

What is needed to help MS comply with Article 7?

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BLUE RIVERS

What is Article 7?

Art 7. (under revision). Restoration of the natural connectivity of rivers and natural functions of the related floodplains

1. MS to make an *inventory of barriers* to longitudinal and lateral connectivity
2. Identify *barriers to be removed* to achieve restoration target of 25,000 km FFR by

2030

Why is it important?

It sets legally bound targets across the EU



TNC

It is a *game changer...*

We have been fragmenting rivers for 2000 yrs...



We have 8 years to defragment them.....

To implement
Art 7 we need
3 things

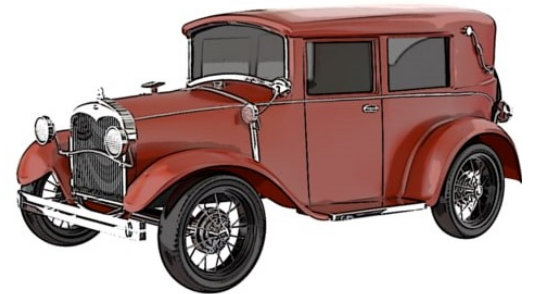
1. A map...
to know where
to go... → *indicators*



2. A compass...
to check where
we are ... → *metrics*

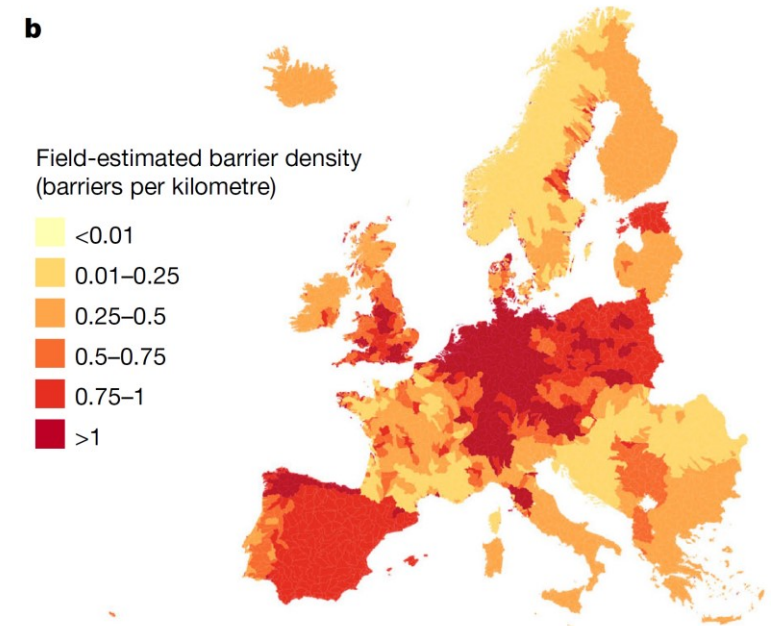
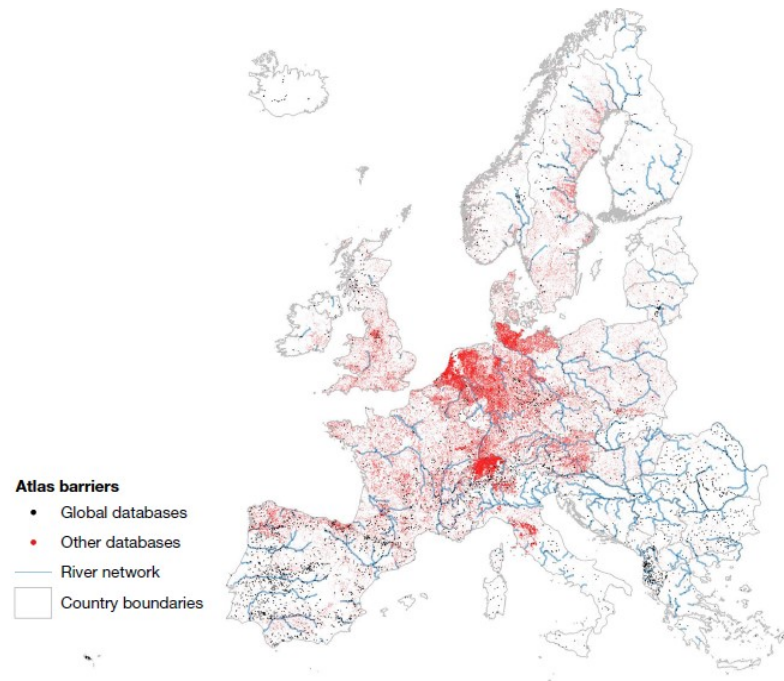
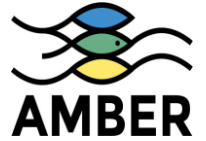


