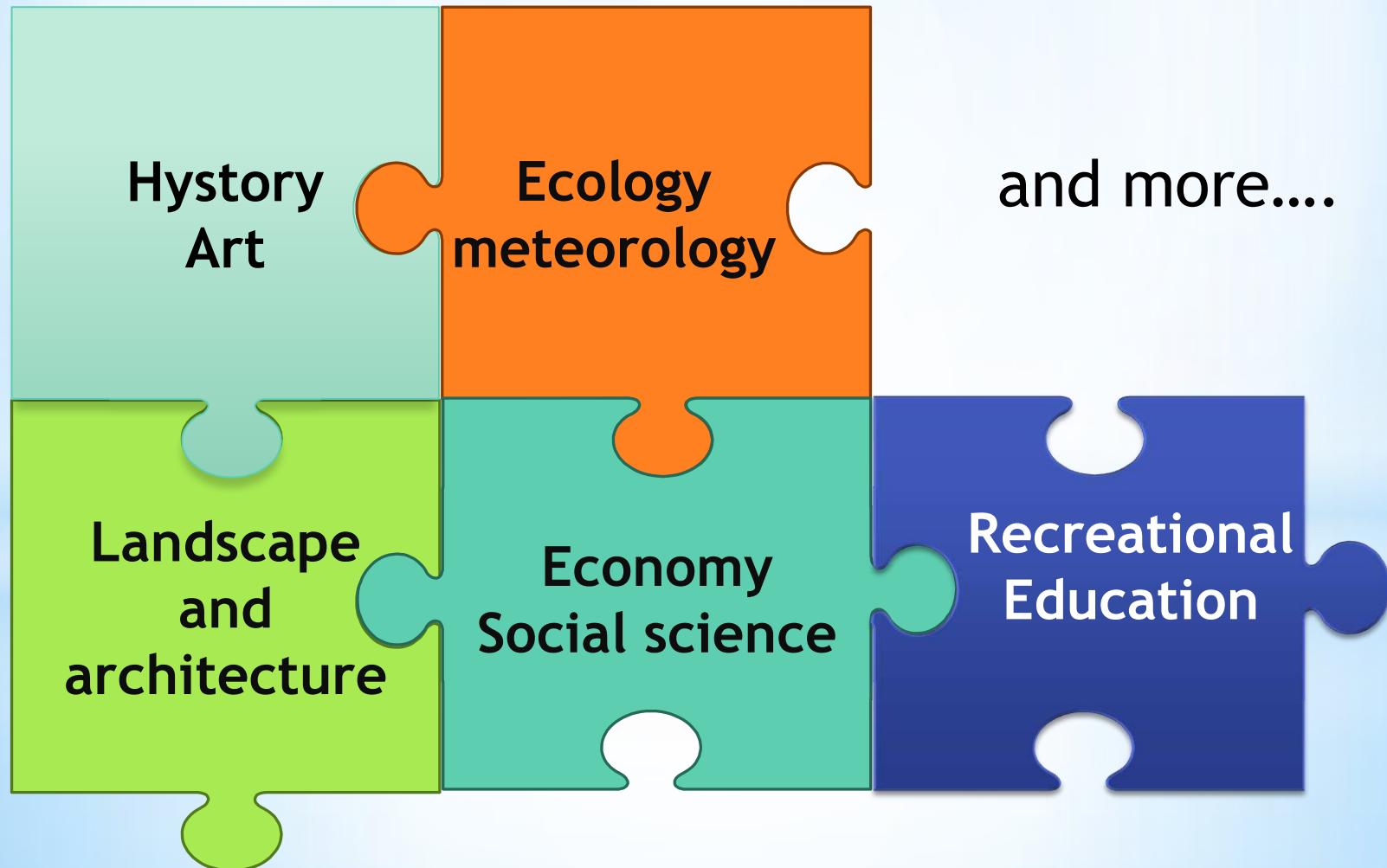
# RESULTS





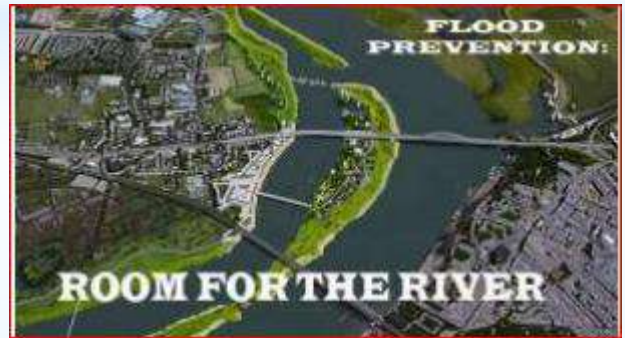
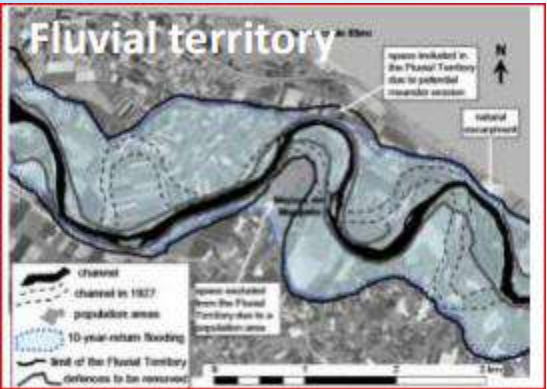
