

WORKSHOP „BLUE ECONOMY IN FRESHWATER AQUACULTURE”
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FRESHWATER AQUACULTURE AS AN IMPORTANT COMPONENT OF THE BLUE ECONOMY

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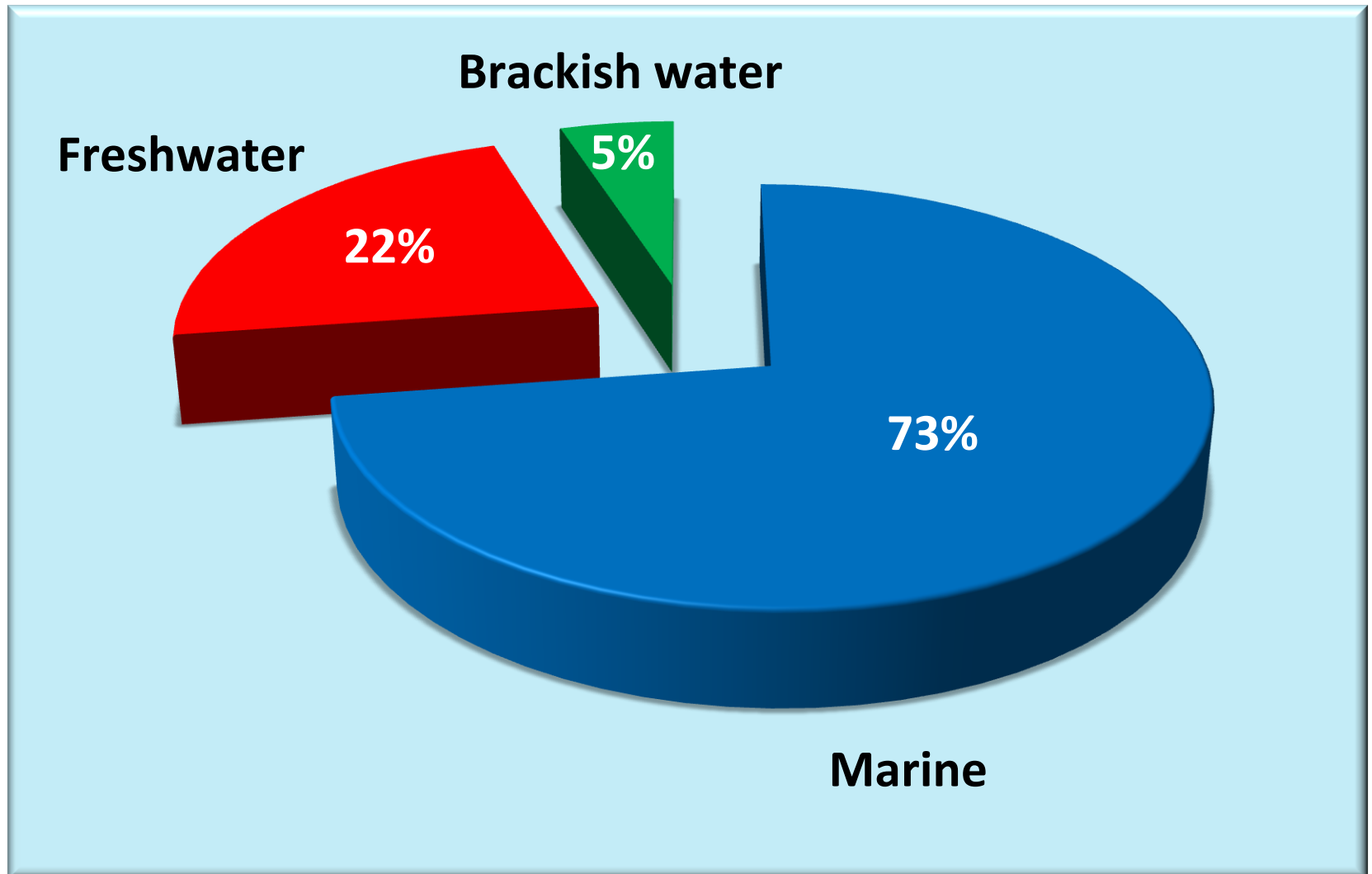
Blue Economy

The term **Blue Economy** means: Using available resources in cascading systems, the waste of one product becomes the raw material for a new cash flow.

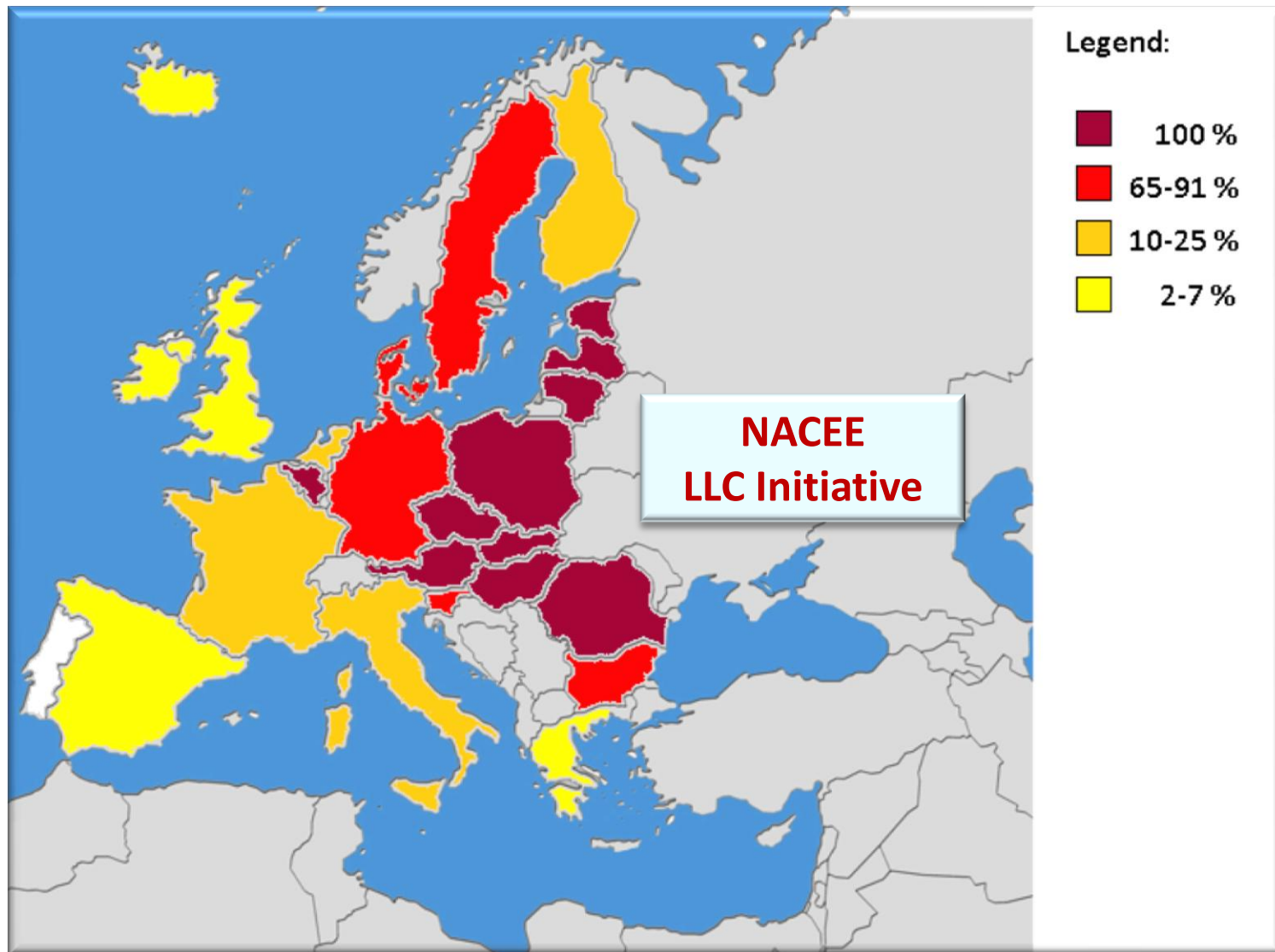
In this way jobs are created, social capital is built and the income increases – without further exploiting and damaging the environment, but rather conserving and improving it.