3. A vehicle...
to undertake the
journey... → *mechanisms*



1. The map (indicators)

We don't begin from scratch...
we have some barrier numbers

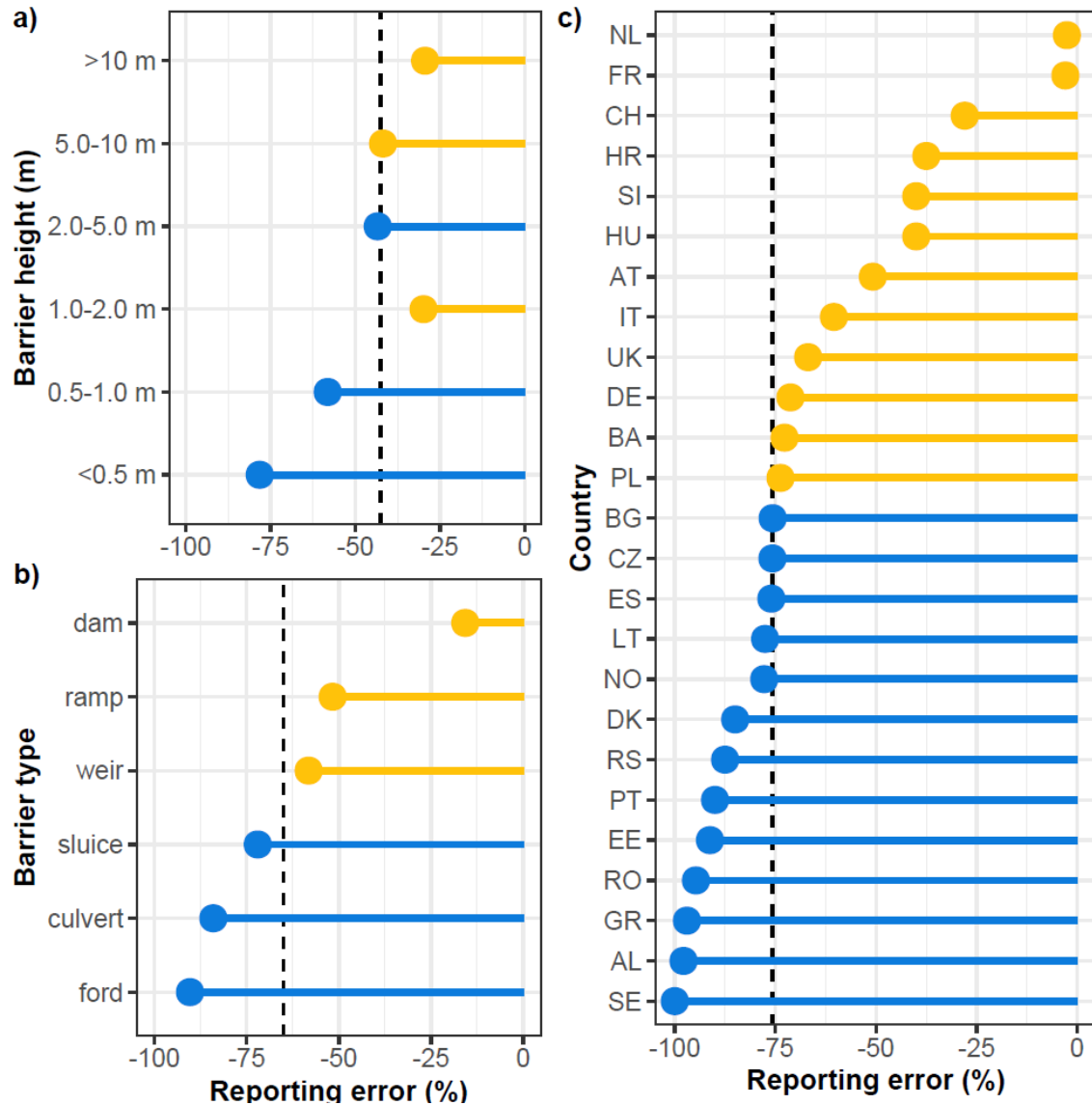


Belletti et al (2020) *Nature*

700k in Atlas

+600k missing

The map is incomplete...



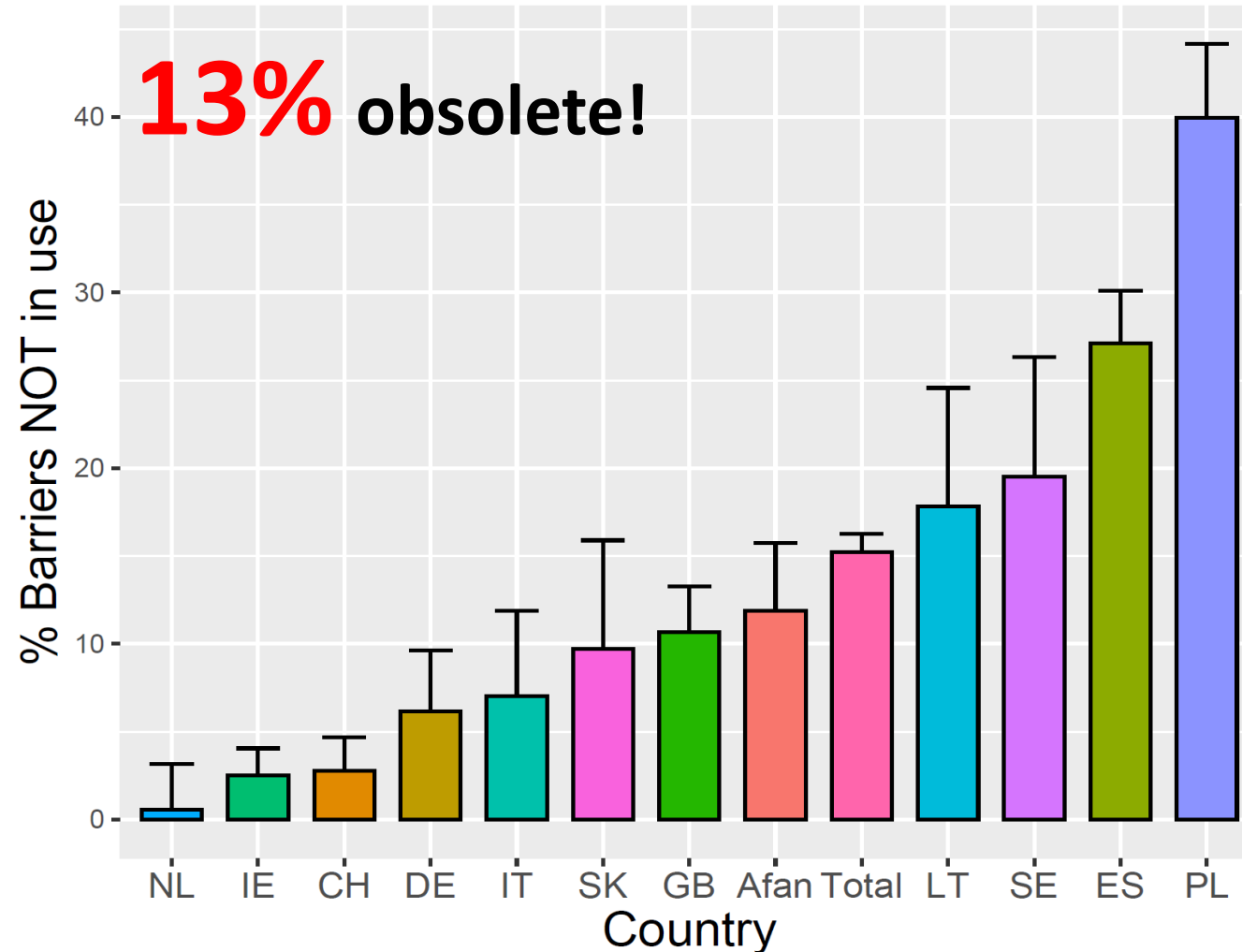
...but we know **where** most of the missing barriers are

