

Dams and Reservoirs: climate change adaptation and public awareness strategies

Piacenza EXPO - 30 October 2024



**AQUA
WATT**

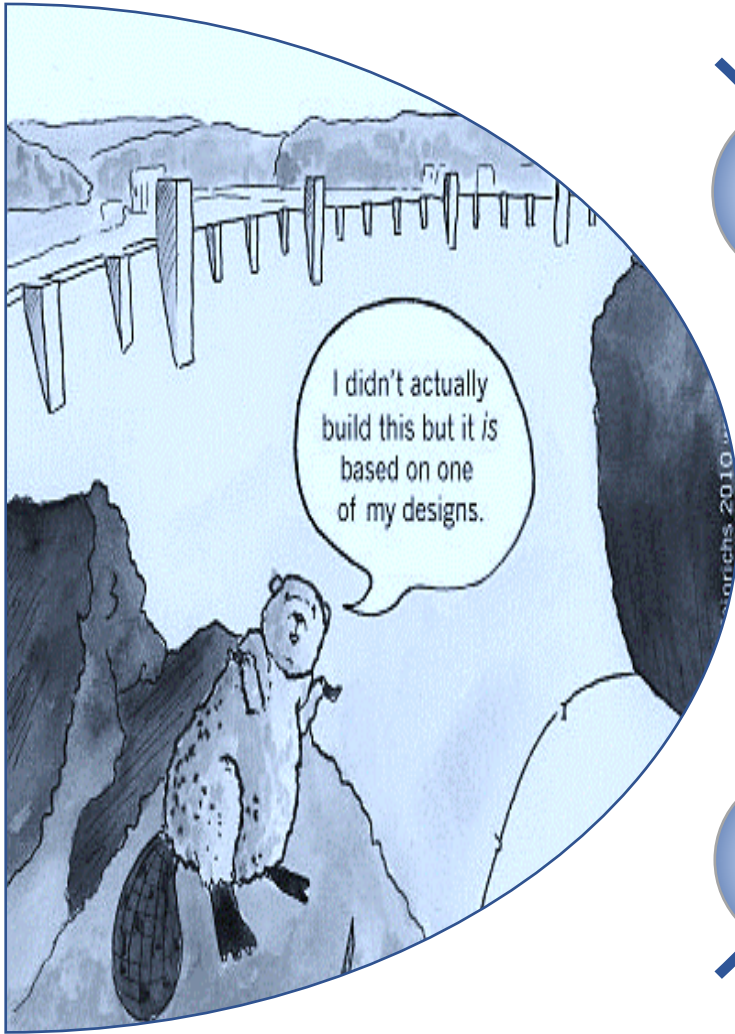


**initiatives to
promote public
awareness on
Dams and
Reservoirs**

Guido Mazzà

Italian Committee on Large Dams





Introduction

Pro-activity of Dam Owners

The *Stakeholders'* point of view

Final remarks

Survey carried out
at national level to
assess ...



... the **dam owners' proactivity** to foster the local development of the host territory, making existing infrastructures more sustainable and environmentally friendly



... the **stakeholders' perception of** on the role (social, economic and environmental) that dams and reservoirs can contribute to provide to our society and the energy transition process

ITCOLD WG «Benefits and problems associated with the presence of artificial reservoirs on the territories»

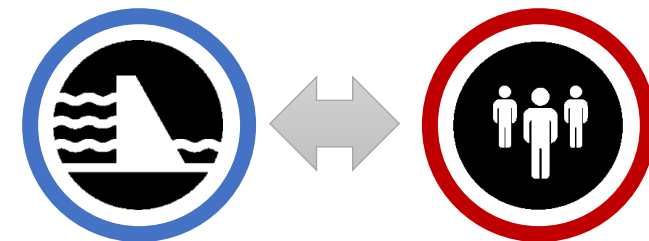
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- ✓ Giuseppe Donghi (EDISON)
- ✓ Massimiliano Spinato (ENEL)
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- ✓ Cristina Cavicchioli, Elisabetta Garofalo, Antonella Frigerio, Massimo Meghella (RSE)



World Commission on Dams (WCD)

*Dams and Development:
a New framework for decision-making*
(Report, 2000)

- ❑ First attempt to carry out a critical analysis on the relationship between dams and territory
- ❑ Main objectives:
 - ✓ **Mitigate** the socio-economic and environmental impact of dams
 - ✓ **Propose** global and integrated **strategies** based on technical and scientific information, considering **the perception of stakeholders on the role played by large dams**



DAMS AND DEVELOPMENT

A New Framework for Decision-Making



THE REPORT OF THE WORLD COMMISSION ON DAMS



earthscan
from Routledge

□ Controversial conclusions of the WCD Report

- ✓ Has the balance between costs and benefits been assessed by the WCD without any **bias**?
- ✓ Has an **objective assessment** been made on the proactivity of the dam concessionaires and on the perception of stakeholders affected by the presence of the dams?
- ✓ **Were the WCD conclusions applicable to countries with mature technologies?**