Freshwater aquaculture in the EU aquaculture scene

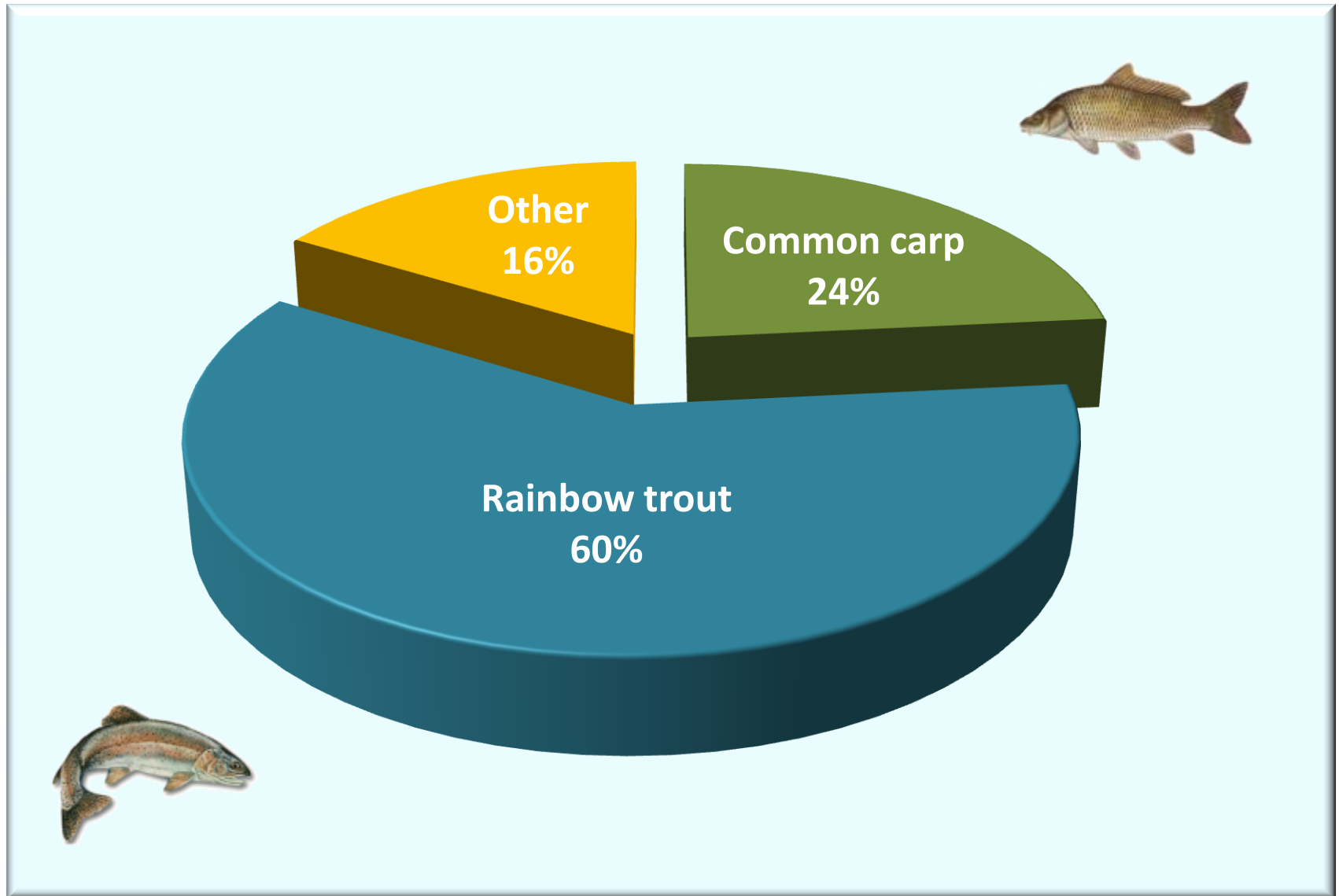
Aquaculture production in EU by environment (by volume), 2010