...and also **what type** they are (small)

.. need to be strategic. The end **does** justify the means...!

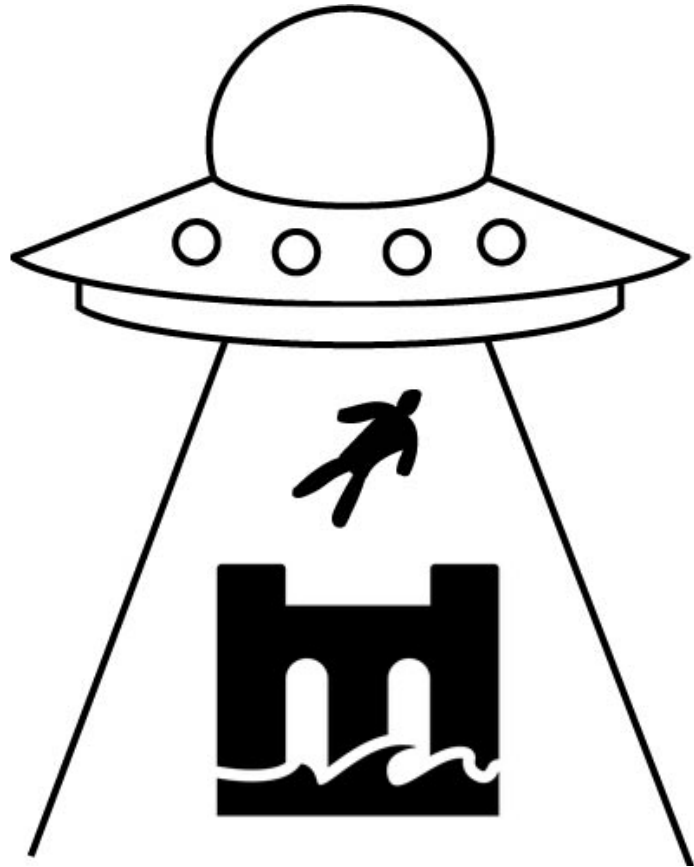
~156,000

obsolete barriers could be removed



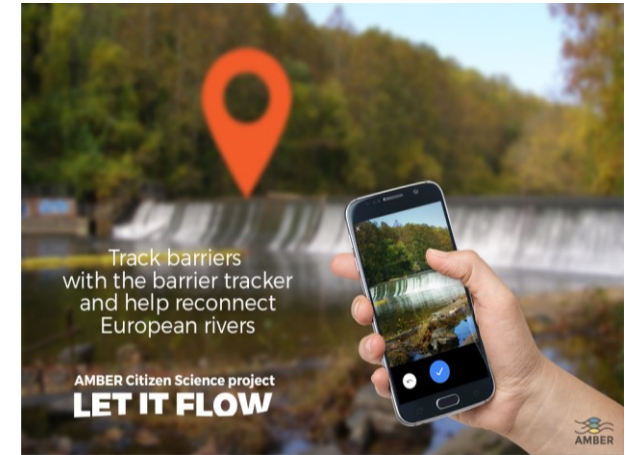
The Low Hanging Fruit

Finding the UFOs....



Unwanted
Fluvial
Objects

1. A phone



Barrier Tracker

2. A bottle



eDNA

The Potential Gain

Acting on just

2%

of obsolete barriers might:

1. Mitigate the impacts of 3,000 obstacles

2. Free **30,000 km** of rivers (1 barrier = 10km gain)

2. The compass (*metrics*)

How can MS prioritize the *barriers* to be removed most *efficiently*?

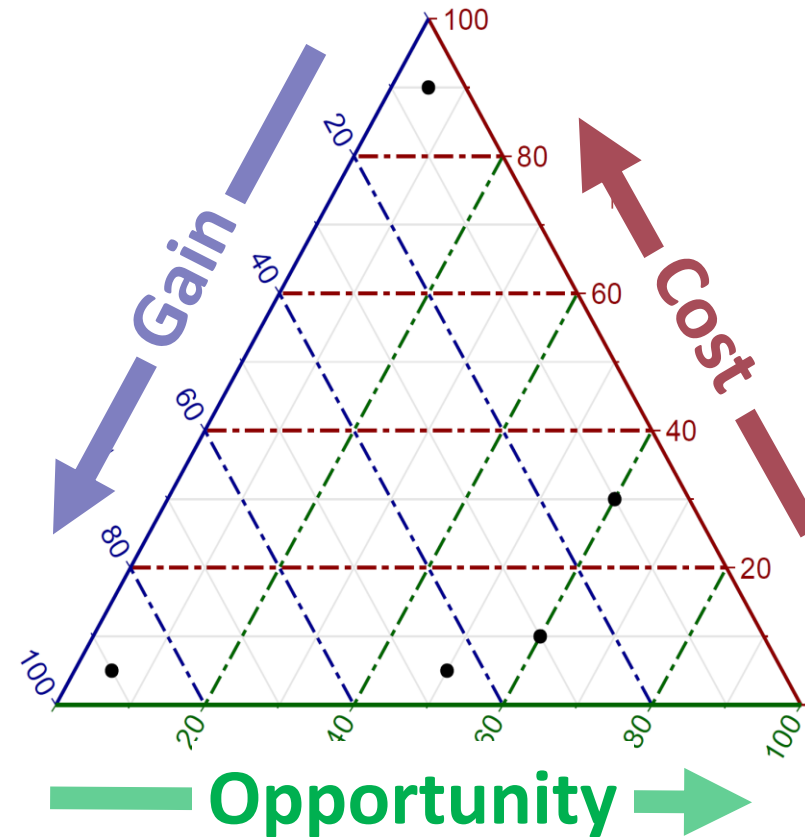
What *metrics* can one use?

