

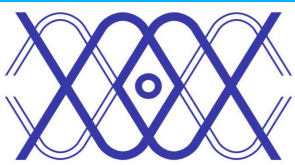
**National Agricultural and
Innovation Centre
Research Institute for
Fisheries and Aquaculture**



Freshwater aquaculture – a chance for sustainable aquaculture development in the EU

Béla Halasi-Kovács, PhD
director

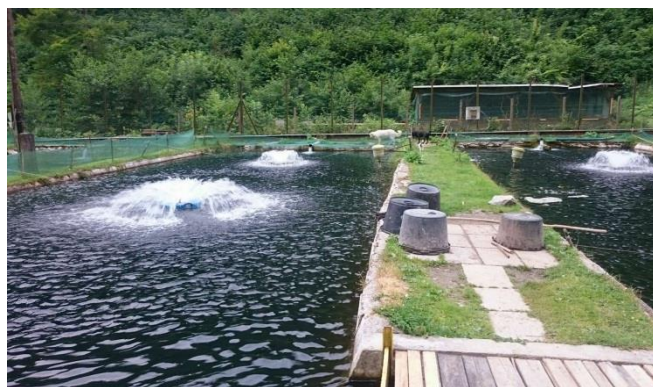
NAIK Research Institute for Fisheries and Aquaculture



The main freshwater aquaculture technology systems in the EU



Pond aquaculture



Flow-trough system



Recirculation aquaculture system (RAS)



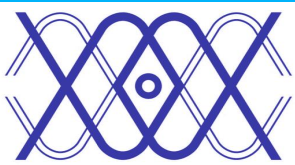
Cyprinid species



Trout



Different „high quality” species



Freshwater pond aquaculture the cultural heritage of Europe



„Thursday” painted by Walter Dendy Sadler
(1854–1923)



„The Four Elements: Water” painted by Joachim Beuckelaer (1535-1575)

JANUS DUBRAVIUS
HALASTAVAKRÓL

ÉS A BENNÜK NEVELT HALAK
TERMÉSZETÉRŐL SZÓLÓ,
tudós, és a vagyon gyarapítását segítő

öt könyve

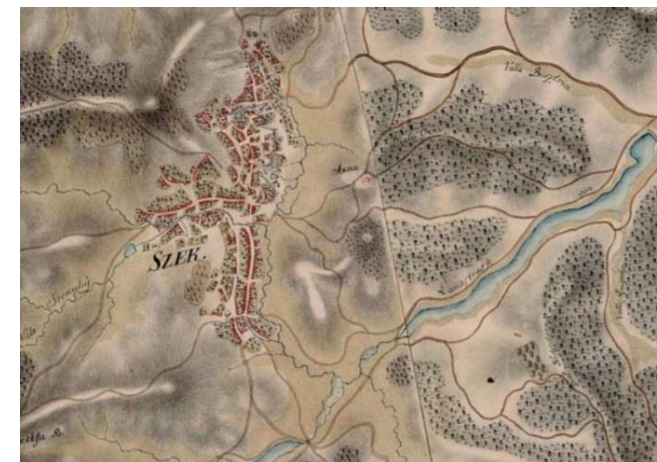
JOACHIMUS CAMERARIUS
nürnbergi orvos megjegyzéseivel



NÜRNBERGEN nyomtatta Paulus Kaufmann

1596

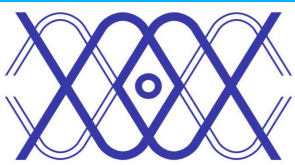
Janus Dubravius (1547): De piscinis et piscium, qui in illis aluntur, naturis, libri quinque, út doctissimi, ita ad rem familiarem, augendam utilissimi



Military map from the 18th century with fish ponds in Transylvania

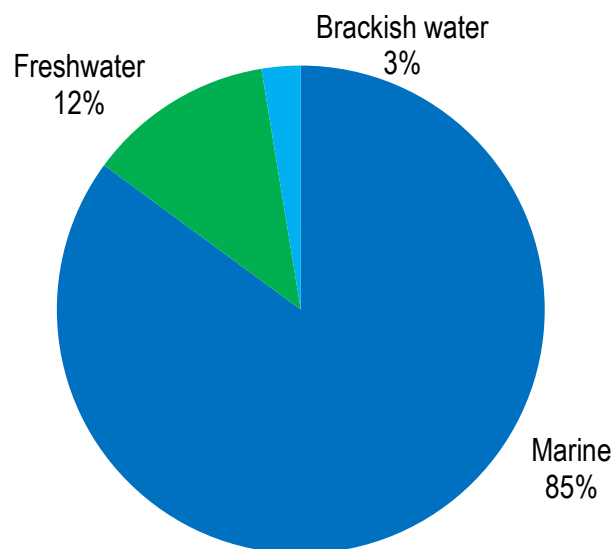


„Still life with fish and cat” painted by Clara Peeters
(1594–after 1657)