PROACTIVE



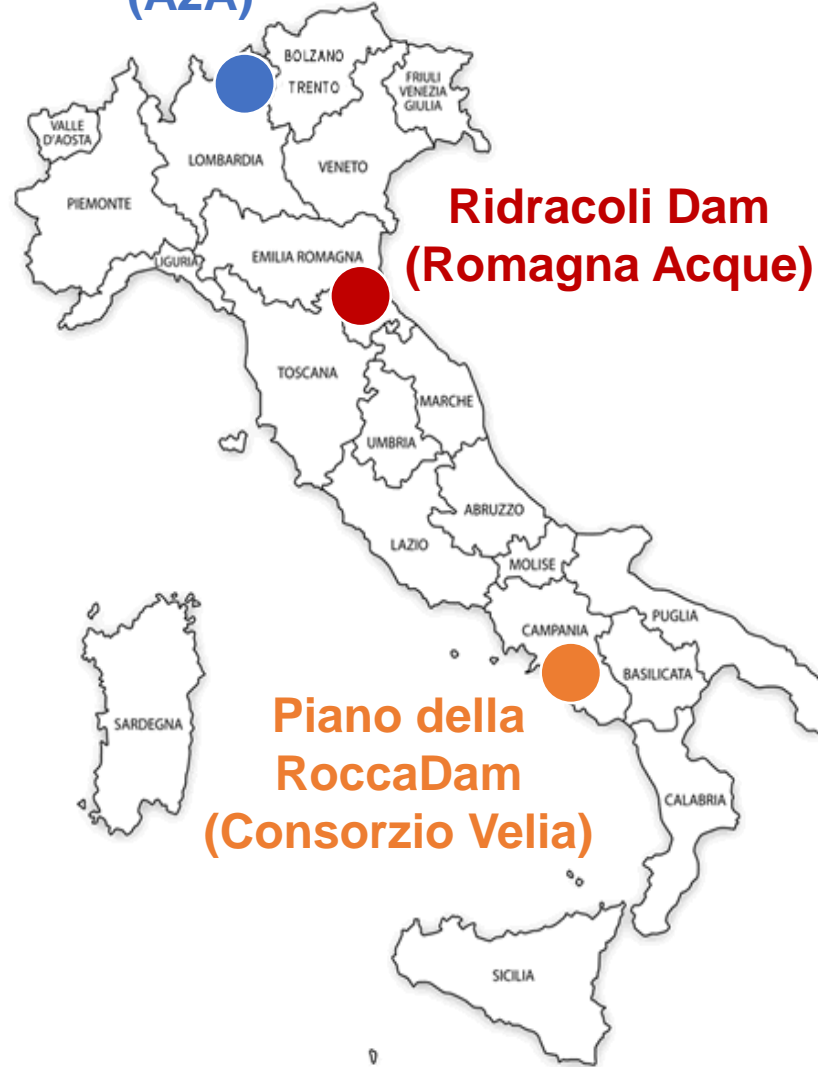
STAKEHOLDER

Proactivity of dam owners - *Best practices*



Study of three dam management best practices

San Giacomo Dam (A2A)

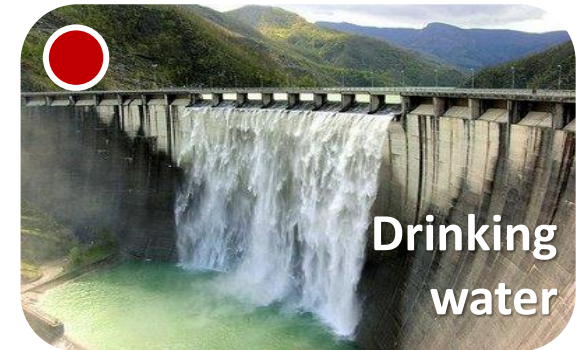


Ridracoli Dam (Romagna Acque)

Piano della Rocca Dam (Consorzio Velia)



Hydropower generation



Drinking water



Multi-use plant



Ministero dello Sviluppo Economico

Proactivity of dam owners - Nationwide survey



- The analysis of the three Best Practices made it possible to develop hypotheses on the proactivity of dam owners that needed to be verified at a national level



- Survey carried out using a questionnaire to measure the pro-activity of dam owners
- Set up of a dam owners' model**



Proactivity of dam owners



❑ The dam owners evaluated their own proactivity in three macro areas



Environmental management

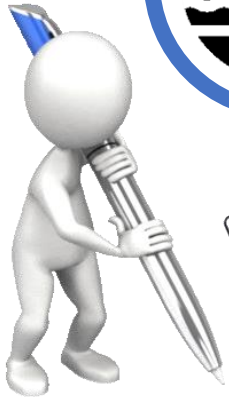


Promotion of local development and communication



Forms of compensation (monetary transfers, water resource releases, etc.)