2. The compass (*metrics*)



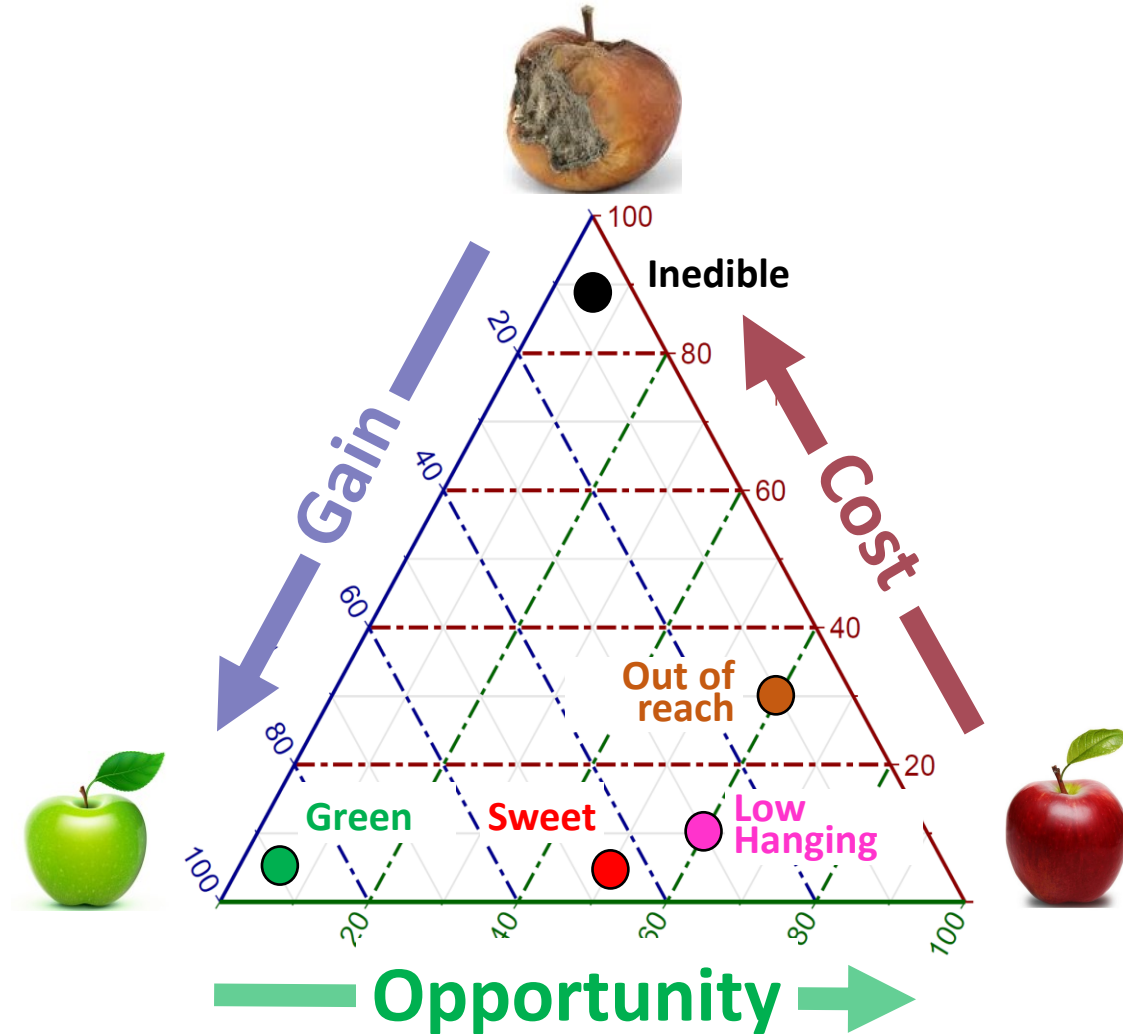
The low hanging fruit in barrier removal...

1. Opportunity
2. Cost
3. Gain



The low hanging fruit in barrier removal...