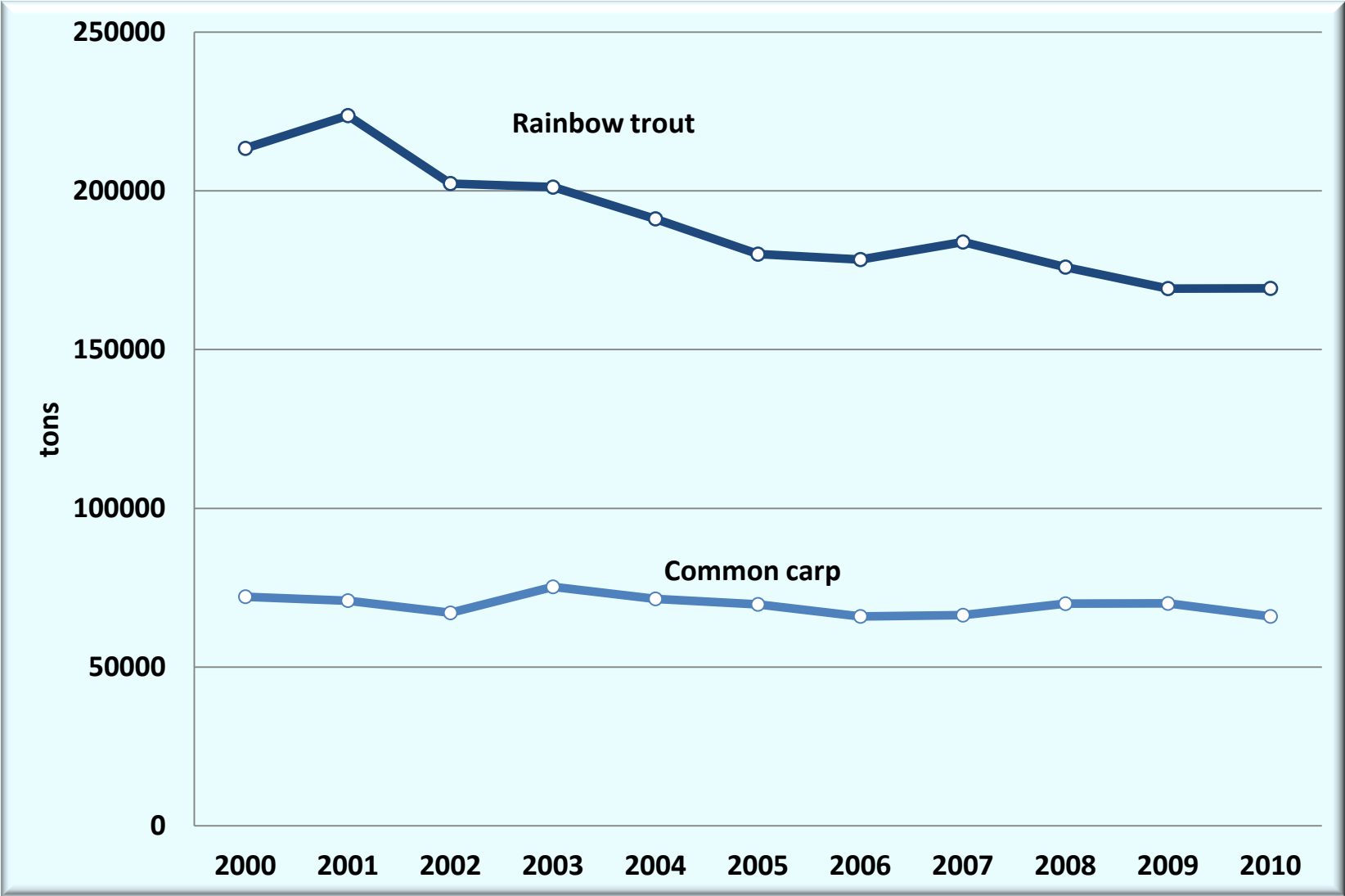
Share of freshwater aquaculture in EU countries, 2010



Main species in EU freshwater aquaculture

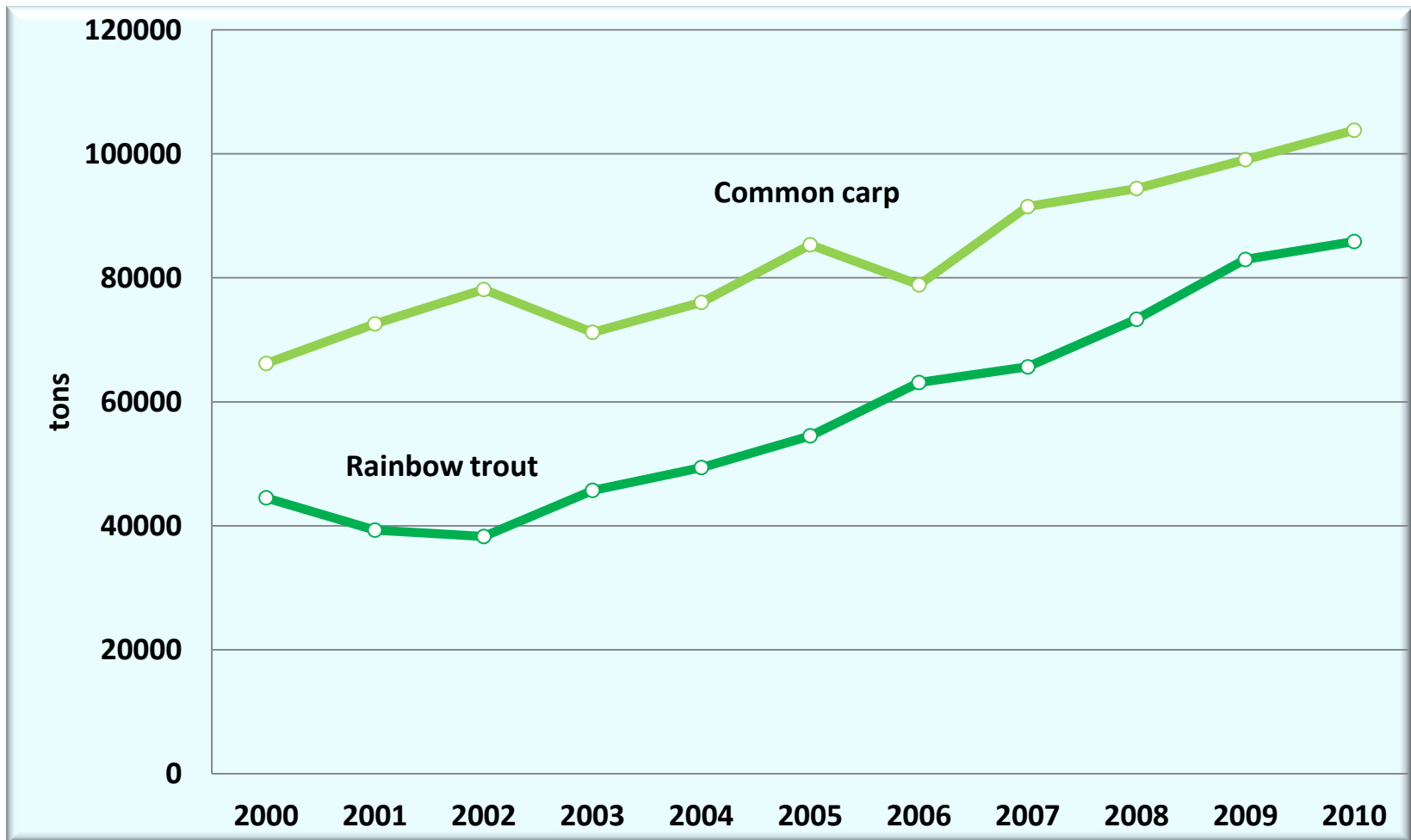


Trout and carp production in EU countries



Source: FAO Fishstat Plus, 2013

Trout and carp production in European non-EU countries



Specificities of freshwater aquaculture

Falenty and Janki, Poland



Potesil, Czech Republic



Crimmitschau, Saxony, Germany



Rétimajor, Hungary





These valuable aquatic habitats
have been preserved
by fish farmers
for hundreds of years!