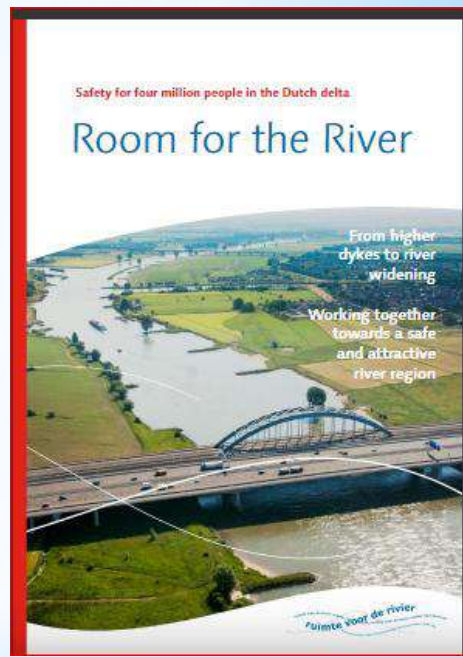
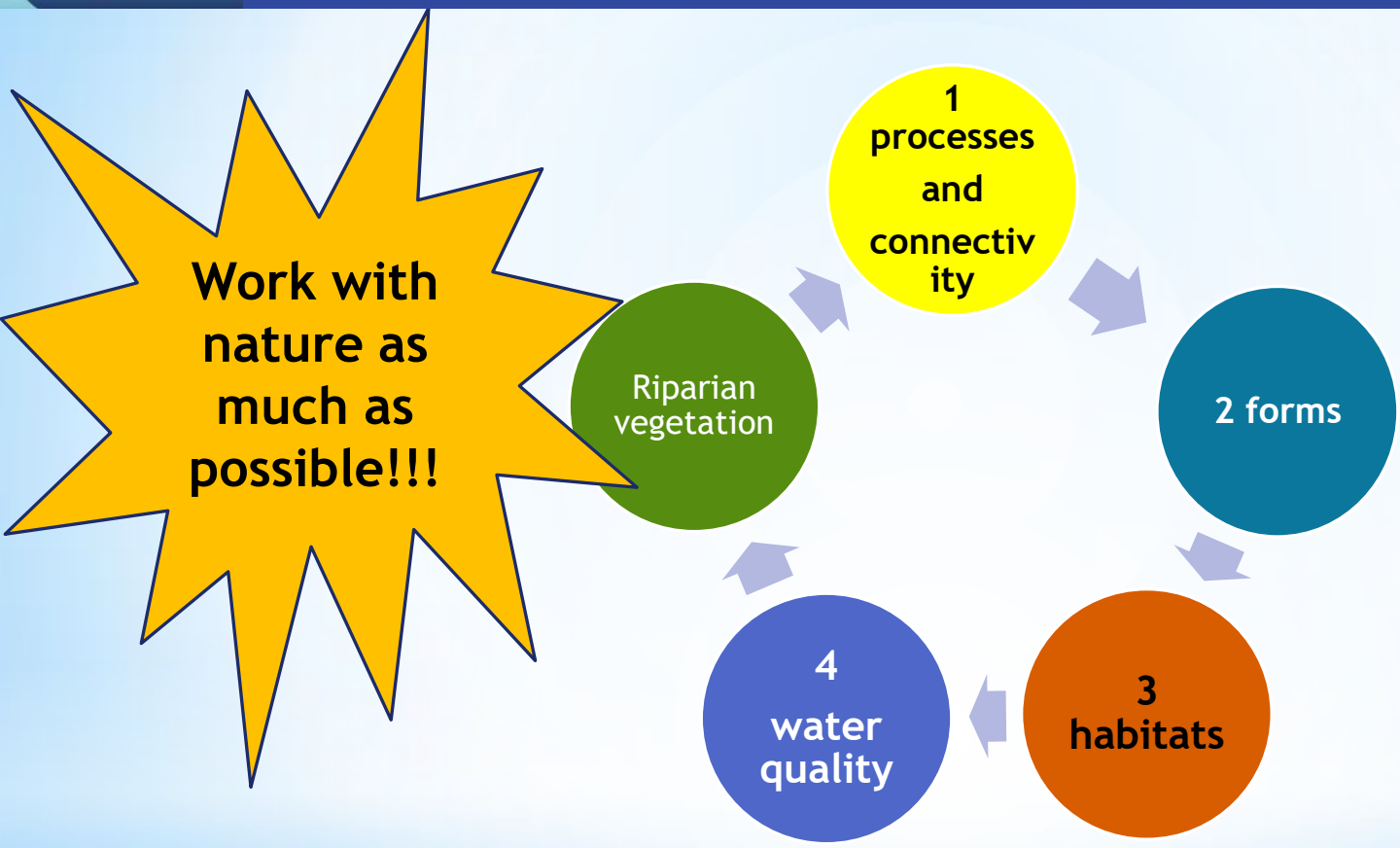
# WATER MUSEUMS ROLE