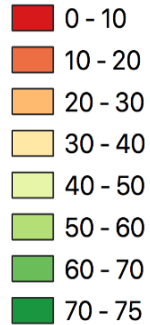
1. Opportunity
2. Cost
3. Gain



DAMROS

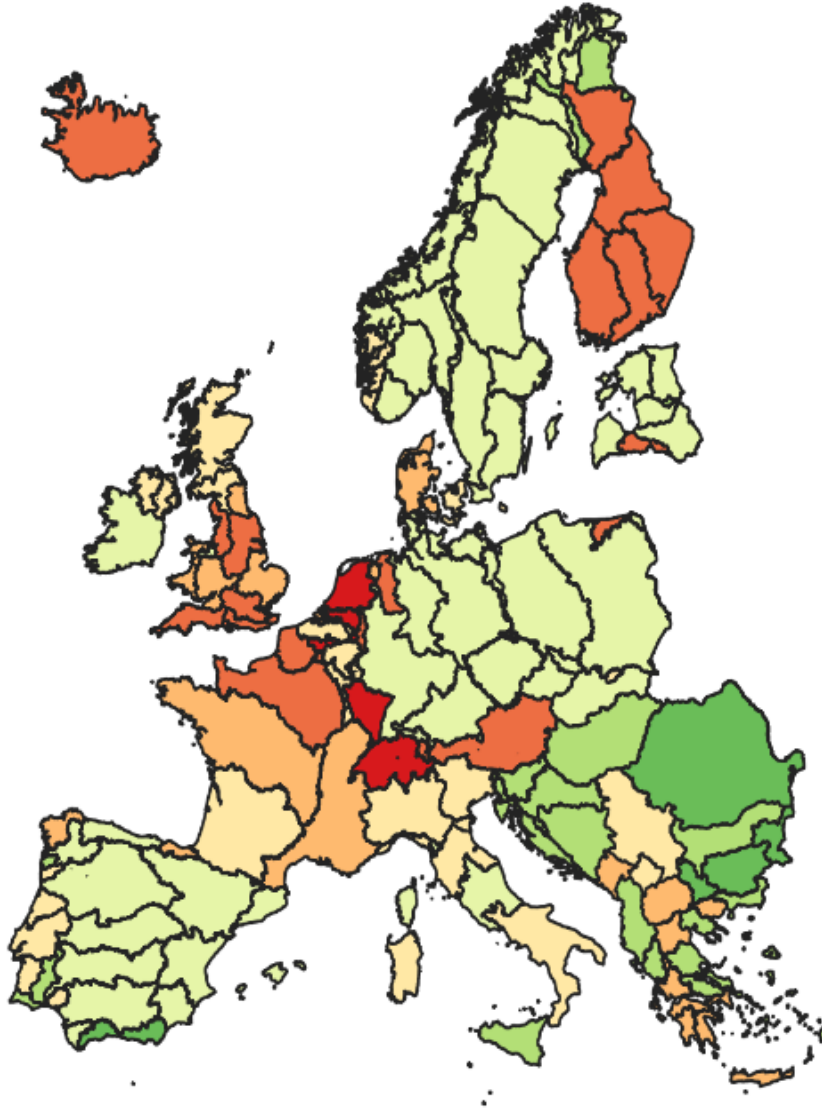
Dam Removal Opportunity Score

Median DAMROS



172 River Basin
Districts (RBDs)

211,075 surface
water bodies
1,699,234 km



A. Fragmentation

1. Barrier density
2. Extent of barrier under-reporting
3. QE2-2 - River continuity conditions

B. Biodiversity & River quality

4. Chemical Status
5. Ecological Status
6. Biodiversity value (mean BQE-1)
7. Included in Protected area

C. Governance & Support for dam removal

8. Barriers flagged as pressure in RBMP (P4-2)
9. Support for dam removal

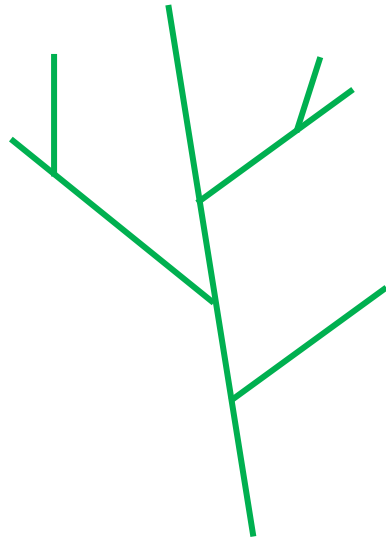
D. Future-proofing

10. Water stress & future flows

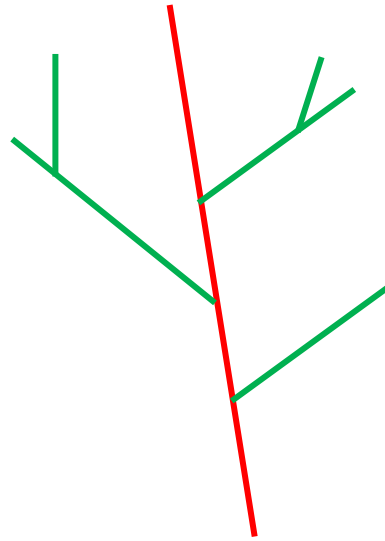
What should we reconnect? the FRU concept

