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Padova University Spin-off

Università degli Studi di Padova

How to finance risk resilience in a climate change context

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21/10/2021

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- Applications
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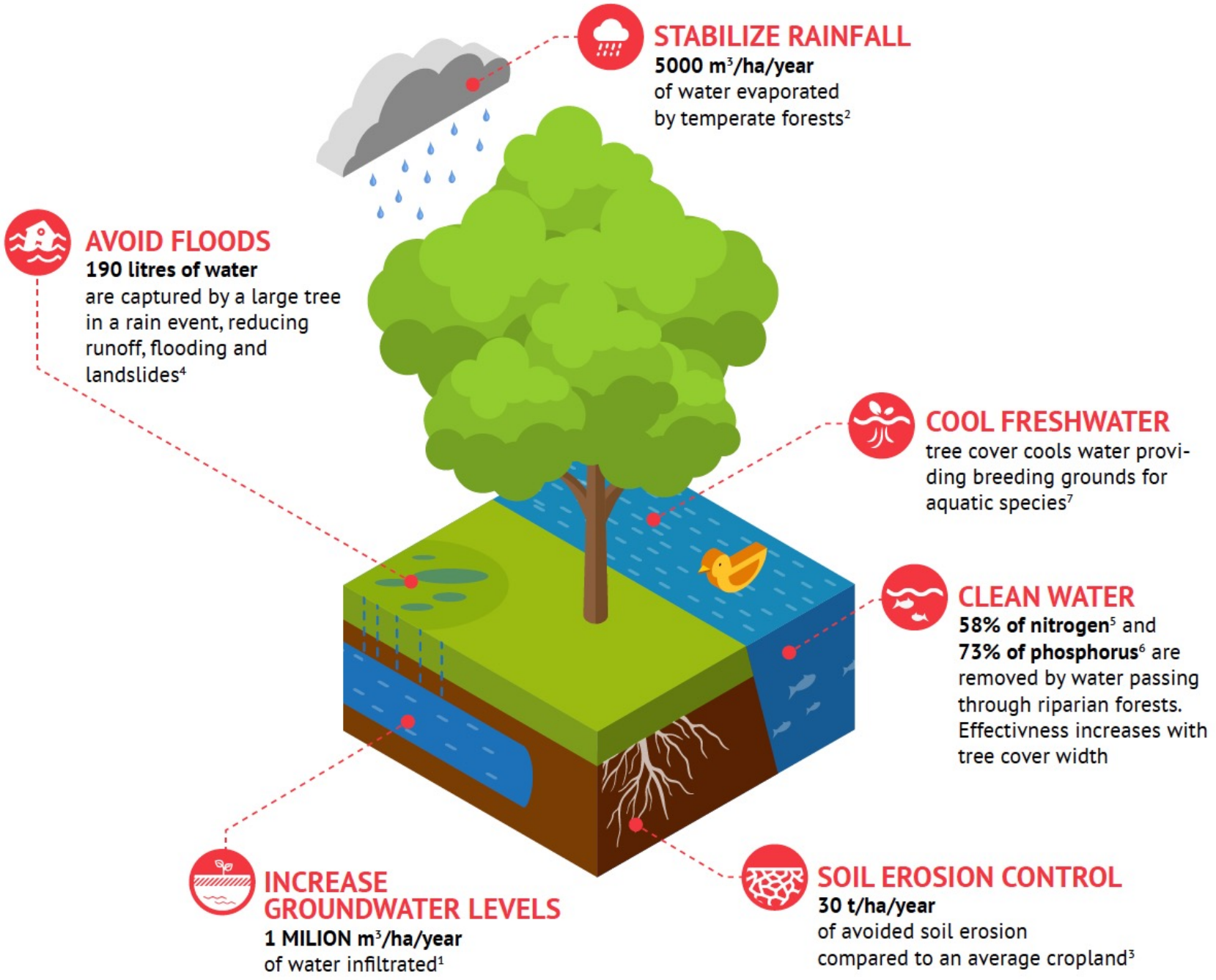
Why financing forest for water?