Water museum must be the opportunity to connect different disciplines around water





# NEW approach for sustainability





# WATER MUSEUMS ROLE

## The Muse new key words

**From:**

Paleontology  
Mineralogy  
Ecology  
Zoology  
.....ies

**To:**

Citizen Science  
Cultural landscape  
Sustainable Development Goals  
Education  
Lifelong learning  
Participation  
Social cohesion

The logo for MuSe, featuring the word 'MuSe' in a stylized, white, sans-serif font. The letters are slightly shadowed, giving it a 3D appearance as if it's floating or resting on a surface. The background is a blurred image of a museum interior with people.

To share knowledge on processes and functions



# WATER MUSEUMS ROLE

## Our commitment on Global Citizen Education Goals



### **Education**

Science & Education activities for all ages

### **Subject**

Convergence on Sustainable Development Goals

### **Local development**

Supporting local assets and social values





# WATER MUSEUMS

from the building to the territory



**Mountain Fresh water research for  
conservation purposes in the Alps**



# WATER MUSEUMS

## from the building to the territory

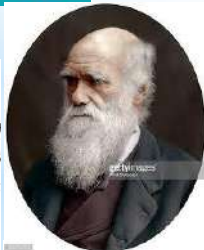
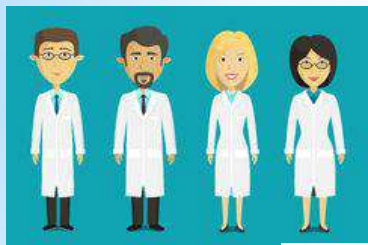
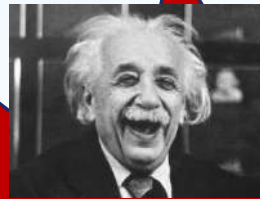


Research And Education at Tovel Lake  
Brenta Dolomites - Central Italian Alps



# Citizen Science

It is an opportunity for an active and aware community





# Osservatorio Citizen Science



PROGETTO  
FreshWaterWatch



RICERCA & TESI  
UNO DEI PROGETTI IN CORSO:  
FOTOGRAMMETRIA



PROGETTI  
SCUOLA



CITIZEN SCIENCE SERVICE  
TI AIUTEREMO AD AVVIARE IL TUO  
PROGETTO CITIZEN SCIENCE



[www.osservatoriocitizenscience.org](http://www.osservatoriocitizenscience.org)



# Citizen Science - FWW



**89%**

Improved understanding of local & global water issues

**95%**

Inspired to reduce environmental impact

**91%**

Contributing to local/company sustainability programme

**77%**

Motivated to continue with association/company

Source: analysis based on 450 FWW citizen scientists (April 2016)



# Opportunity for global community



[FreshWater Watch - Earthwatch](http://earthwatch.org)

<http://earthwatch.org/Scientific-Research/FreshWater-Watch>



# Healthy freshwater ecosystems



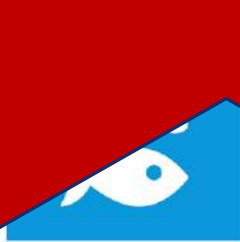
SUSTAINABLE DEVELOPMENT GOALS  
17 GOALS TO TRANSFORM OUR WORLD



THANKS for lissening!

[bruna.gumiero@unibo.it](mailto:bruna.gumiero@unibo.it)

[www.osservatoriocitizenscience.org](http://www.osservatoriocitizenscience.org)



SDGs: Call to action





# From a Natural History Museum to the new MUSE – Museo delle Scienze. Trento - Italy

Since 18° Century, nobles & rich people of Trento built up a first permanent natural history collection.

In 1921, a natural history museum went organized in a historical building in the city center,

In the '90 we began to better develop research activity (together with fresh water ecology studies), new exhibitions and innovative public programs.

In 2003 the nomination to develop a feasibility study of a brand new museum.

In 2013 the public opening.