The economical effect of production and non-production function of extensive and semi-intensive fish ponds (Turkowski & Lirski, 2011)

Value provided by production function:

4,830 EUR/ha/year

Value provided by non-production function:

52,857 EUR/ha/year

Classification of ecosystem service and function of extensive aquaculture systems

Aquaculture ecosystem service function

Provisioning service

Food

Material

Genetic resources

Regulating service

Waste treatment

Climate regulation

Gas regulation

Disease regulation

Cultural service

Recreation & tourism

Education & research

Cultural

Aesthetic

Ecosystem services

- Creation and maintenance of aquatic habitats
- Contribution to biodiversity

1500 ha pond Golysz, Poland, 2105
flora and fauna species

(Sieminska A. & Sieminska J., 1967)



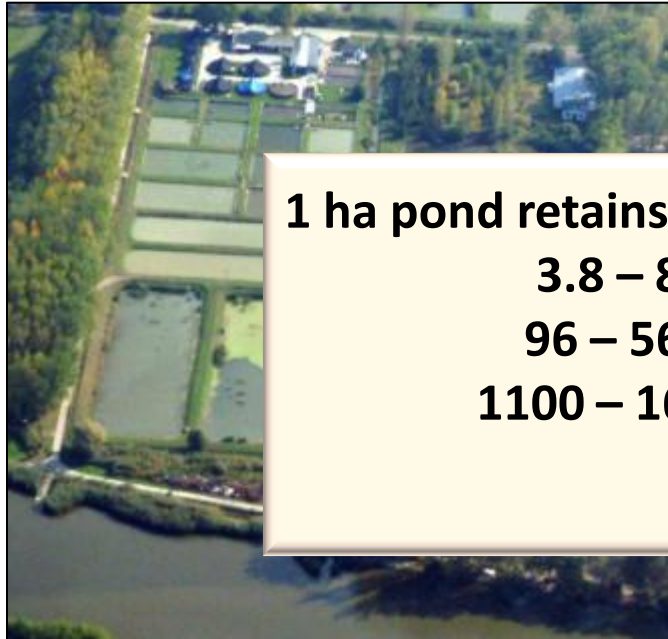
74 ha pond Stawinoga, Poland,
160 bird species

(Dobrowolski et al., 1995)



Environmental services

- Treatment of used waters of various origin
- Bioremediation



1 ha pond retains:

3.8 – 8.4 kg Phosphorous

96 – 560 kg Nitrogen

1100 – 1600 Suspended Solids

(Knösche et al. 2000)

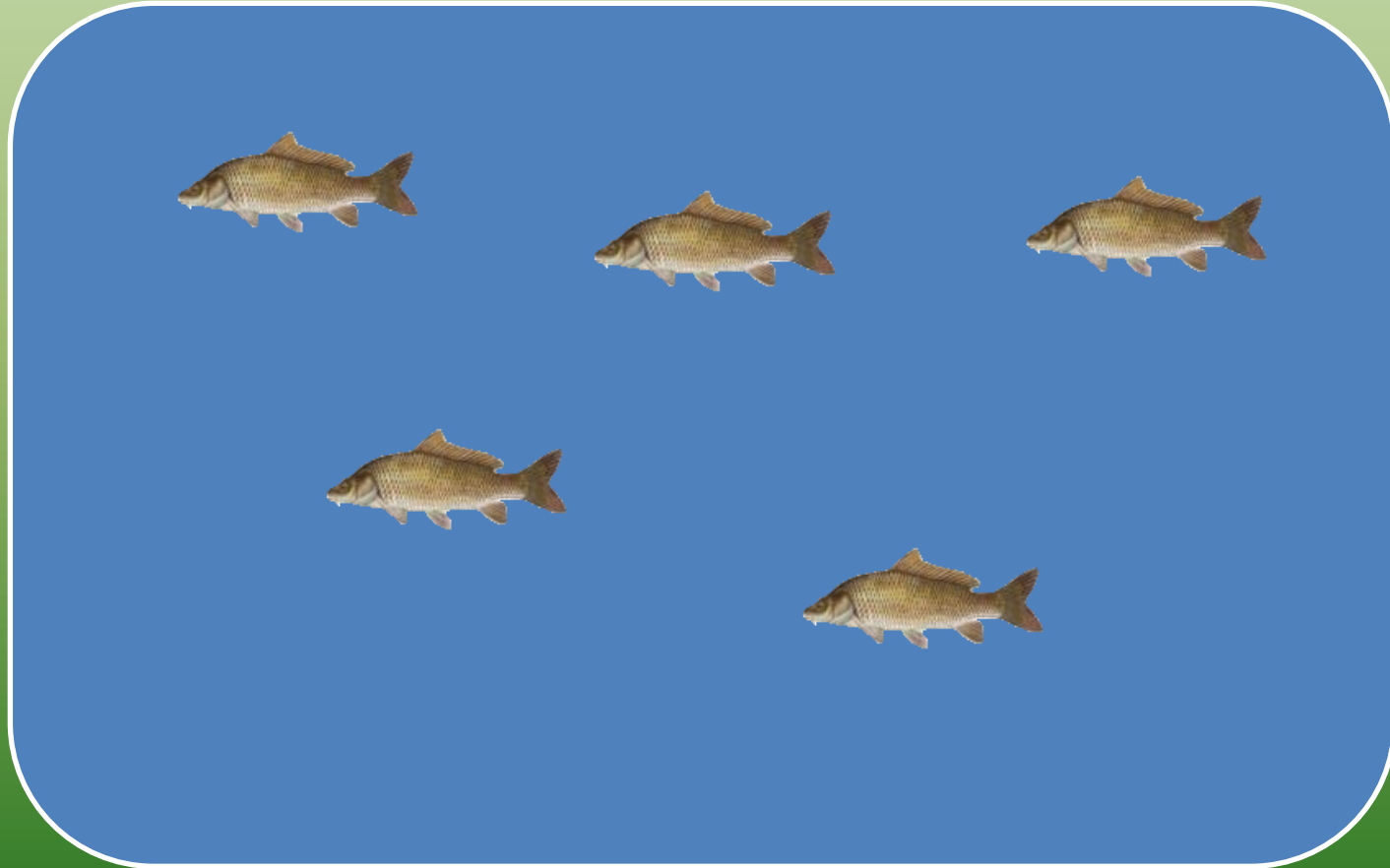
Ecosystem service **OR** fish production?

Ecosystem service **AND** fish production!