Proactivity of dam owners - *Nationwide survey*

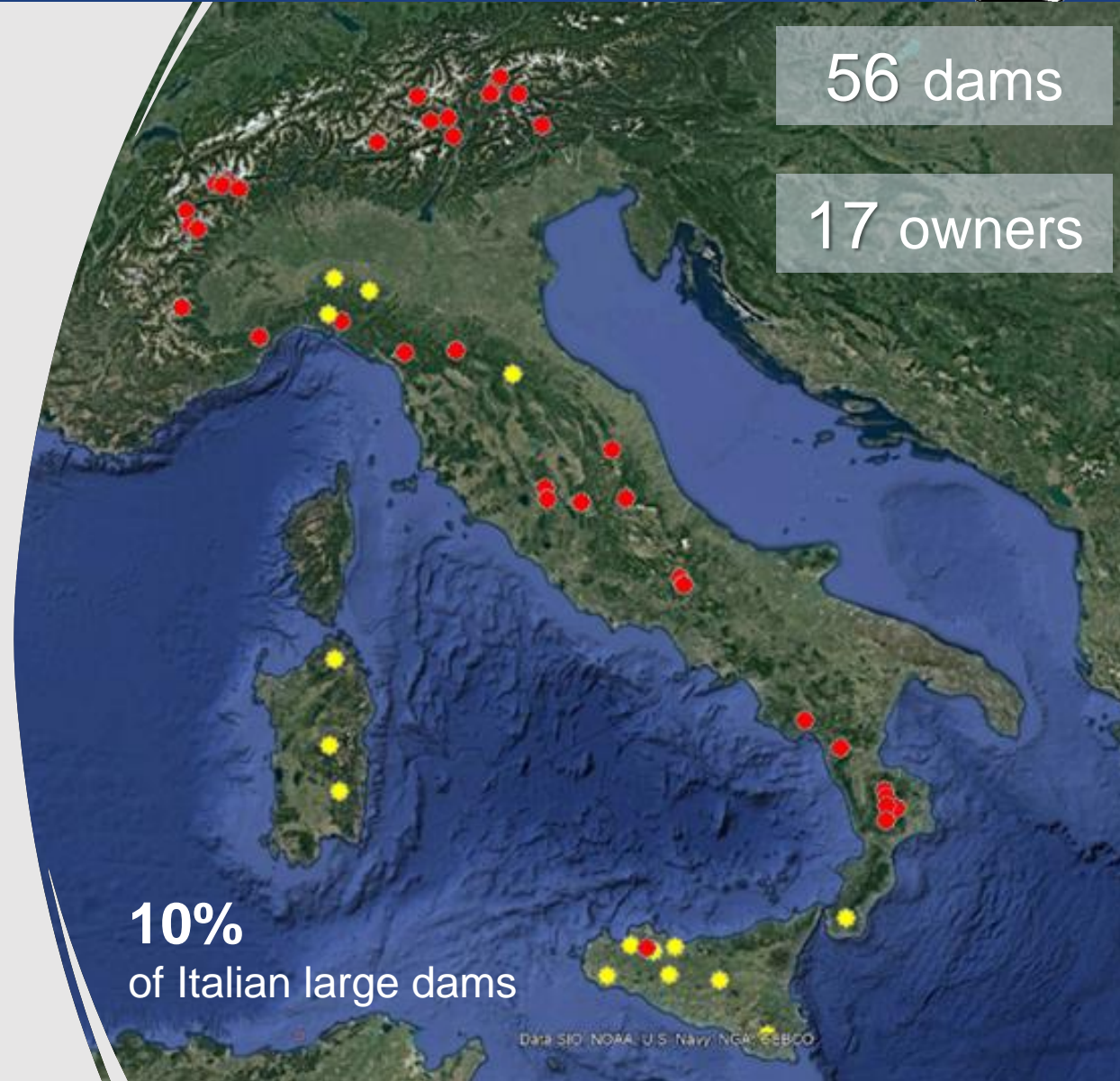


- Excellent
- Very good
- Good
- Average
- Poor

Statistically significant sample

41 dams primarily intended for hydroelectric generation