Global trend: integrating green and grey infrastructures/approaches

To increase resiliance of the build environment

Problem: floods

Applications: riparian forests and floodplain

Problem: lower water table

Applications: Forest infiltration areas

www.parcofiumebrenta.it

Problem: pollution from agriculture

Forest-water safeguard areas to protect drinking water source

www.parcofiumebrenta.it

Problem: forest fires and water quality

Applications: Forest management for resilience to wildfire in water catchments

Problem: dam sedimentation

Improved forest management to avoid erosion and dam sedimentation

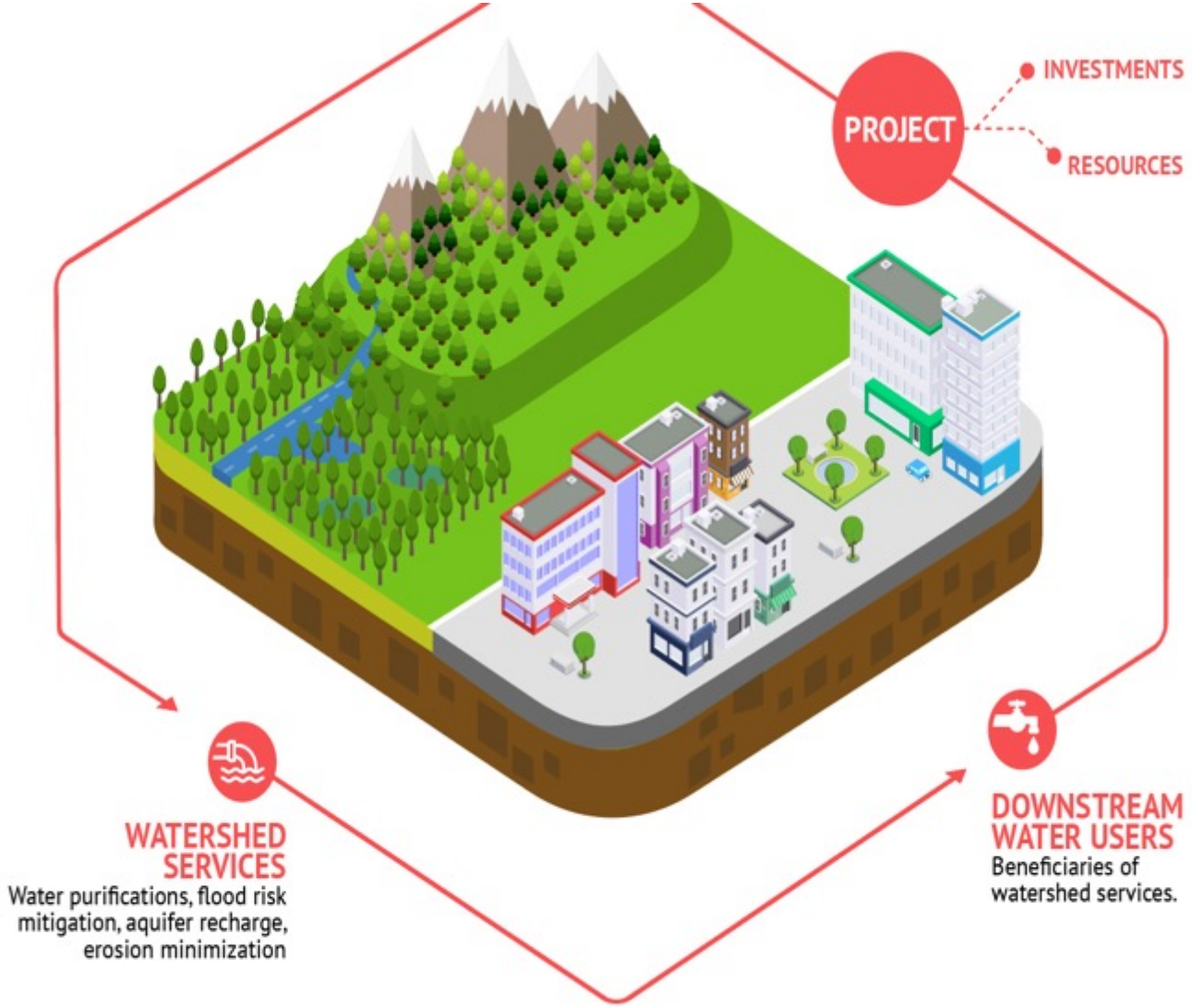
Idro Ecomuseo delle Acque di Ridracoli

How do we finance forests for water?

Payments for Watershed Services (PWS) *are* ***market-policy tools*** *that allow:*

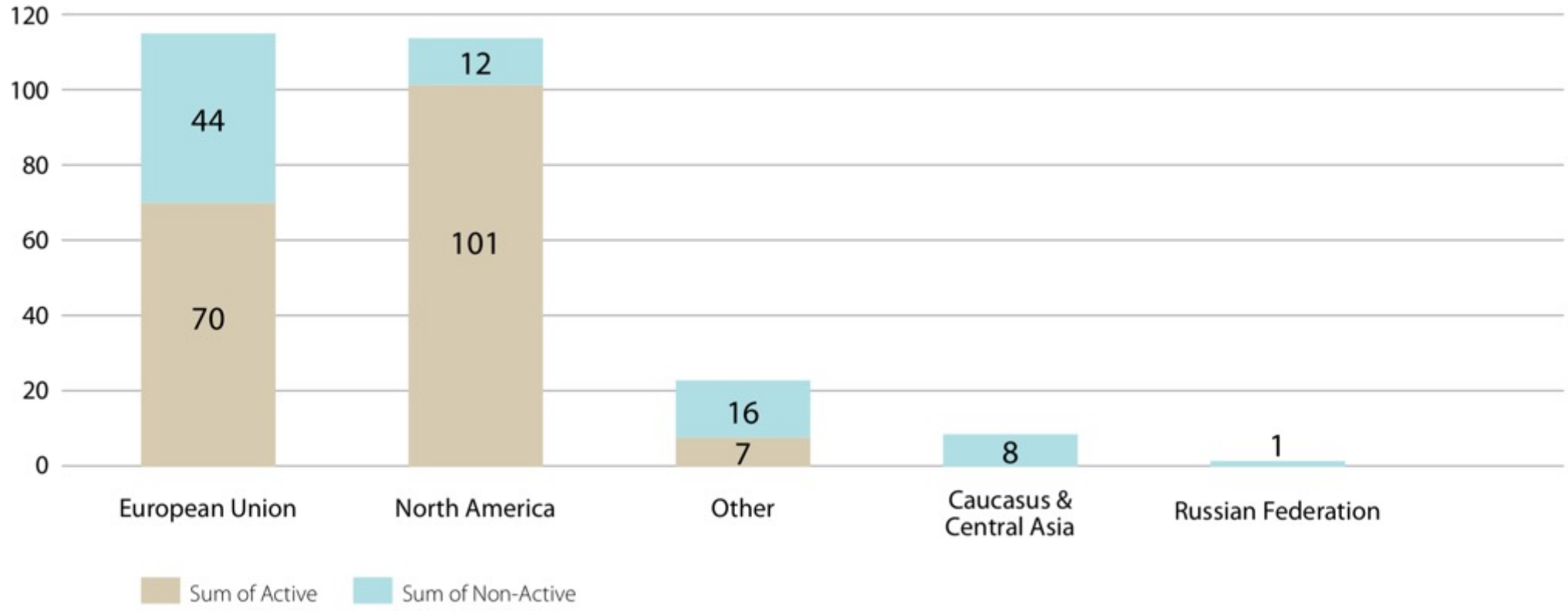
- ***transfers*** *of resources between social actors, which aims to create* ***incentives***
- *to* ***align*** *individual and/or collective land use decisions*
- *with the* ***social interest*** *in the management of natural resources*

(Muradian *et al.*, 2010).