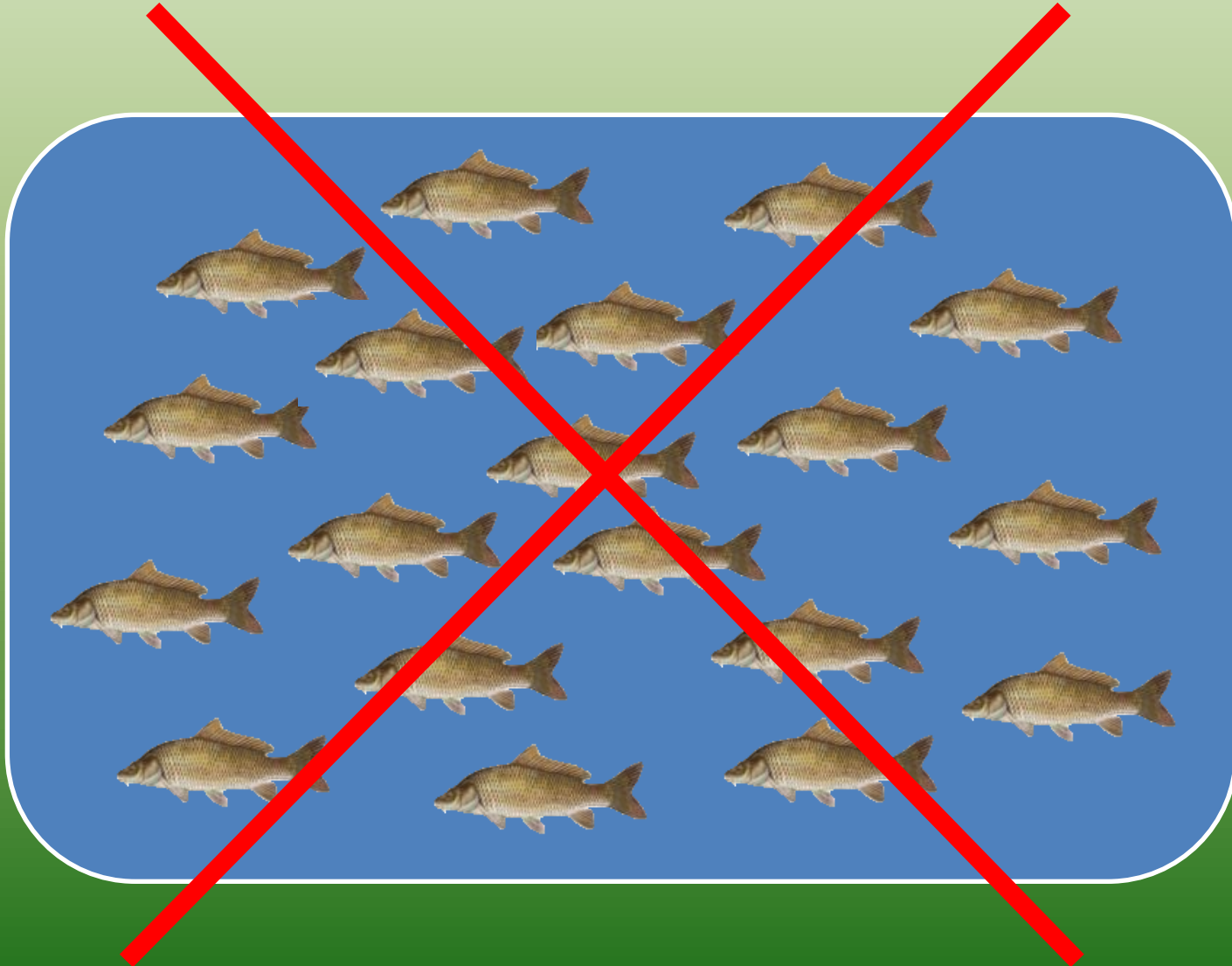
The answer is:

Sustainable intensification

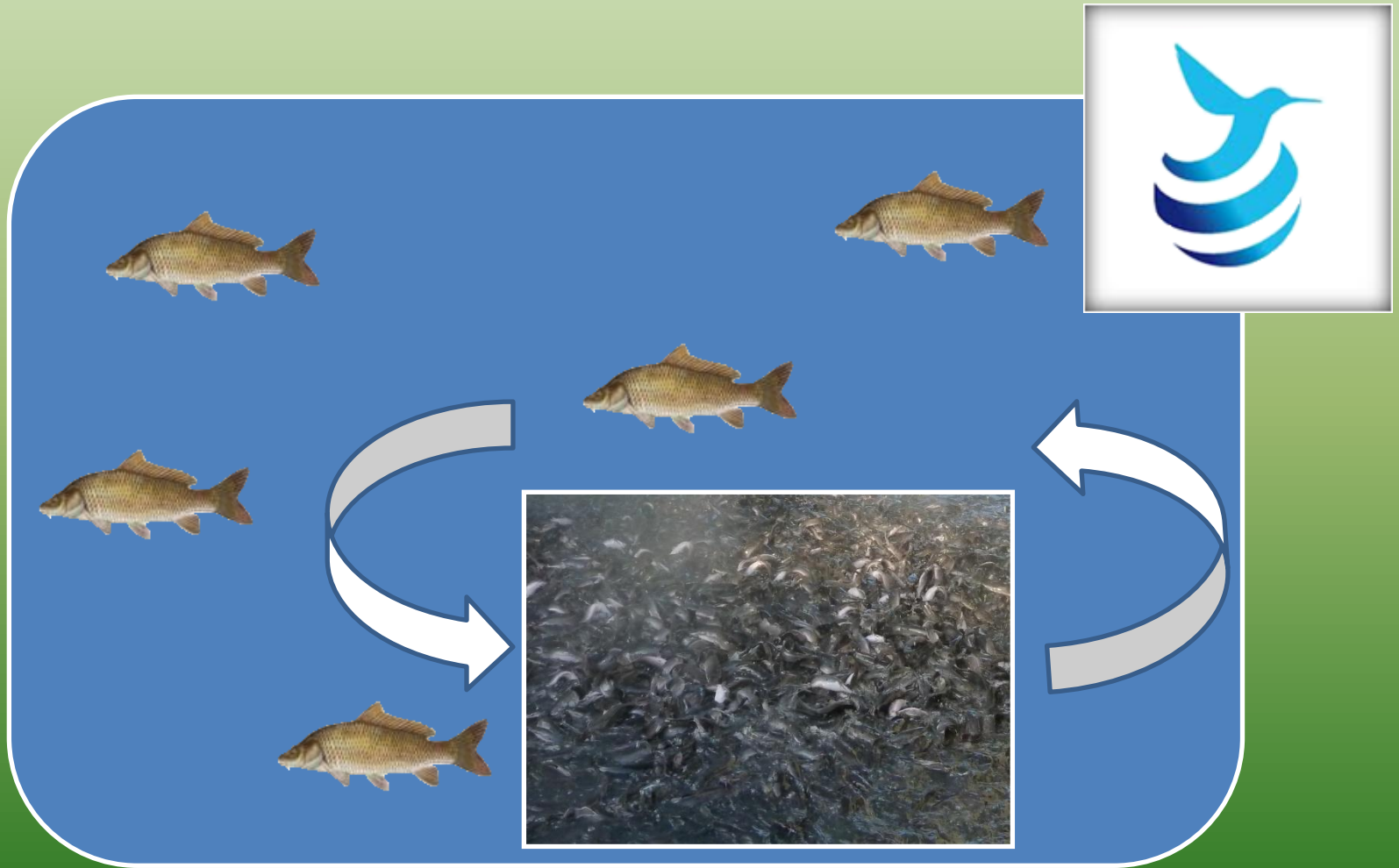
Extensive fish farming in pond



Intensive fish farming in pond



Sustainable intensification

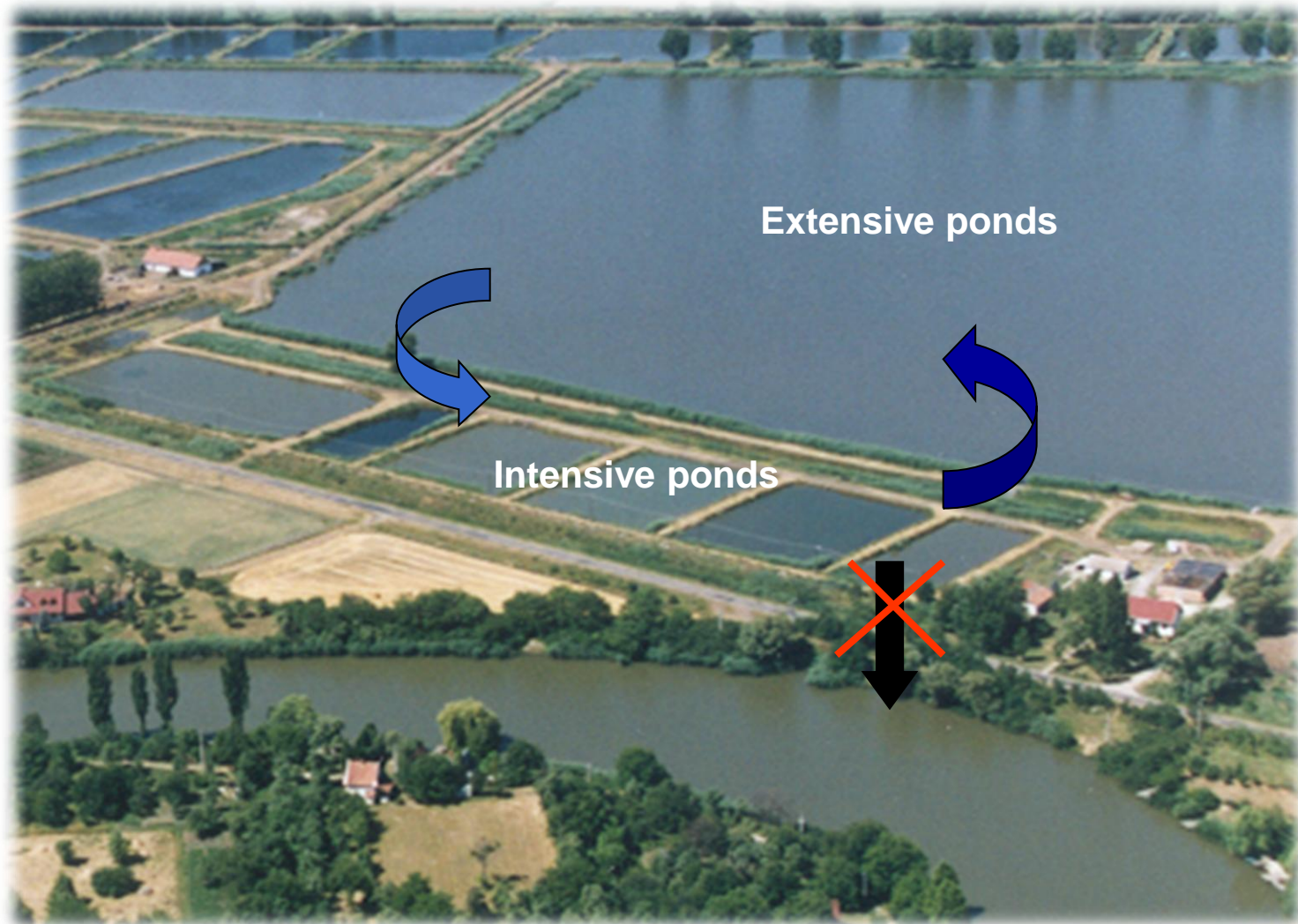