15 dams primarily intended for drinking water and irrigation use

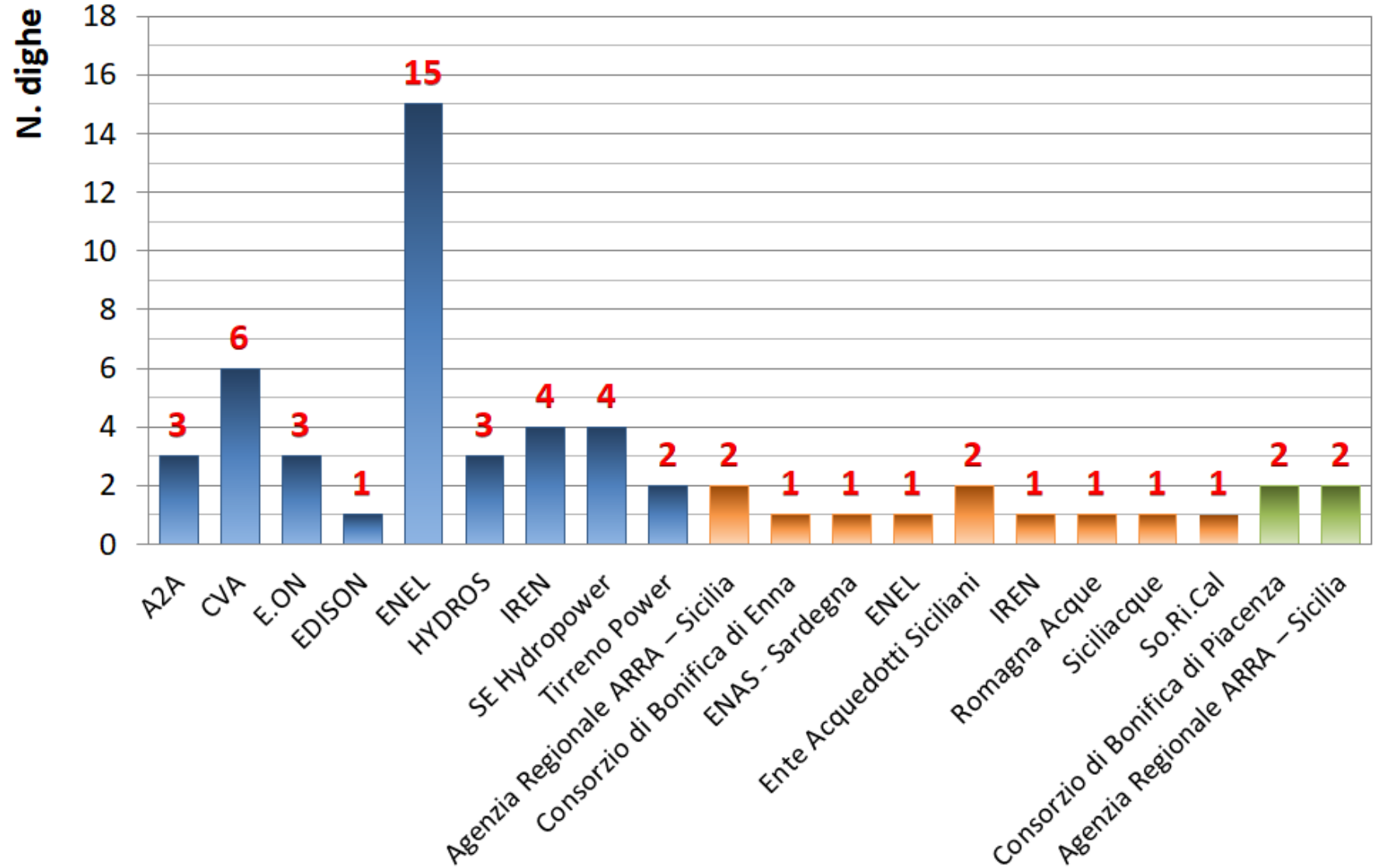


Proactivity of dam owners - *Nationwide survey*

Hydropower
41 dams
9 dam owners