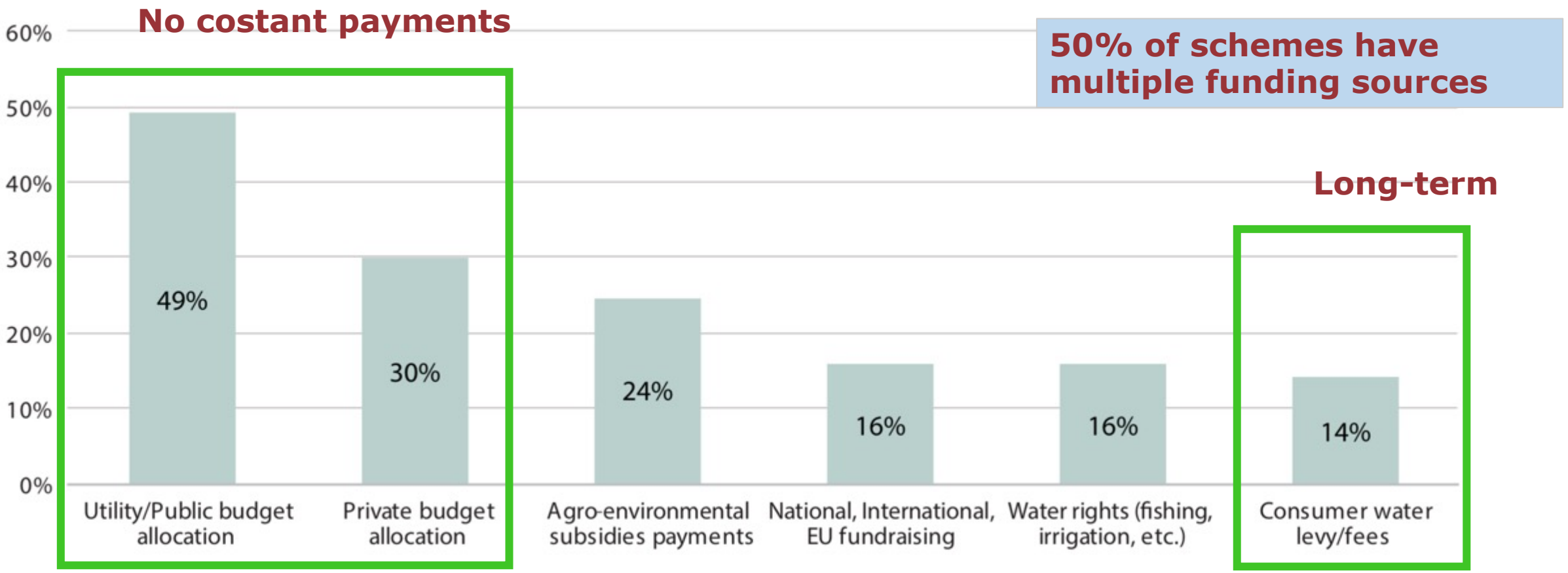
Geographical distribution of forest PWS

Number of active and non-active (design, pilots, unknown) PWS schemes by UNECE regions



Source: Leonardi, 2015.

Funding sources



UNECE/FAO, 2018. Forests and Water: Valuation and Payments for Forest Ecosystem Service

11 typologies of quasi-PES in the water sector

Programme typologies	Sub-type	Major drivers	Main financing sources
Public – non-voluntary	Compensation for legal restrictions	Increase acceptance of legal restrictions through compensation of opportunity costs	Public budget allocation or scope taxes
Public regulated	Agri-environmental schemes	Public goods provision and partial cover of adoption of management practices	Common Agricultural Policy
	Public bilateral agreements	Local public goods provision	Budget allocation
	Water charge - public bilateral agreements	Investing on water quality. Charging customers for water related services via water charges	Scope taxes
	Regulated trading initiatives	Regulatory compensation	Compensatory trading schemes
Compensatory private initiatives	Trading initiatives	Standardized water footprint voluntary compensation	Compensatory trading schemes
	CSR offsetting	CSR water footprint voluntary compensation	Private sponsor
Private voluntary payments	Avoided impacts bilateral agreements	Avoid use of chemical inputs through paying for opportunity cost incurred (no associated benefits)	Private budget allocation
	Multiple benefits partnerships	Improve hydrological service provision through natural capital maintenance and improvement. Based on partnership model	Multiple sources and instruments
	User funded schemes	Charging final beneficiaries to invest on targeted hydrological services	Beneficiary pays fund
	Environmental benefits – bilateral agreements	Improve hydrological service provision through natural capital maintenance and improvement. Based on bilateral agreement	Private budget allocation

Charges through water bill

«Other private schemes, successful at local level, have failed to reach the desired scale and impact»

UNECE/FAO, 2018.

Financial solution: green taxes

- Paul Romer, the 2018 Nobel Memorial Prize: **'The problem is not knowing what to do - The problem is getting a consensus to act**'