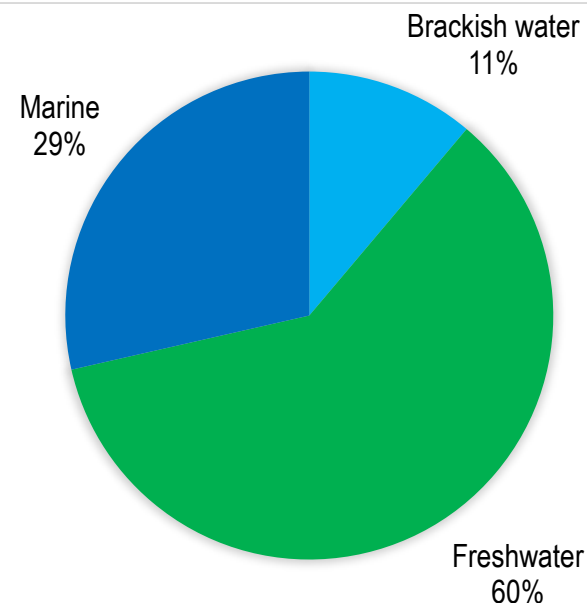


Contribution of freshwater aquaculture in the EU and global production

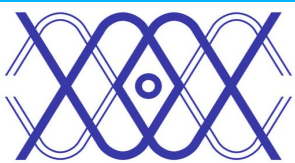
European aquaculture production by origin