**Examples of productive, water
efficient and environment friendly
freshwater aquaculture systems**

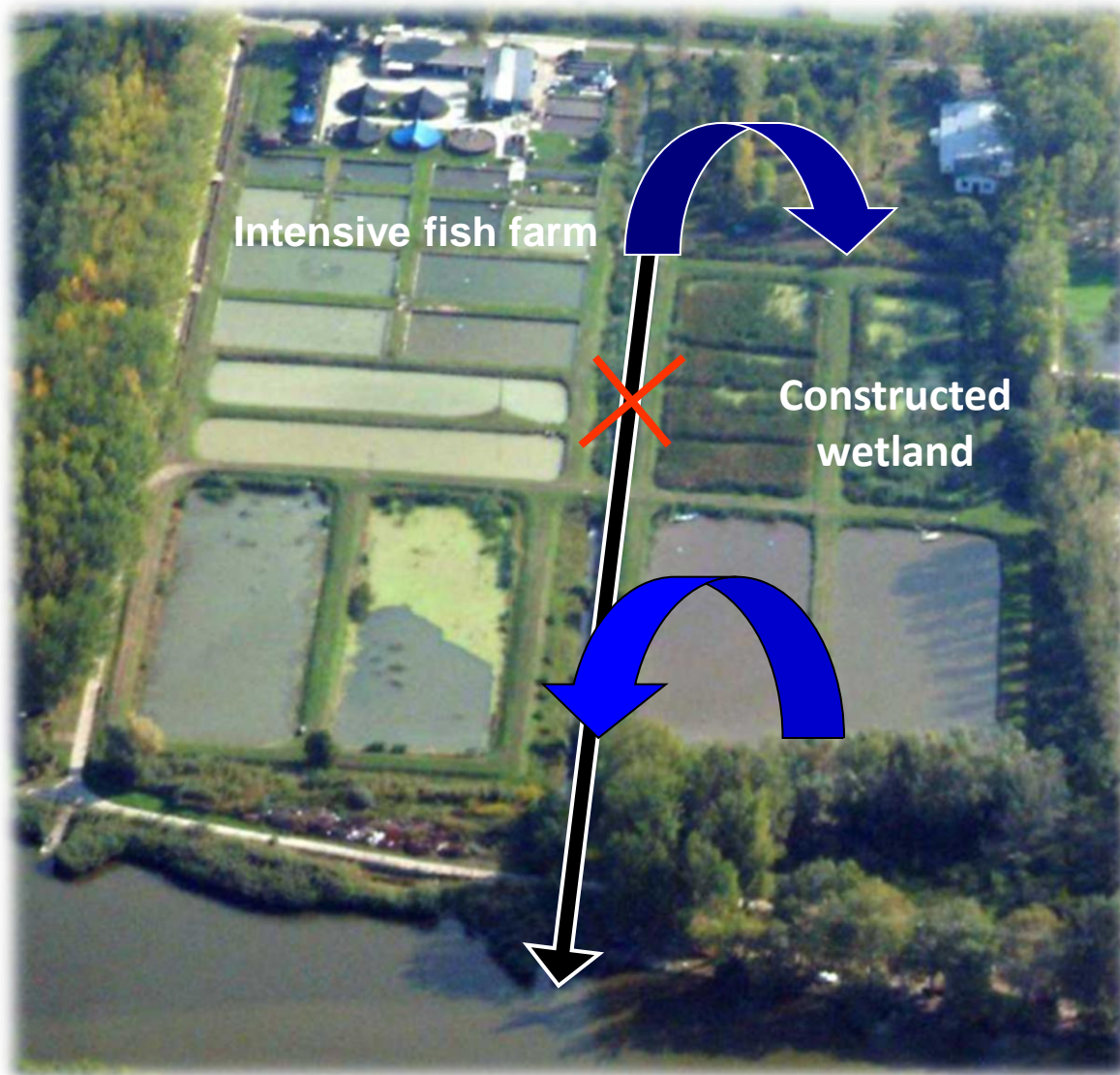
„Pond in pond” system



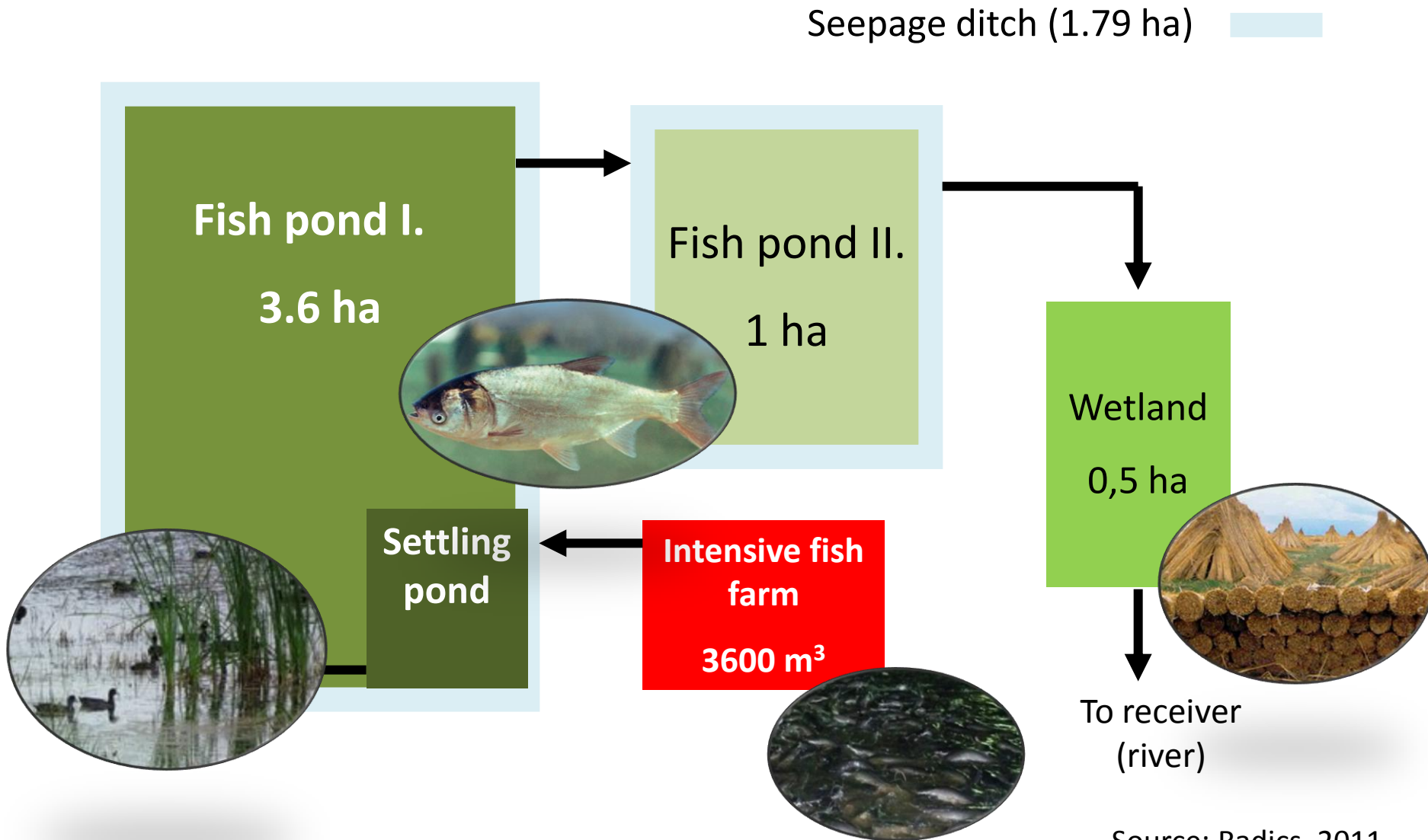
Fish pond water recirculation (pond RAS)