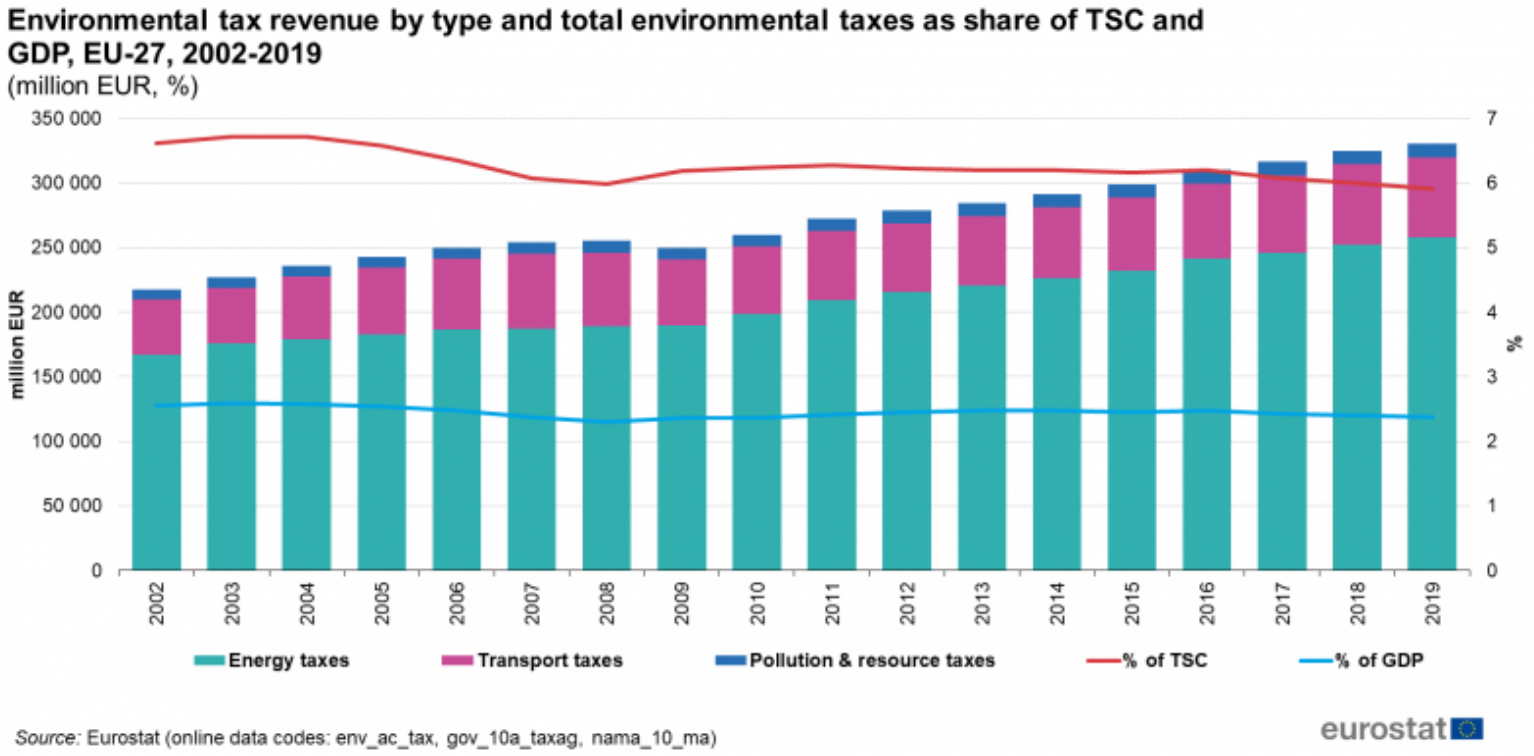
- The **European Green Deal** sets out three main goals to be achieved by 2050, and **taxation can play an active role** in helping Europe reach those goals.

Paul Romer, the 2018 Nobel Memorial Prize in Economics

Green tax shift towards ecological taxation

- In 2019, total green tax revenue in the EU represented **2.4% of EU GDP** and **5.9% of total EU** of taxes and social contributions (TSC).

- Only 3.2% of these, were coming from taxes on **pollution and resources, the rest on transport and energy**

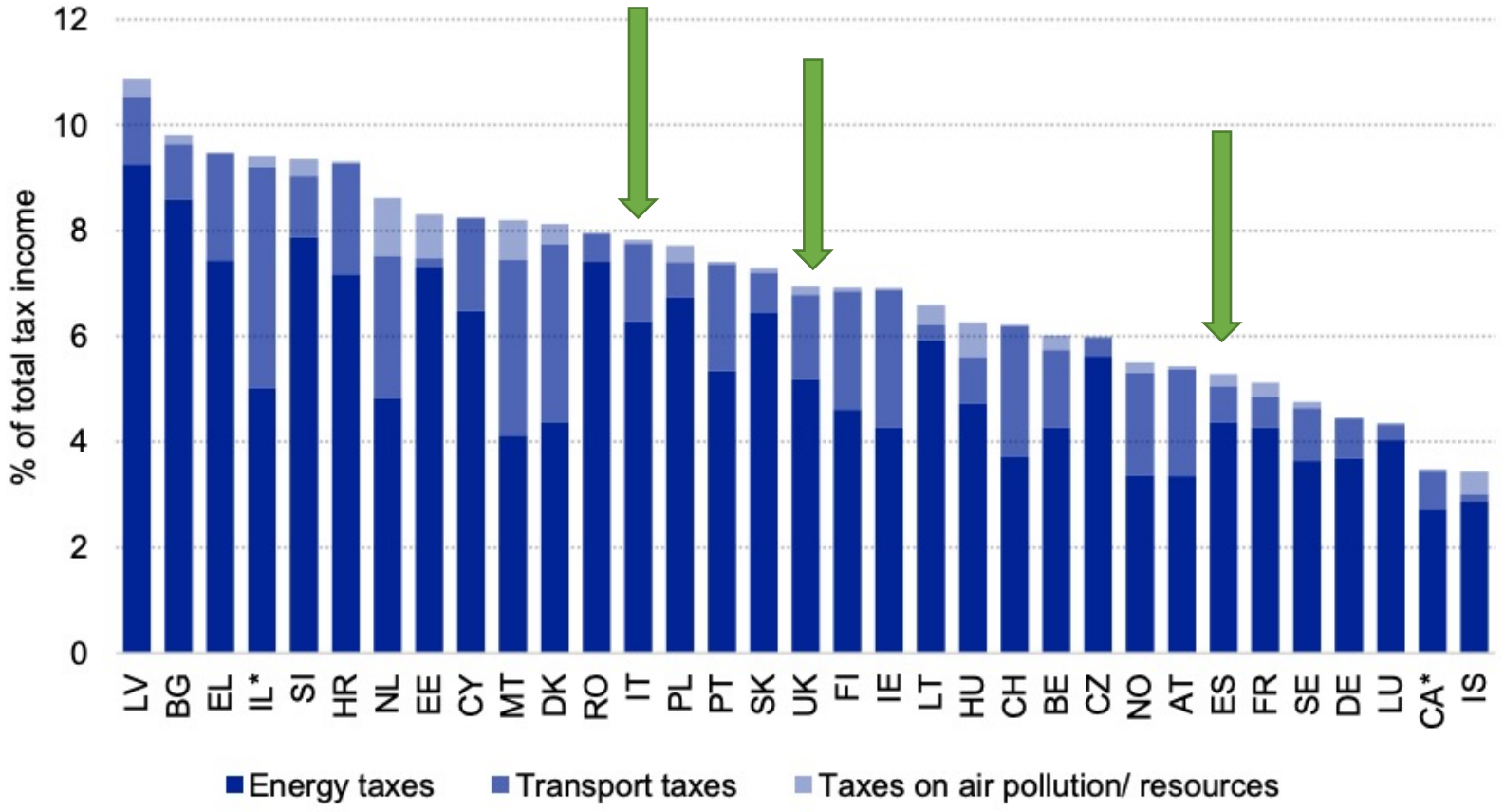


Financial solution: green taxes

The fact:

- Green taxes were born in order to correct negative externalities of economic activities
- However, only a tiny part of green taxes are going to finance environmental and climate actions
- Example: **in Italy only 1% of all green taxes are used for environmental protection (Ref Ricerche, 2020).**

Figure 2 Environmental tax income as share of overall tax income



**Data from 2018. Data for IL and CA from OECD (2014)*

Source: Ecorys based on Eurostat

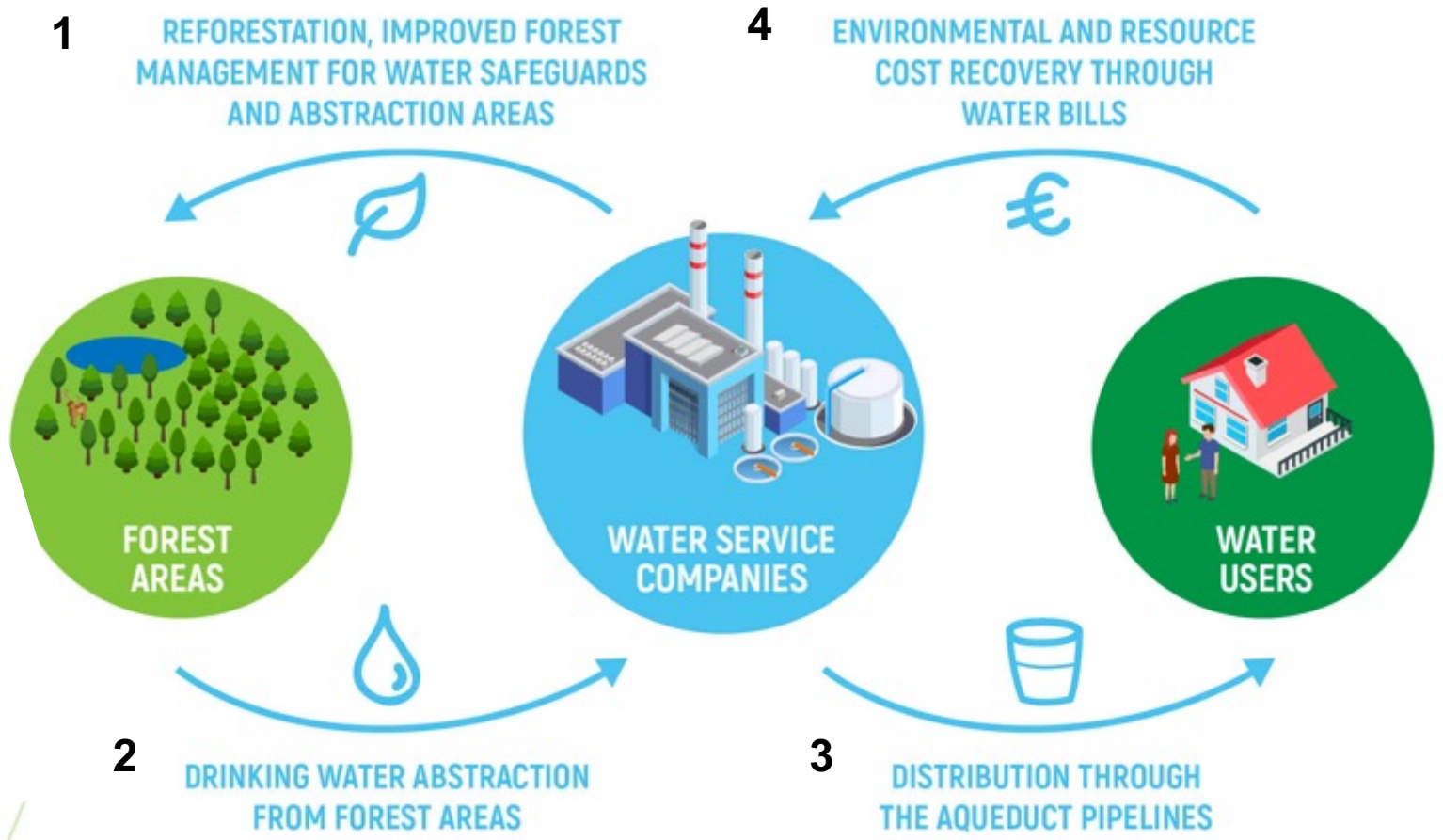
Financial solution: “true” green taxes

How to finance risk resilience: Ensure that sectors that are connected with negative environmental externalities are charged with green taxes, at local, provincial, regional and national level, and:

- **Shift towards ecological taxation:** move taxation from labor to polluting sectors and natural resource consumption
- **Increase circularity of green taxation:** to ensure that the revenues collected through the green taxation are directed to incentivize environmental alternatives and natural resource protection, including climate adaptation
- **Internalization of Environmental and Resource Cost (ERC),** in a way that the price to use a natural resource would be close to its real economic value.