**MUSE**



# The cultural Identity of Muse – Trento Italy

A journey into the fabulous space of Muse to appreciate the uniqueness of the **alpine natural landscape** and to imagine **smart solutions** for our **common sustainable future**.





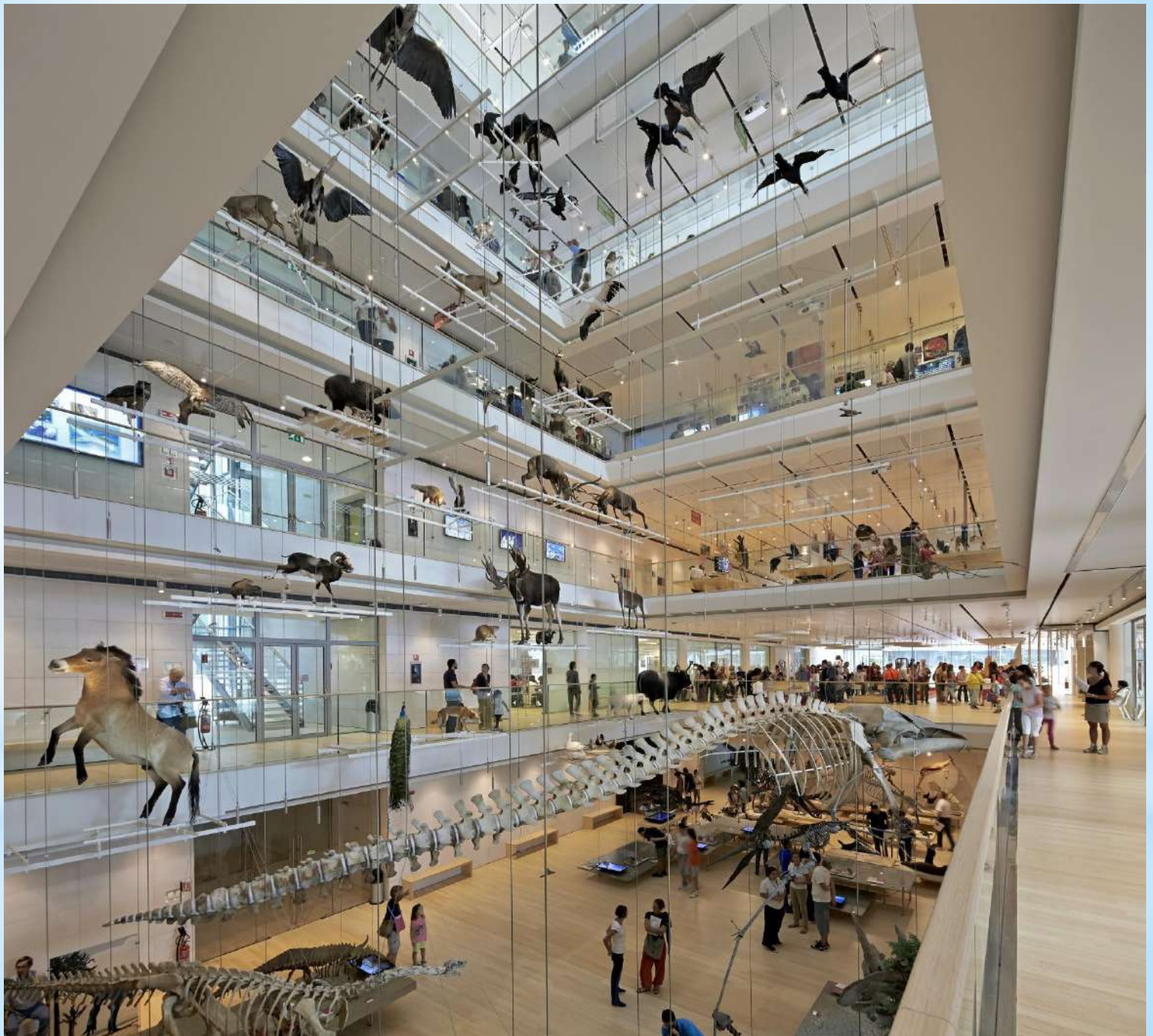
# Six floors, one unique open space

from the top of the mountains to the deep history of life



MUSE







# The Promise



To become:

- A relevant scientific research institution
- A relevant informal education institution
- A place where things happens, people meet and build up a personal opinion
- A venue that participate to the cultural and touristic offer of the region



# \* Numbers ... so far

## for the local economy

500k visitor/year. 75% tourists from outside  
50ML €/year the induced grow on local  
economy



## for the people

The Muse is a relevant cultural entity for citizen  
and visitors, support s cultural associations ,  
education activities and long life learning.



## for the museum

Up to n. 2000 fte employees (160 with University  
degree) for Operations, Education, Audience  
Development , Research, (regional and EU  
Projects)



MUSE