Functional River Unit

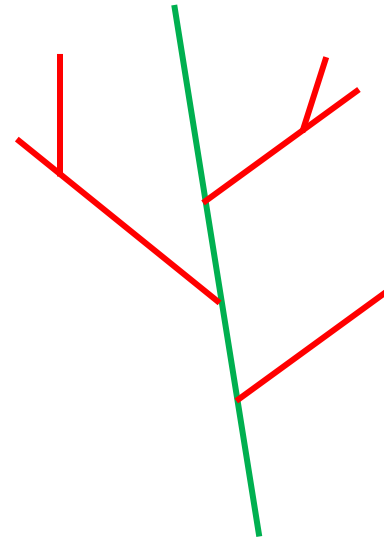
Fragmented
Connected



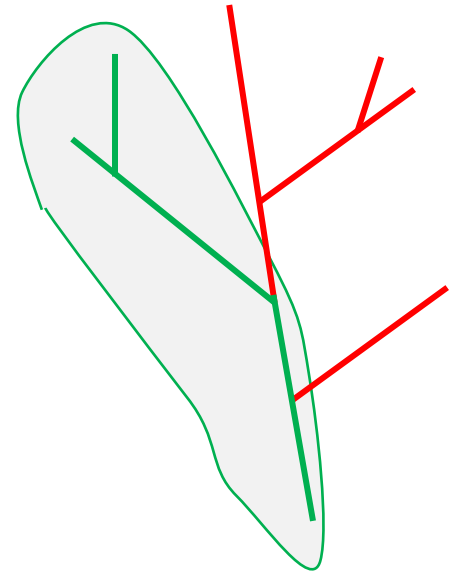
OK all
catchment
connected



NOT OK only
tributaries
connected

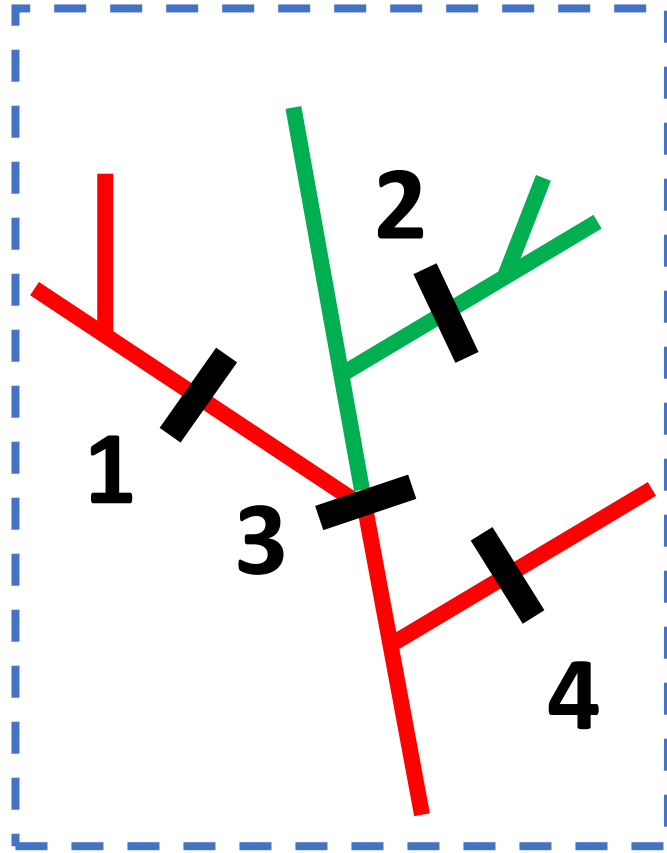


NOT OK only
main stem
connected

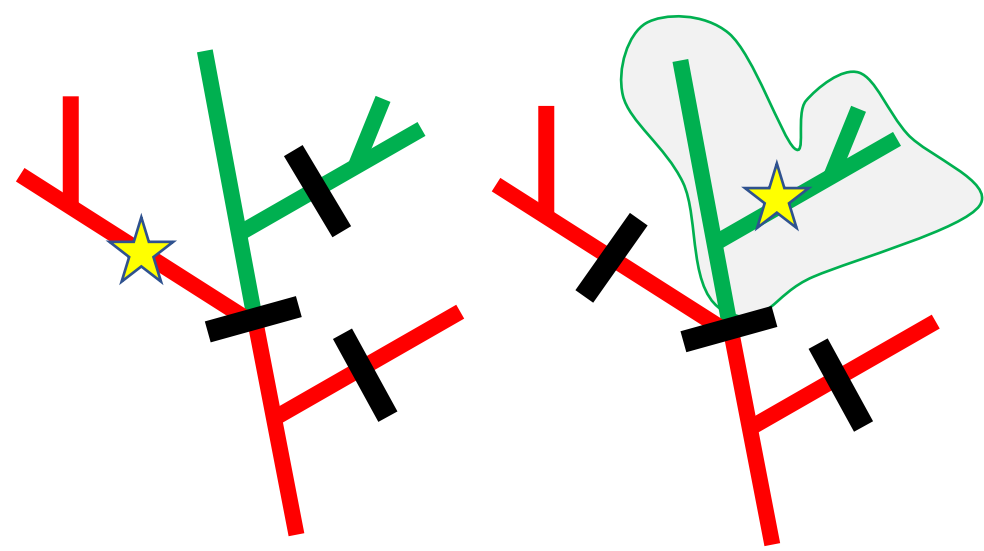


OK continuum
preserved,
main stem + key
tributaries

Reconnecting FRUs

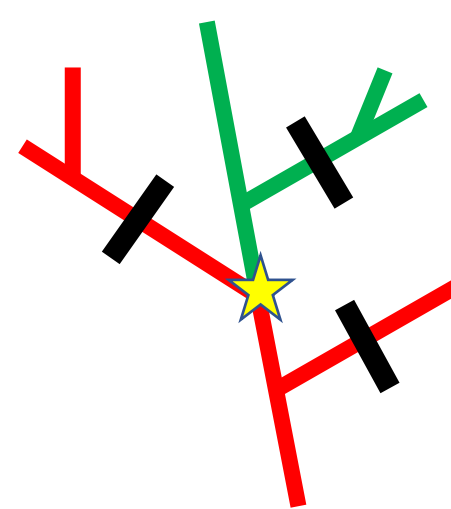


■ Poor quality
■ Good quality (GES, GEP)