Example: LIFE Brenta 2030 - A forest-water charge PES

- **Art. 9 of Water Directive** – polluter/user pay principle and inclusion of Environmental and Resource Cost (ERC) in the tariff system
- **National Decreet 39/2015** allows the cost recovery for measures related to water conservation and mitigation of environmental impacts through the water bill



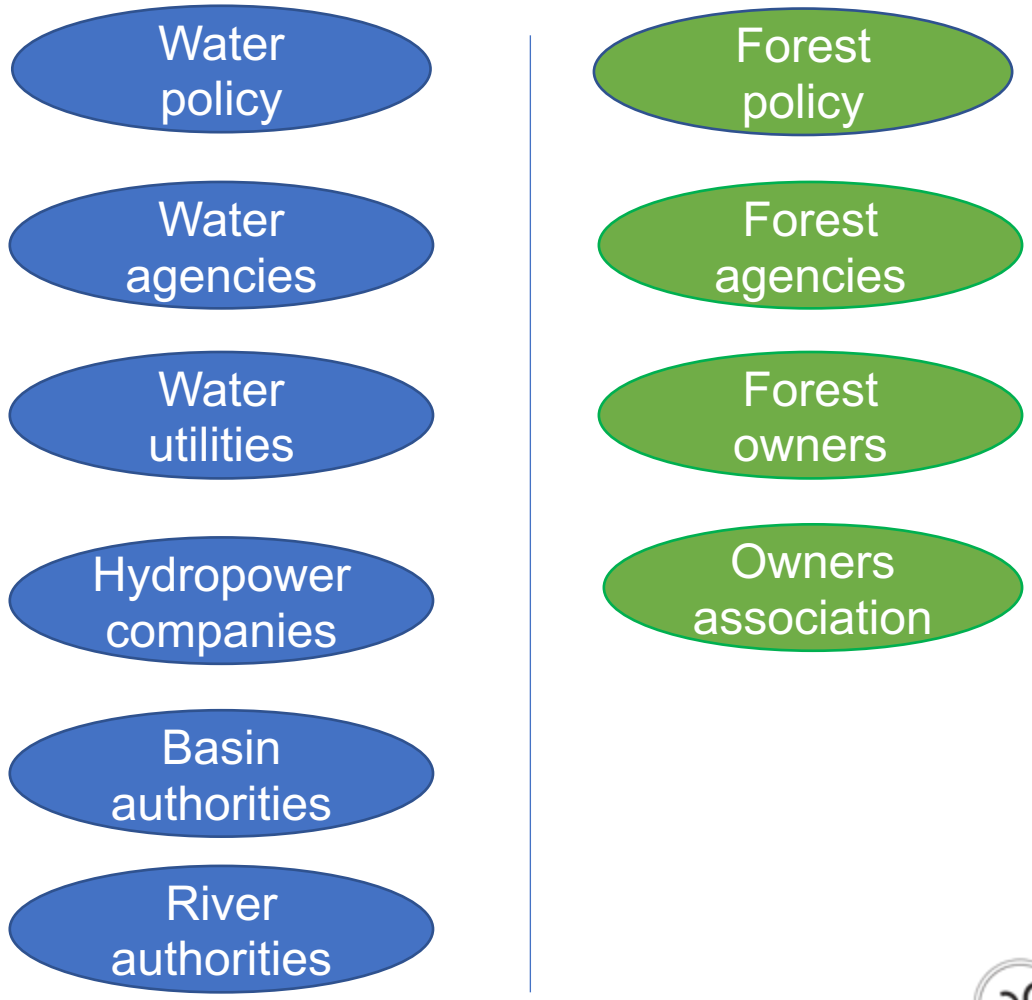
Parco Fiume Brenta
LIFE BRENTA 2030

www.parcofiumebrenta.it

Con il contributo dello strumento finanziario LIFE dell'Unione Europea
LIFE18-NAT_IT_000756

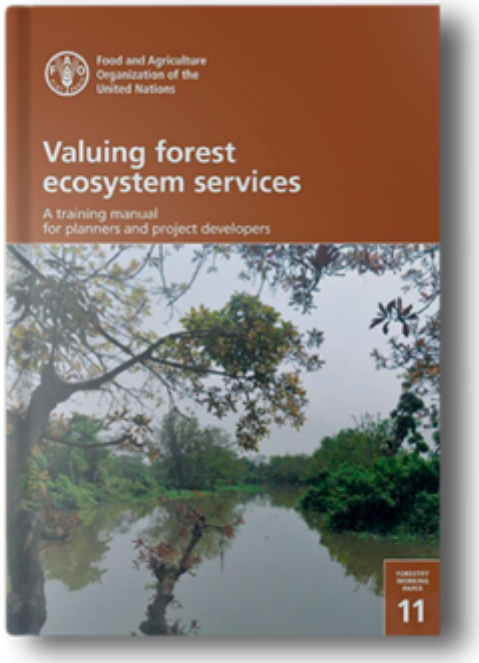
Recommendation: policy link and governance are key factor

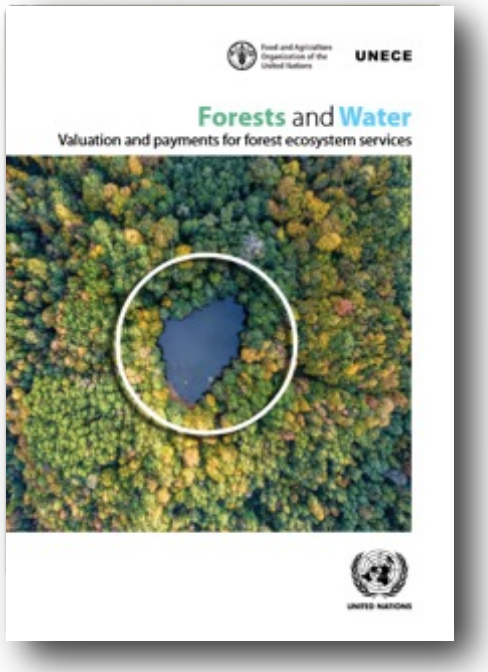
- **Link to key policy goals** > Green Deal, Water Directive, Natura 2000, Biodiversity strategy and national norms
- **Alignment/integration** of water/Civil protection and forest/land use institutions and policies
- **Ensuring participation of key actors:** the main obstacle is culture (grey vs green)
- Use PES / Green Taxes as one tool (of a set) not as final aim



STUDIES AND RESEARCH

Available on etifor.com





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Thanks!