Effluent treatment in constructed wetland



Freshwater IMTA system



Multi-functional pond fish farming



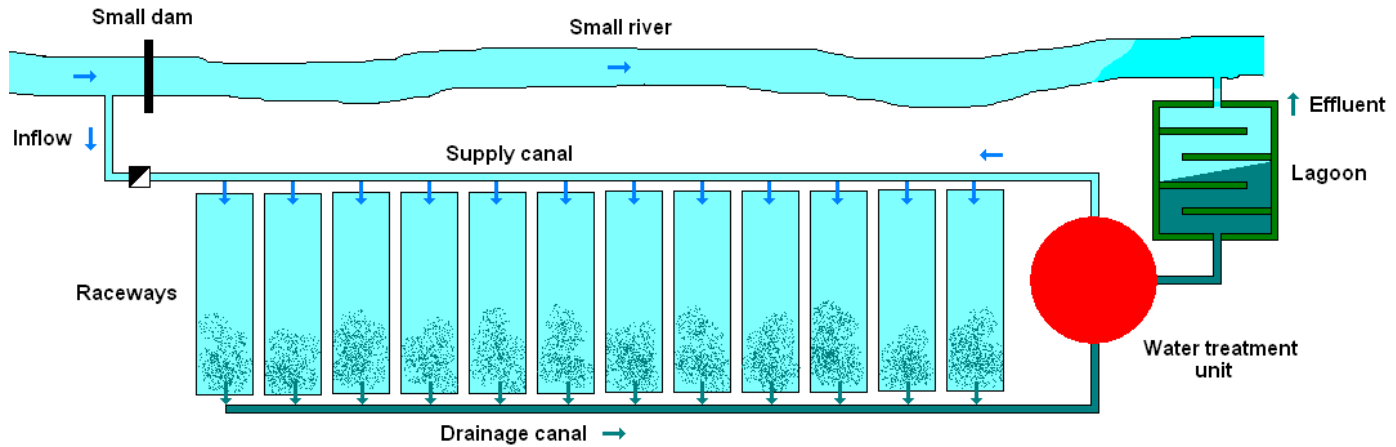
1- Ótátriszti fogadóközpont



Services
=
Higher and diversified
farm income
+
Additional employment



New type of trout farms with water recirculation



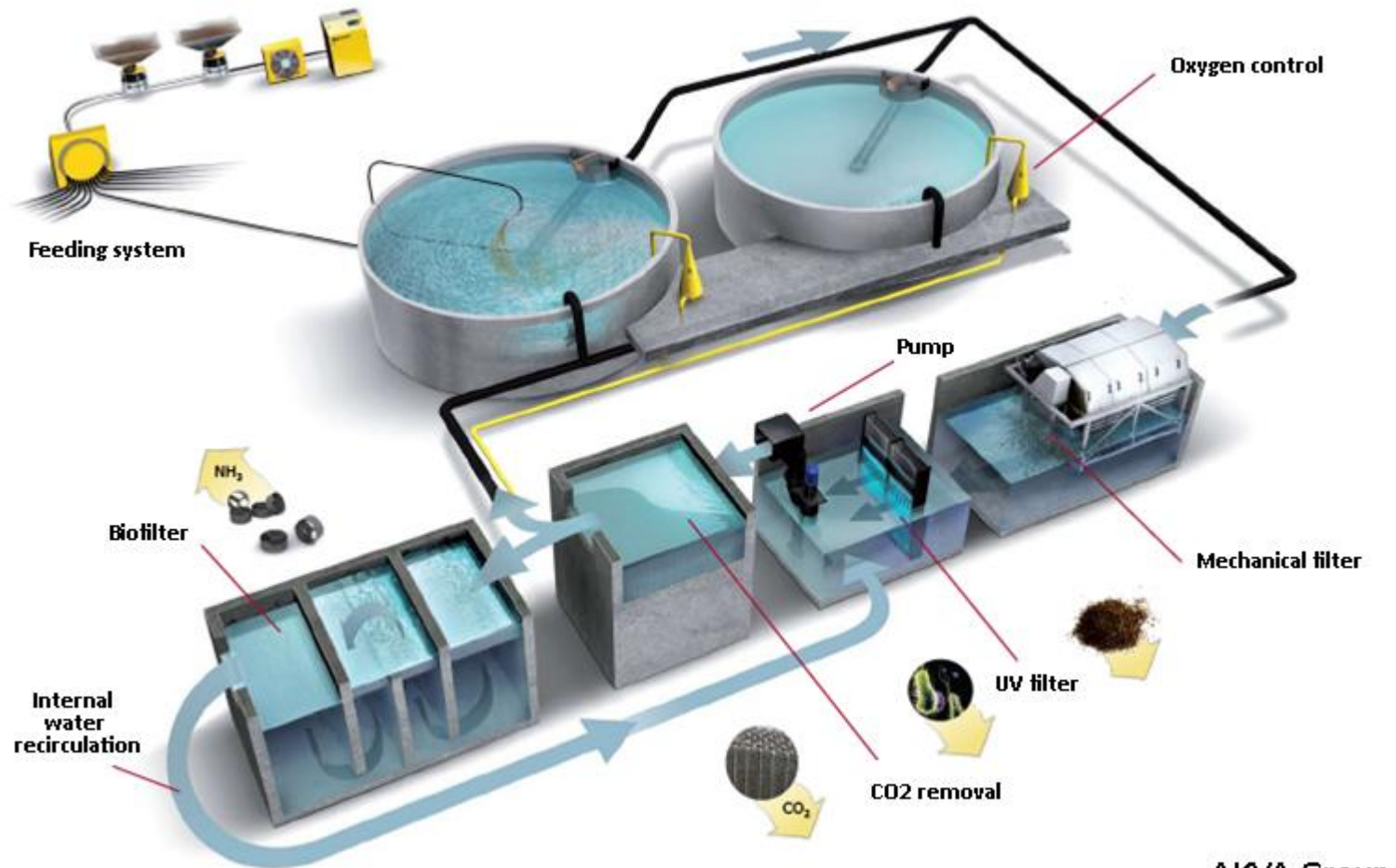
Trout farm with lagoons for effluent treatment



Aquaponic system



Scheme of a recirculation aquaculture system (RAS)



RAS for tilapia and Claresse production



RAS for barramundi production



Future of freshwater aquaculture

EATIP "Aquainnova" FP7 Project

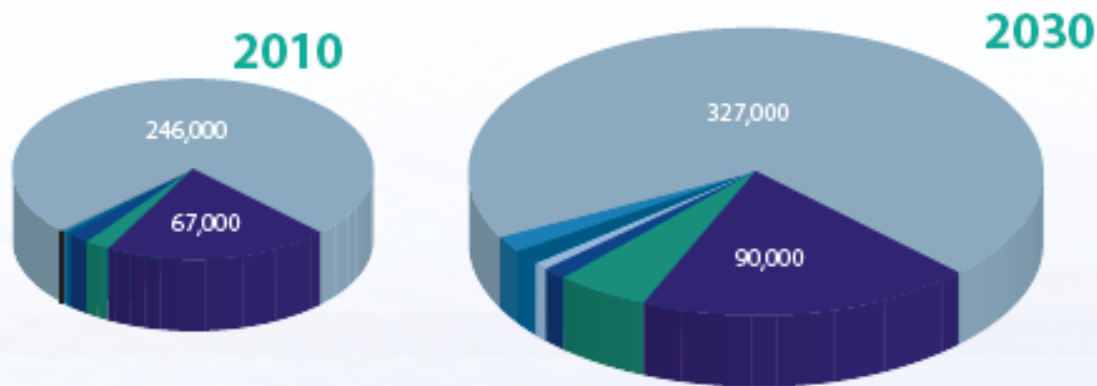


- **Freshwater Group in TA Systems & Technology**
- **Freshwater Aquaculture Workshop in Warsaw**
- **Vision of EU freshwater aquaculture**
- **SRIA and Action Plan for the development of freshwater aquaculture**

Vision of EU freshwater aquaculture

Vision 2030

- Production growth >40% = 1.5%/year
- Trout and carp remain core products
- Will diversify & establish new activities
- Recognition and expansion of ecosystem services
- Product diversity for mass and target niche markets
- Productivity increases of 50%/employee
- FCR decreases to 0.9 for trout (15% improvement)



Total Increase **tons** 136,000 **41%**

Total Increase **M€** 337 **39%**

Challenges for freshwater aquaculture



Identify advantages of freshwater aquaculture



Complex legislation hindering development



Define clear targets for lesser-known species



Integrate RAS better and improved use of outputs



Raise productivity of traditional farms



Better recognition of contributions to society

Main conclusions

Freshwater aquaculture is an unexplored opportunity in the development of food security and rural livelihood in many regions in the EU

Well managed freshwater aquaculture contributes to the preservation and improvement of the environment

Specificities of freshwater aquaculture should be better understood and acknowledged by the public, and policy makers

There is need for appropriate regulation and support for ecological and environmental services



Thank you for
your attention!