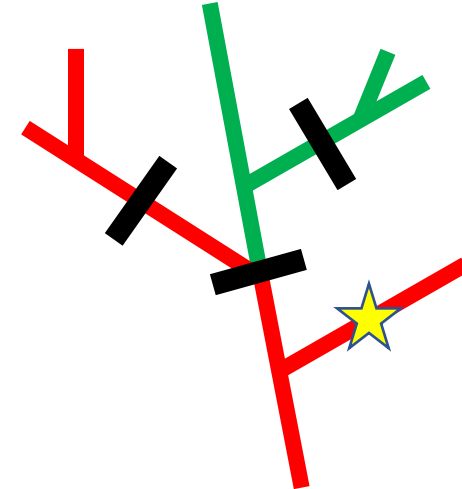


1 – No gain

2 – Gain



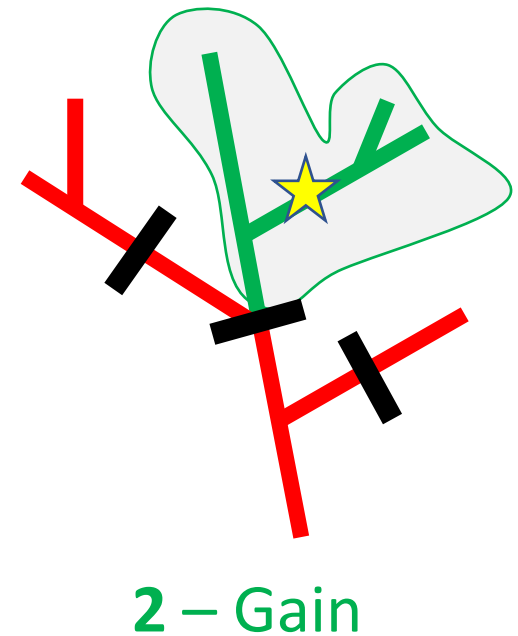
3 – No gain



4 – No gain

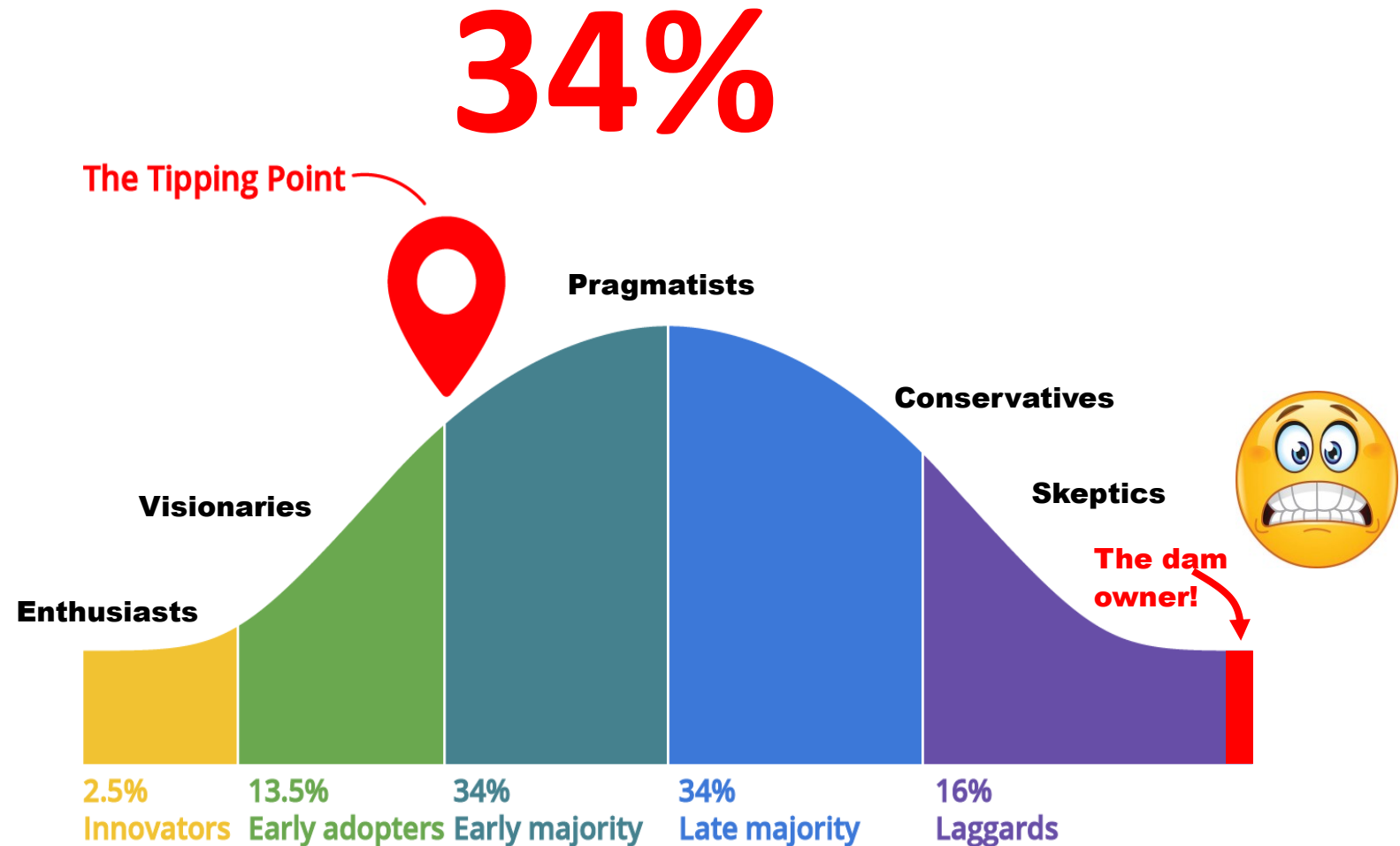
Introducing the *Flumen* (Latin: 'river')

- We want to reconnect 25,000 km of **GOOD habitats!** not poor ones!
- *Flumens* are interconnected high quality FRUs (GES or GEP)
- They can serve as the 'operational currency' for reconnecting Free-Flowing Rivers
- Two key benefits: (1) more connected quality habitats in (2) increasingly more rivers