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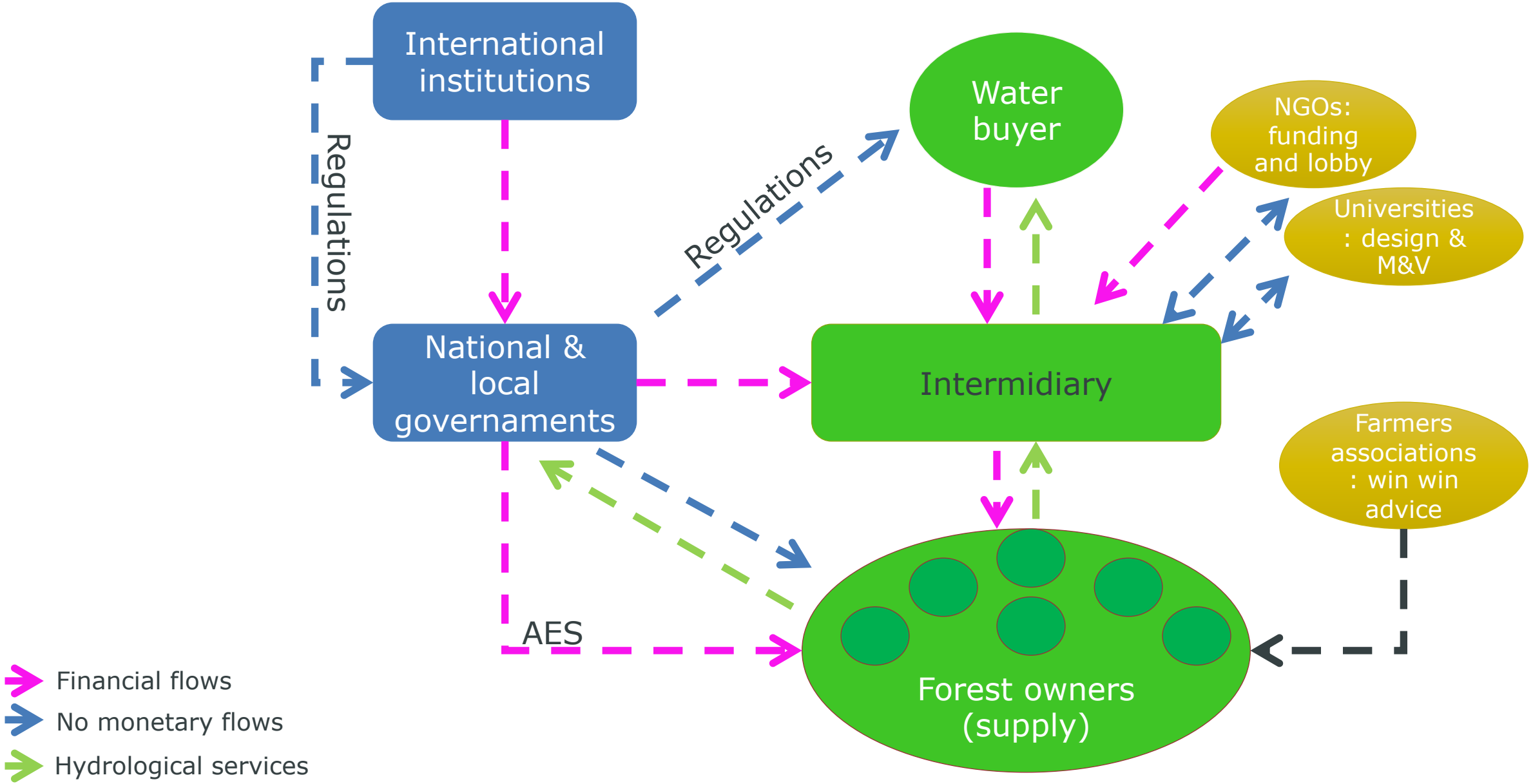
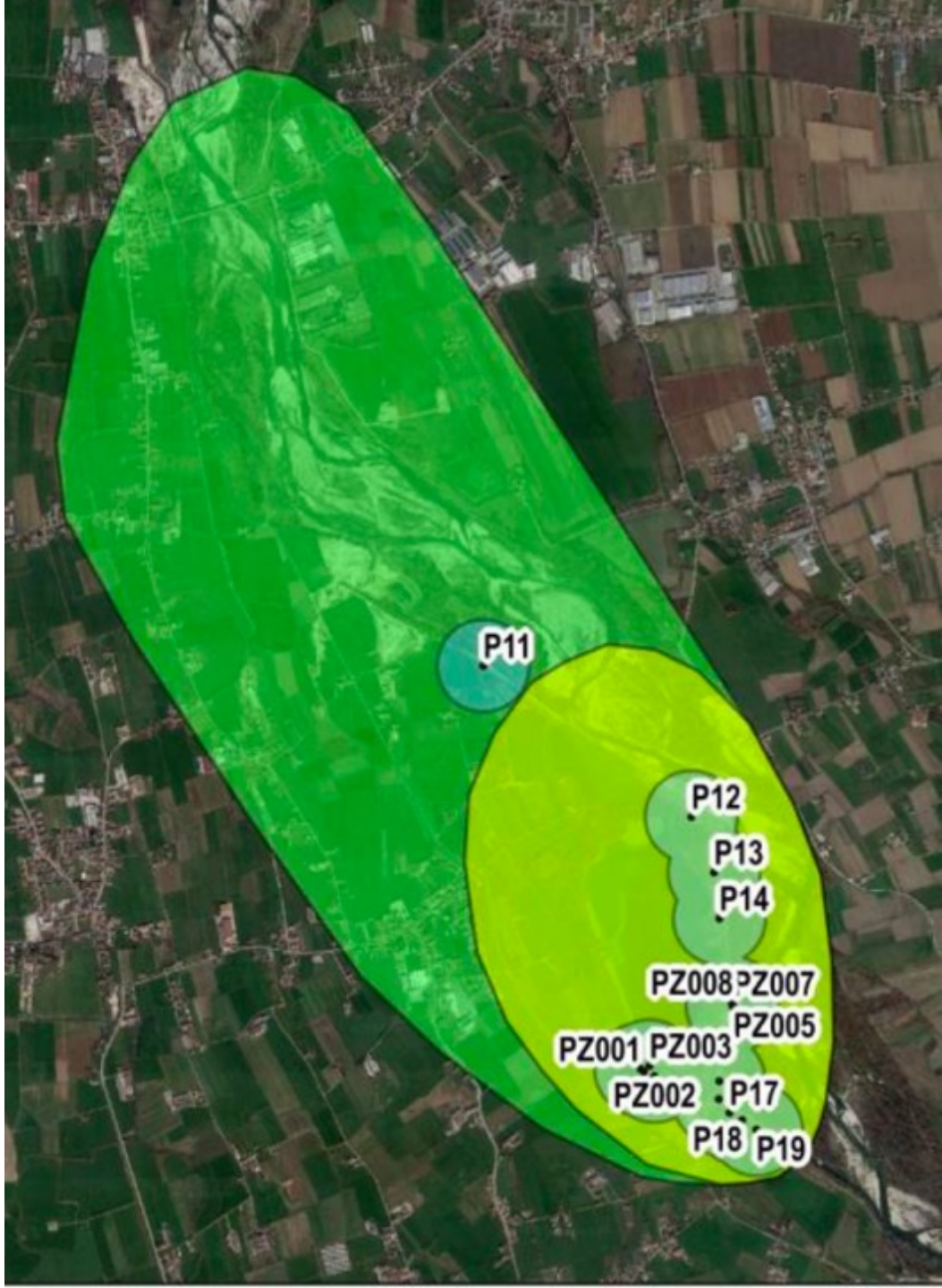
Example: Multiple benefits partnerships