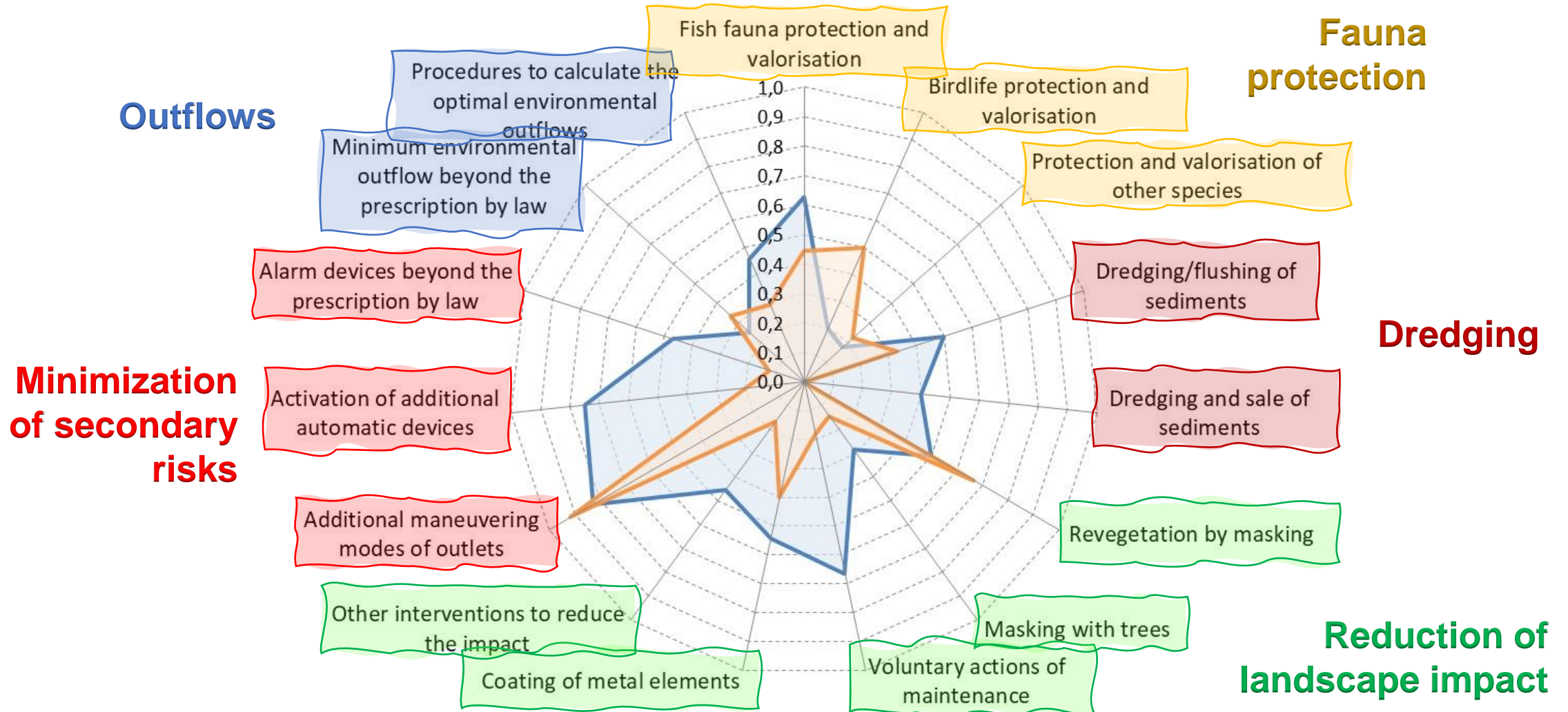
Water supply
11 dam
9 dam owners

Irrigation
4 dams
2 dam owners



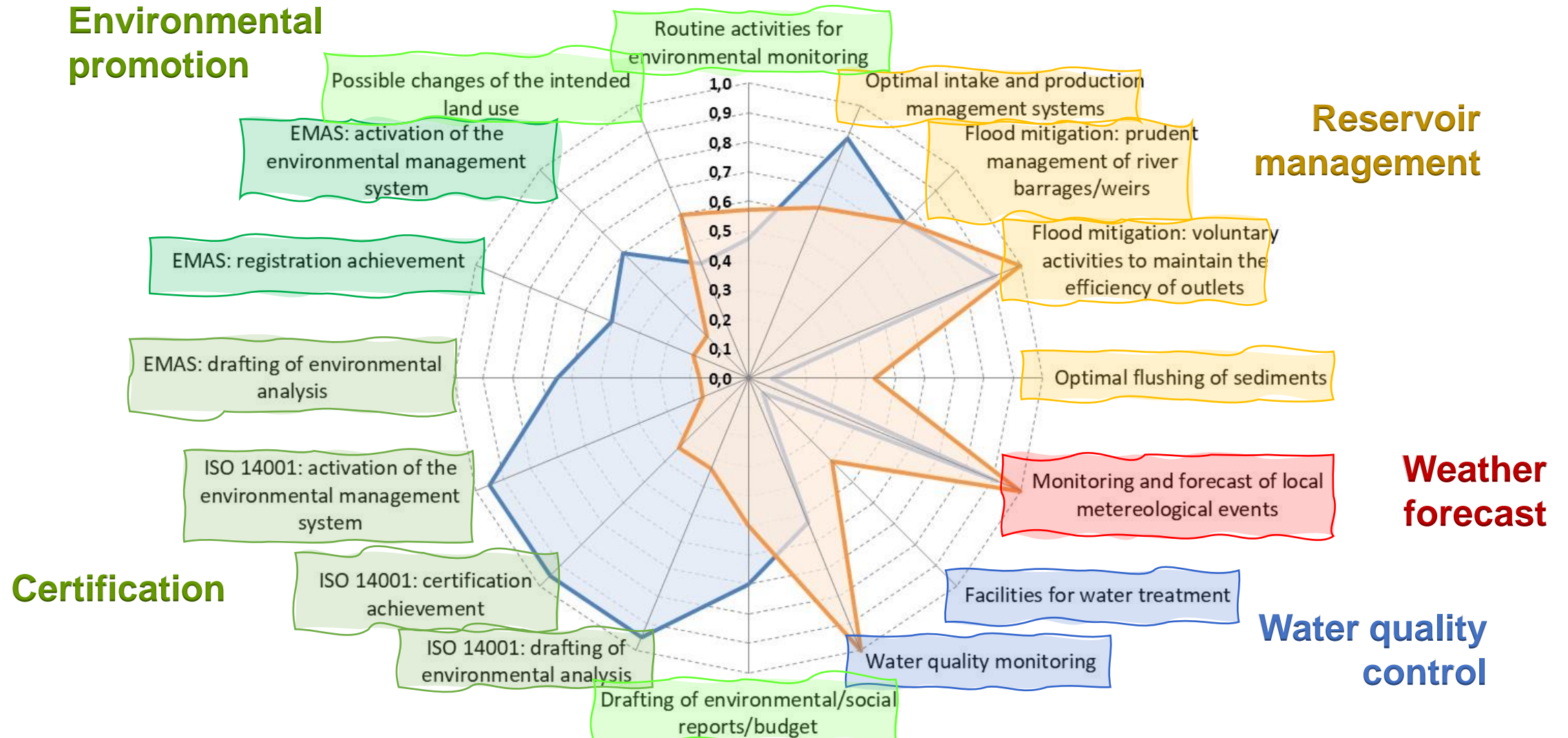
Proactivity of dam owners - *Environmental management 1*