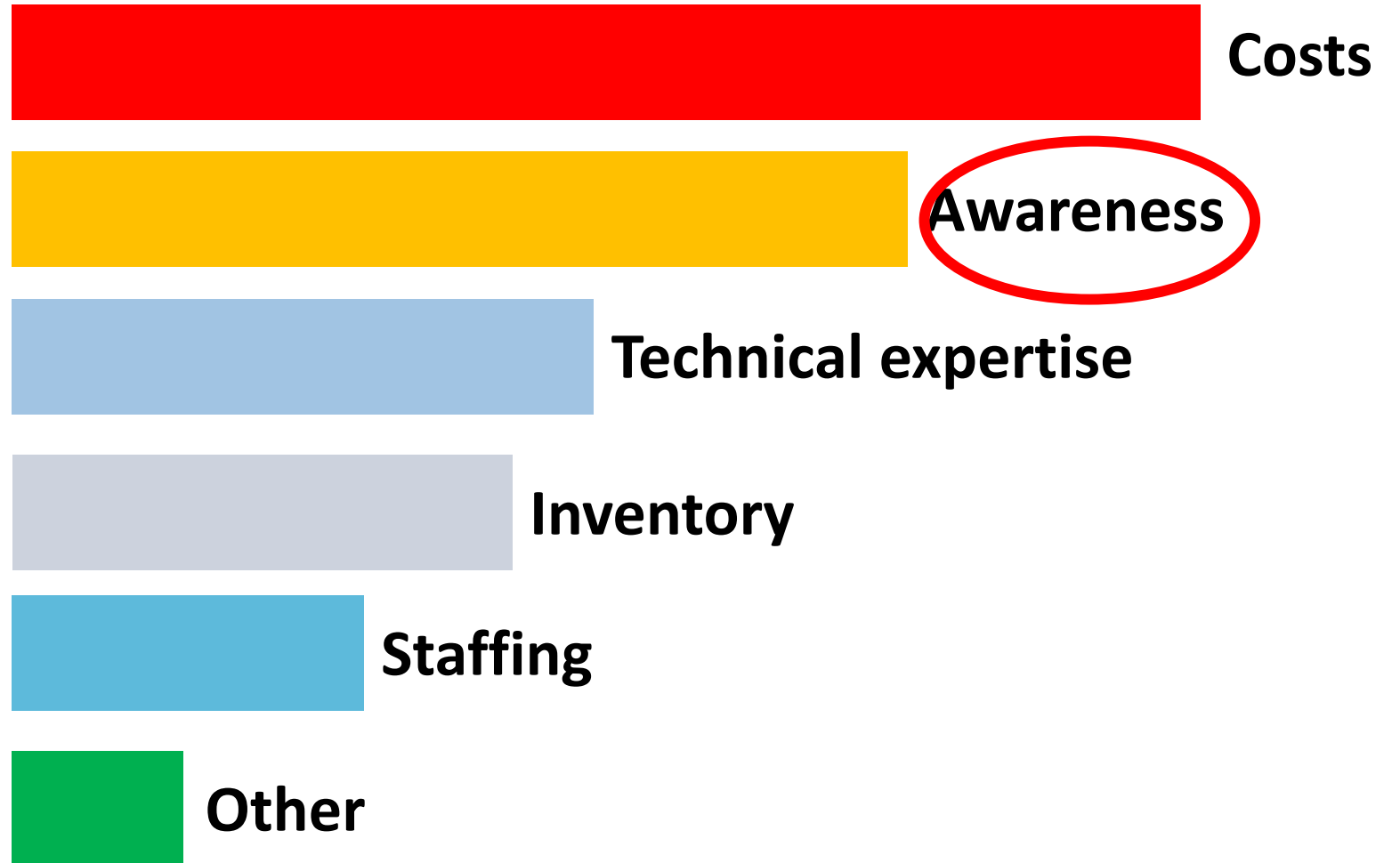
3. The vehicle (mechanism)

What mechanisms can we use to *scale up* dam removal?



What are the barriers to remove barriers?

N = 266



Smoking is **bad...**



Quitting smoking is **good...**



Smoker



Non-Smoker



Fragmenting is **bad...**

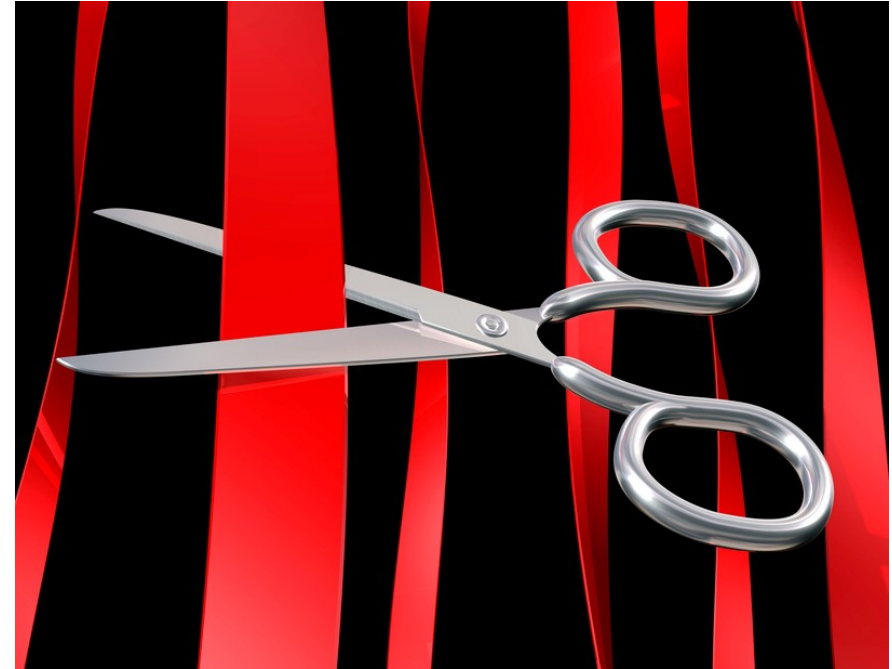


Defragmenting must be **good...**



Bureaucracy & red tape also hamper dam removal

- Ownership checks
- Consent forms
- Site access permits
- Impoundment licenses
- Risk assessments
- Public consultation
and more....



there are many *Dam-moaners!!!*

The *Use it or lose it* principle for barrier management ...

1. User rights should be demonstrated...
2. All barriers should be registered
3. Barriers should cause no harm
4. Barriers should be fit for purpose
5. Barrier liabilities should rest with the owner

**USE IT
OR
LOSE IT**





1. No owner?
No problem.. → *remove it*
2. Don't use it?
No problem.. → *remove it*
3. Unfit for purpose?
No problem.. → *remove it*
4. Liability risks?
No problem.. → *remove it*

Thank You!



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