Recommendation: be science-driven but keep it pragmatic

- Targeting is essential, but starting is even more important
- Often most suitable land is not available
- Start with 1-2 suppliers/farmers (early adopters) and work with followers



Recommendation: ensure co-benefits

- One single ecosystem service is not able to sustain the whole project cost
- Integrated approach with carbon, recreational and biodiversity benefits is needed

Recommendation: delegate monitoring to certification schemes

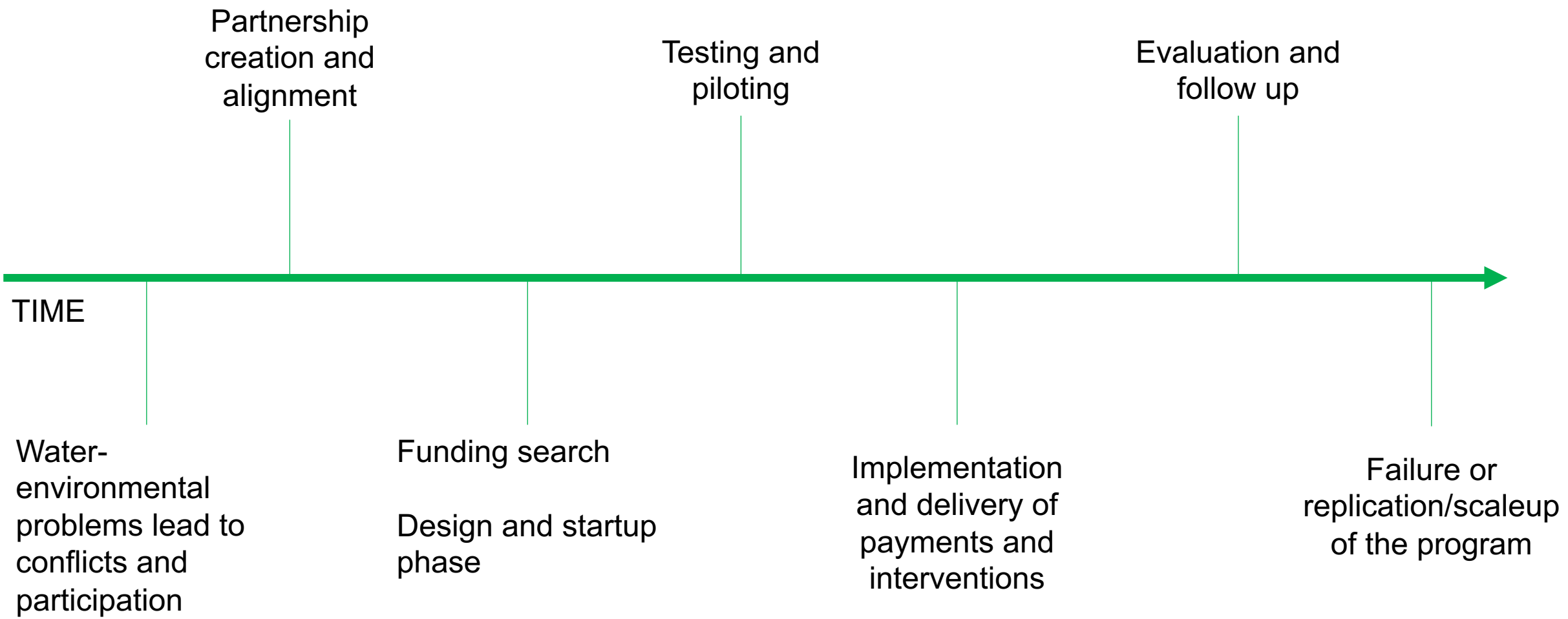
Successful case studies have shown the integration with:

- organic farming;
- FSC forest management certification.

Recommendation: **ensure citizen engagement**

www.wownature.eu

The «life» of PWS



PWS drivers

Table 4: User-Driven Watershed Investment Programmes: Buyer Motives by Sector			
Rank of motive	Public sector/ Government	For-profit/ Private Sector	Water Utility (Public or Private)
1.			
2.			
3.			

 To mitigate risks to water resources or infrastructure from climate change or natural disasters

 To enhance brand value/ demonstrate leadership on water resource challenges

 To mitigate risks to water resources or infrastructure from land-use decisions in the basin

 To deliver social co-benefits, such as sustainable livelihoods or drinking water access, delivered by project

 To ensure supply chain resilience

 To meet compliance with regulations

 To address physical risks, such as declining water quality or supply disruptions affecting business model

 To avoid or reduce capital costs of drinking water or wastewater services

State of European Markets 2017. Bennet and Leonardi, 2017.