■ Hydropower
 ■ Irrigation - Drinkable water



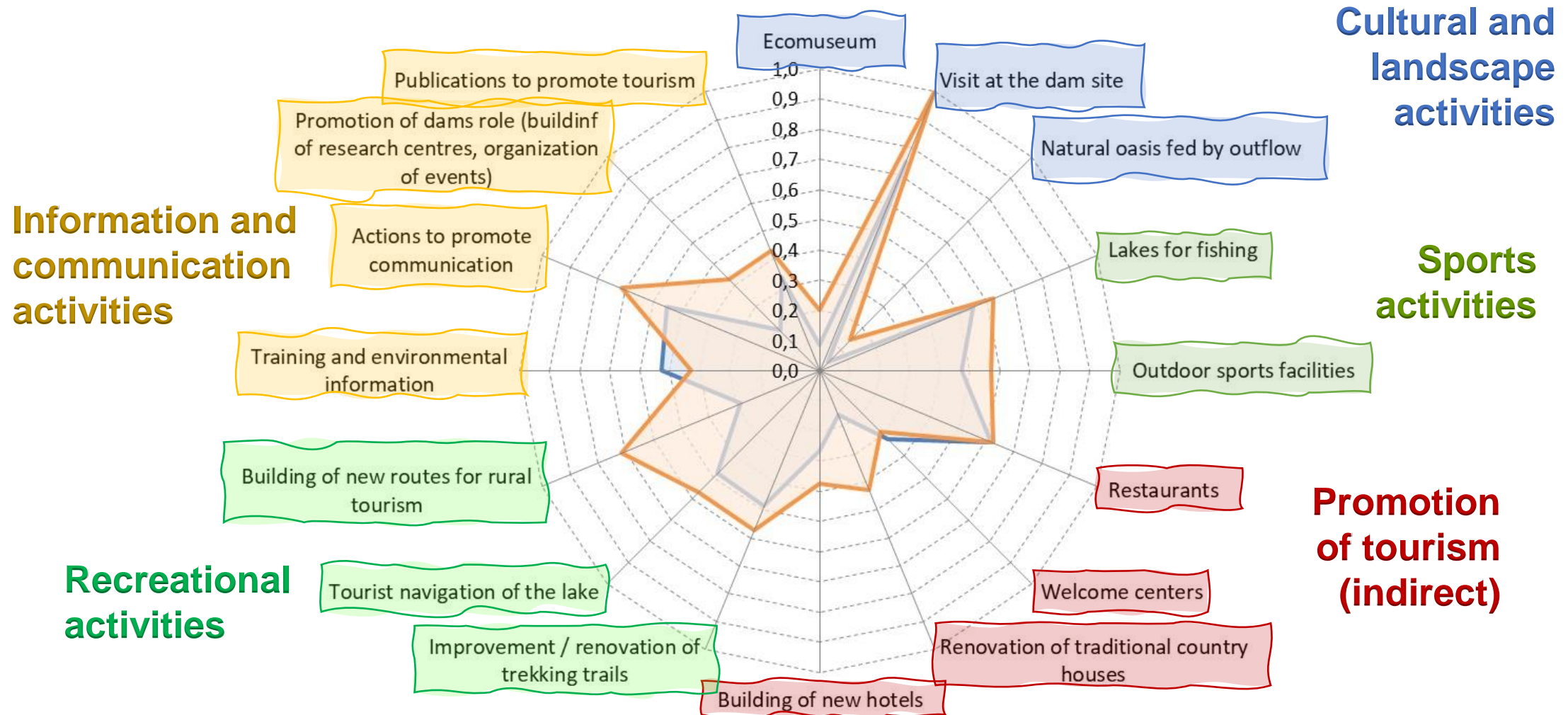
Proactivity of dam owners - *Environmental management 2*

■ Hydropower ■ Irrigation - Drinkable water



Proactivity of dam owners - Promotion of local development

■ Hydropower
 ■ Irrigation - Drinkable water



Cultural and landscape activities

Sports activities

Promotion of tourism (indirect)

Information and communication activities

Recreational activities

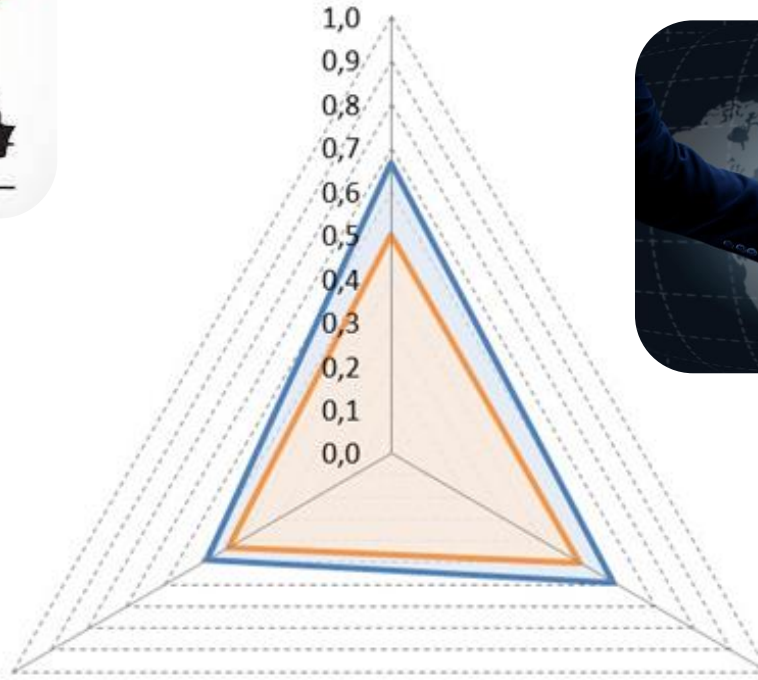
Proactivity of dam owners - *Promotion of communication*

□ Hydropower □ Irrigation - Drinkable water



Promotion and/or participation
in consultation fora

1,0
0,9
0,8
0,7
0,6
0,5
0,4
0,3
0,2
0,1
0,0



Local development programs

Voluntary agreements,
memoranda of understanding,
environmental initiatives





The transfer of economic resources basically concerned only the hydroelectric dam owners



Water transfers concerned 27/56 dams (with a % of turnover from some % even up to 10%)



The direct economic transfer involved 21/56 dams (with a rather variable % of turnover from a few % up to 10%)



What is the stakeholders' point of view?



Perceived role of dams



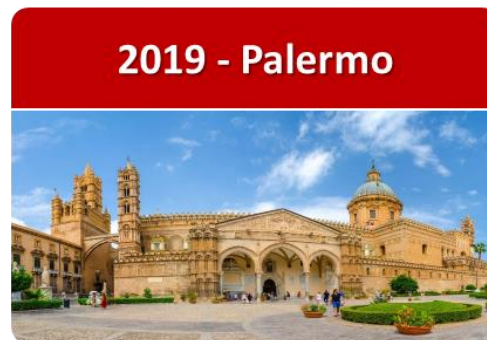
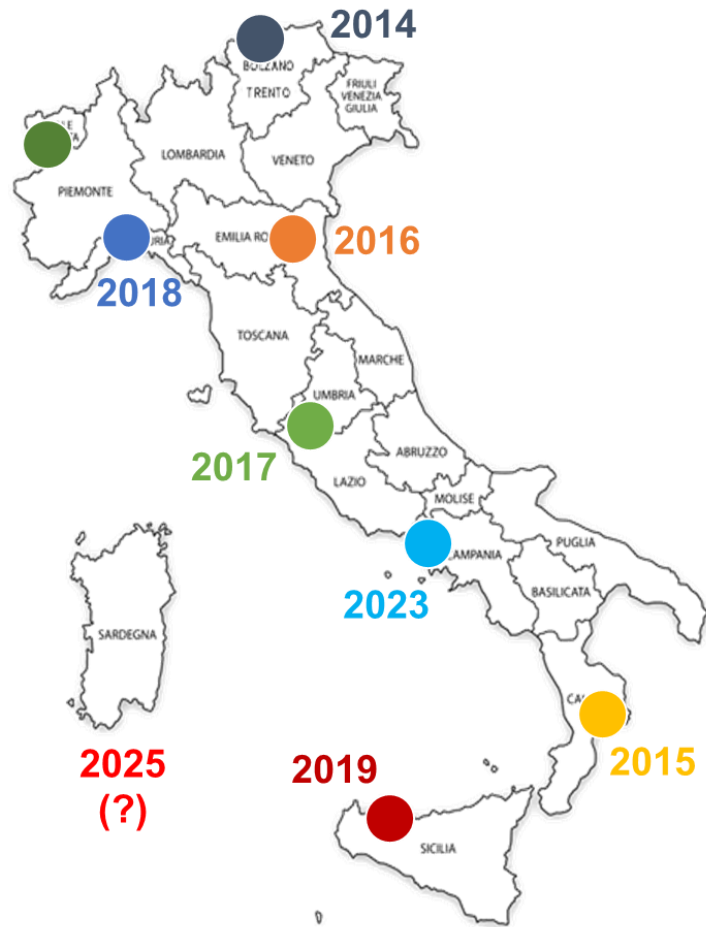
Perception of the dam owners' pro-activity



Importance of forms of participation and cooperation

The point of view of the stakeholders

Workshop “Dams and territory”

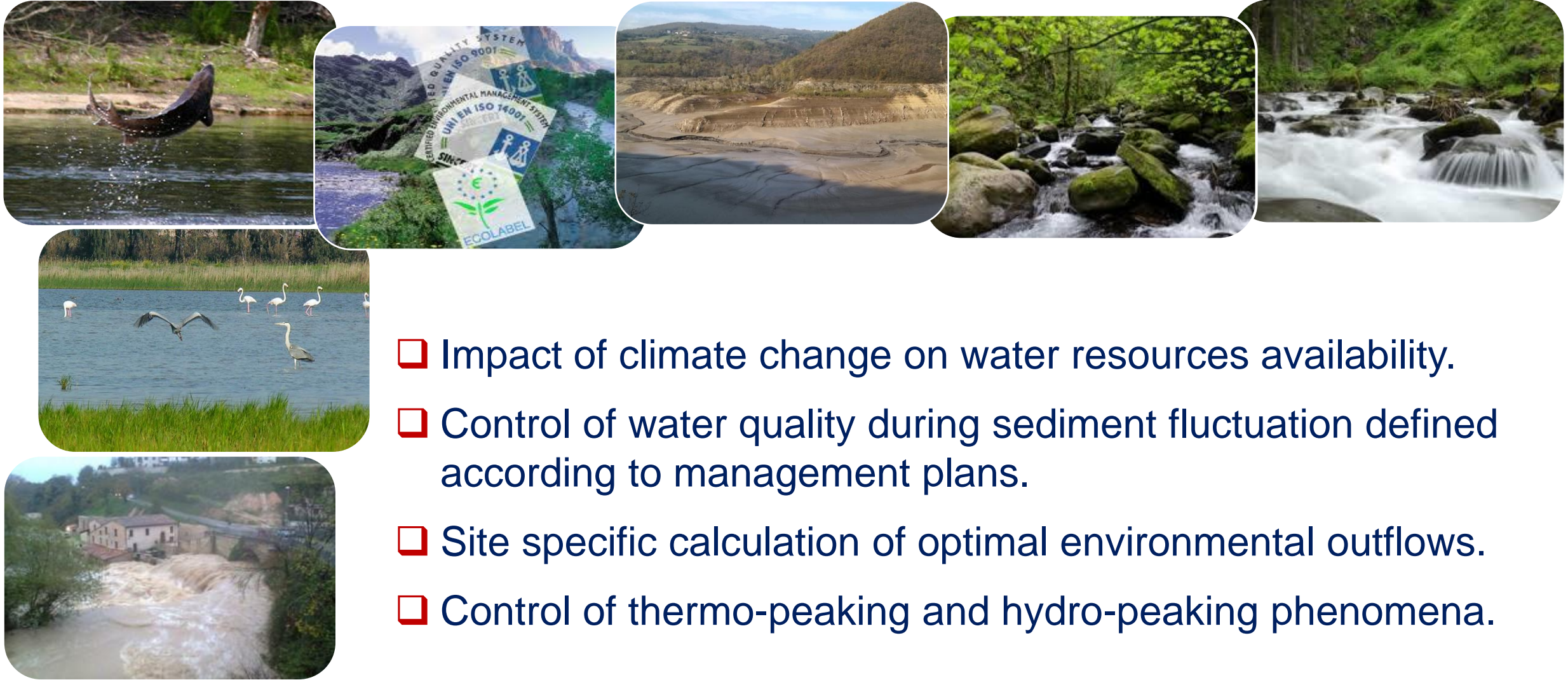


The point of view of the stakeholders – *Environmental aspects 1*



- Wildlife protection, oases creation, actions to reduce environmental impact, certifications.
- Optimization of the use of water resources considering different priorities: mitigation of flood risk and water deficit in periods of drought, fire protection, etc.

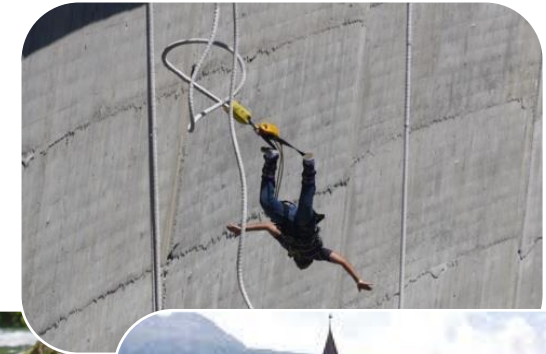
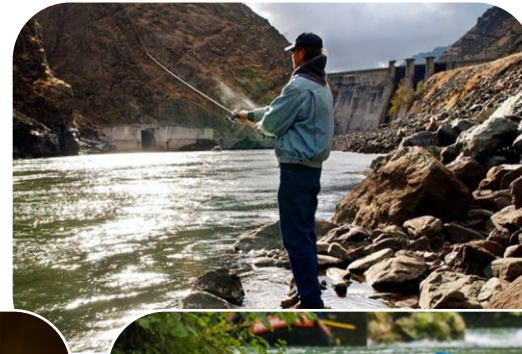
The point of view of the stakeholders – *Environmental aspects 2*



- ❑ Impact of climate change on water resources availability.
- ❑ Control of water quality during sediment fluctuation defined according to management plans.
- ❑ Site specific calculation of optimal environmental outflows.
- ❑ Control of thermo-peaking and hydro-peaking phenomena.

The point of view of the stakeholders – *Socio-economic aspects*

- ❑ Water releases for the development of the local economy.
- ❑ Consultation processes and monetary compensation of impacts.
- ❑ Guided visits to dams and power plants, creation of eco-museums, promotion of sports competitions, recreational and educational activities: *fishing, rafting, hiking, trekking, sailing, etc.*



The point of view of the stakeholders – Complementary aspects



- ❑ Importance of multiple uses of water and ancillary services: *stabilization of the electricity grid, water storage, firefighting, etc.*
- ❑ Safe and efficient maintenance of existing structures: *rehabilitation works, risk reduction, dredging of sediments, etc.*
- ❑ Criticisms of the presence of mini-hydro plants
- ❑ Critical issues related to uncertainties regarding the procedures to be adopted for the renewal of concessions.

Final remarks - Promoting ITCOLD activities



- ❑ “The assessment of the relationship between dam owners and host territories. A picture of the Italian experience”. **EurCOLD Symposium**, 25/10/2016, Antalya (Turkey).
- ❑ Task Force “**Dams and Territories**”. **ICOLD European Club**, 2019.
- ❑ “*Assessment of the relationship between dam owners and host territories*”. **SLOCOLD Workshop**, 30/01/2020, Ljubljana (Slovenia).
- ❑ “*Dighe e Territorio*”. **AIPnD Conference**, 17/09/2021, Sondrio (Italy).
- ❑ “*Dam owners and host territories: a complex relationship. The Italian experience to facilitate their communication*”. **4th Int. Dam World Conference**, 30/09/2021, Lisbon (Portugal).
- ❑ ITCOLD survey was included in the **HYDROPOWER EUROPE PROJECT 2021**
- ❑ “*Dams and territories: ITCOLD's initiatives to promote proactive dialogue*”. **EurCOLD Symposium**, 30/05/2022, Marseille (France).
- ❑ “*The initiatives of the Italian Committee on Large Dams to promote a proactive dialogue between dam owners and stakeholders*”. **92nd ICOLD Annual Meeting**. New Delhi, India 29 Sept. - 03 Oct. 2024.





Indagine socio-economica e ambientale sul rapporto "diga - territorio"
ITCOLD – Comitato Nazionale Italiano delle Grandi Dighe

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**MANIFES
TO**

The new version of the Manifesto issued in 2016 by EurCOL is being developed

24 May - 1 June 2024
1st Dam Day in Italy
20 Partners
27 Events

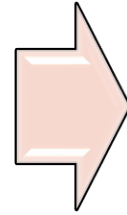


2024



Dam Day
Dighe e serbatol in Italia

Final remarks



Continue to organize “**Dams and Territory**” workshops to promote **dialogue** between **dam owners and stakeholders** for the benefit of the country system and to promote knowledge of the role played by dams and reservoirs.

Overcoming prejudices about the role of dams, **promoting public acceptability** of these large infrastructure systems, **facilitating the comparison between different points of view and interests.**

ITCOLD's initiatives to promote public awareness on Dams and Reservoirs



Guido Mazzà

A special thanks to Antonella Frigerio for her precious contribution to the success of these ITCOLD initiatives

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