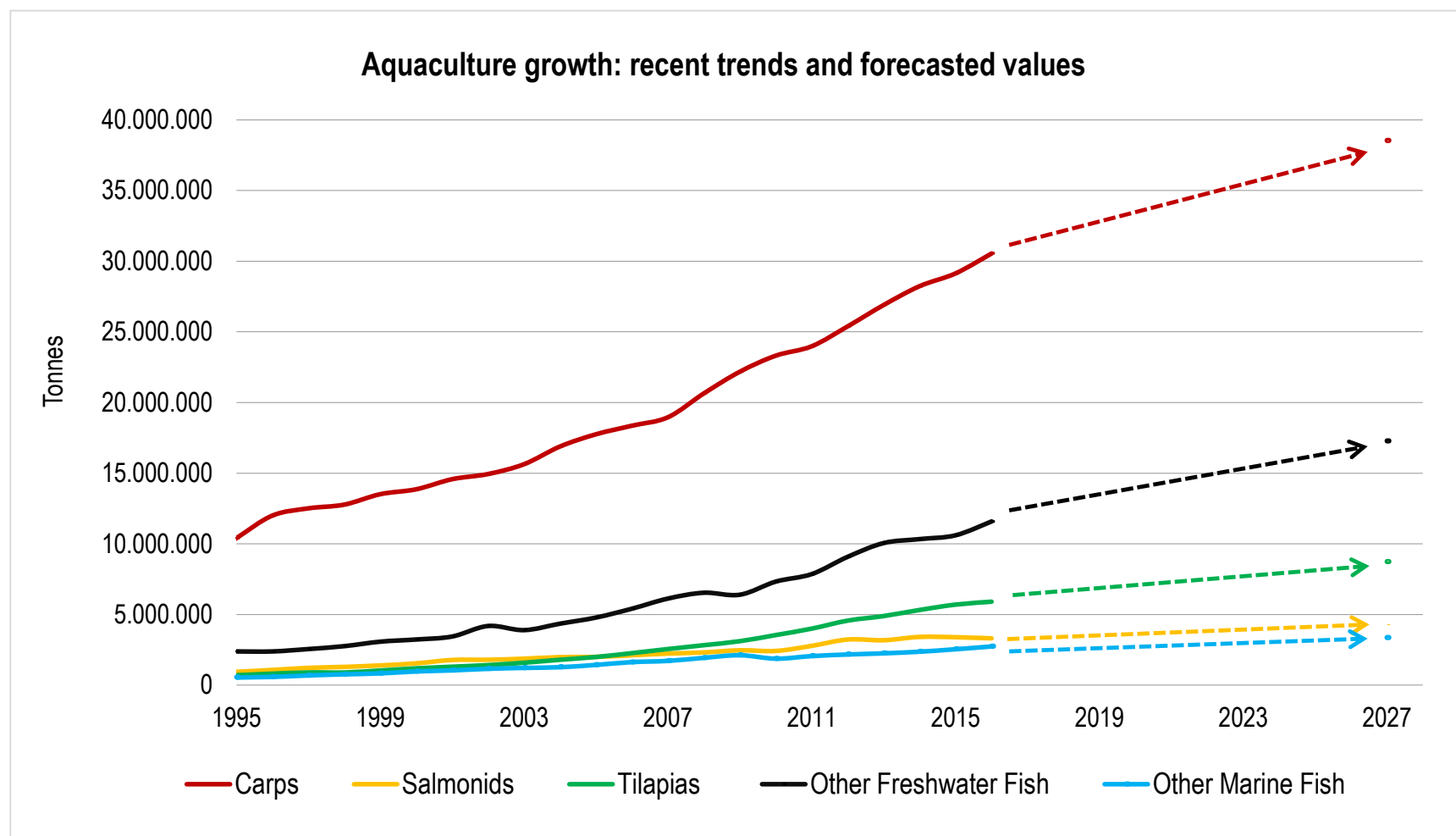
Global aquaculture production by origin



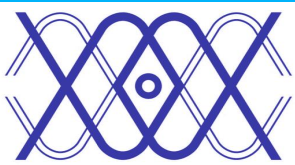
Source: FAO Fishstat 2019



Relevance of Carps production in the world aquaculture



Source: FAO Fishstat 2018, OECD/FAO, 2018



The billion euro question

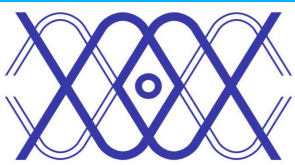


Market production...



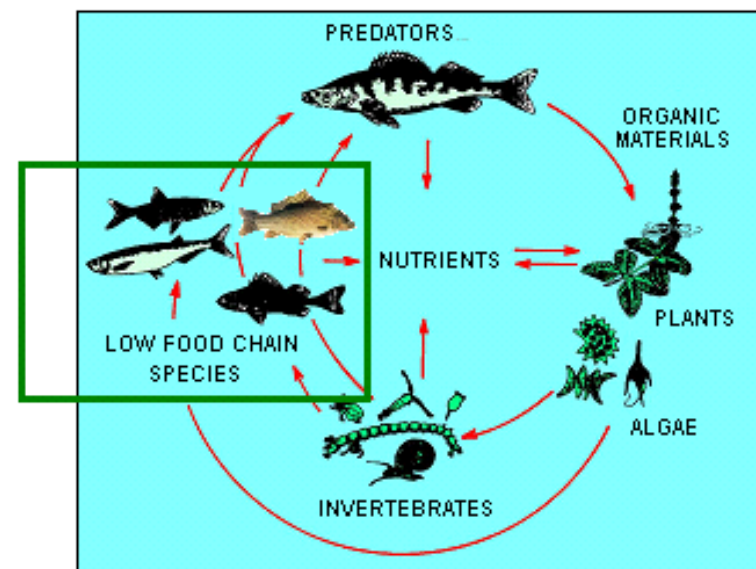
or outdoor museum

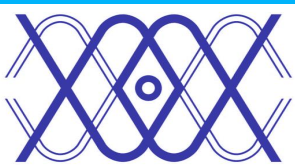




The values of pond aquaculture

- 93 000 tonnes fish production in ponds
- Low food chain species
- Most resource-efficient animal protein production
- Production based on natural processes: wise use of natural resources
- Good example of circular economy
- Fit to the XXI century „Green Sustainability” production model
- Employment in rural areas





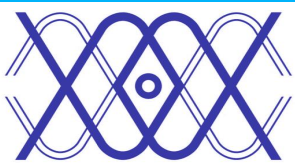
Additional values of pond production: natural and environmental values

- Pond aquaculture maintains 250.000 ha natural-like wetlands in the EU
- Pond fish farms contribute to preserve biodiversity:
 - More than 400 bird species, most of them with NATURA 2000 importance
 - Substantial part of the otter population in Europe
 - Numerous wetland related plant and animal species with European significance
- Pond fish farms contribute to better water management
 - Retention of water
 - Retention of soluble and floating compartments in supply water

1 HA POND RETAINS YEARLY:
3.8 – 8.4 kg Phosphorous
96 – 560 kg Nitrogen
1100 – 1600 kg Suspended Solids

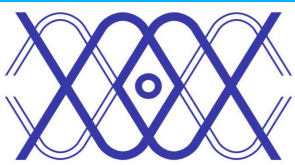
(Knösche et al. 2000)



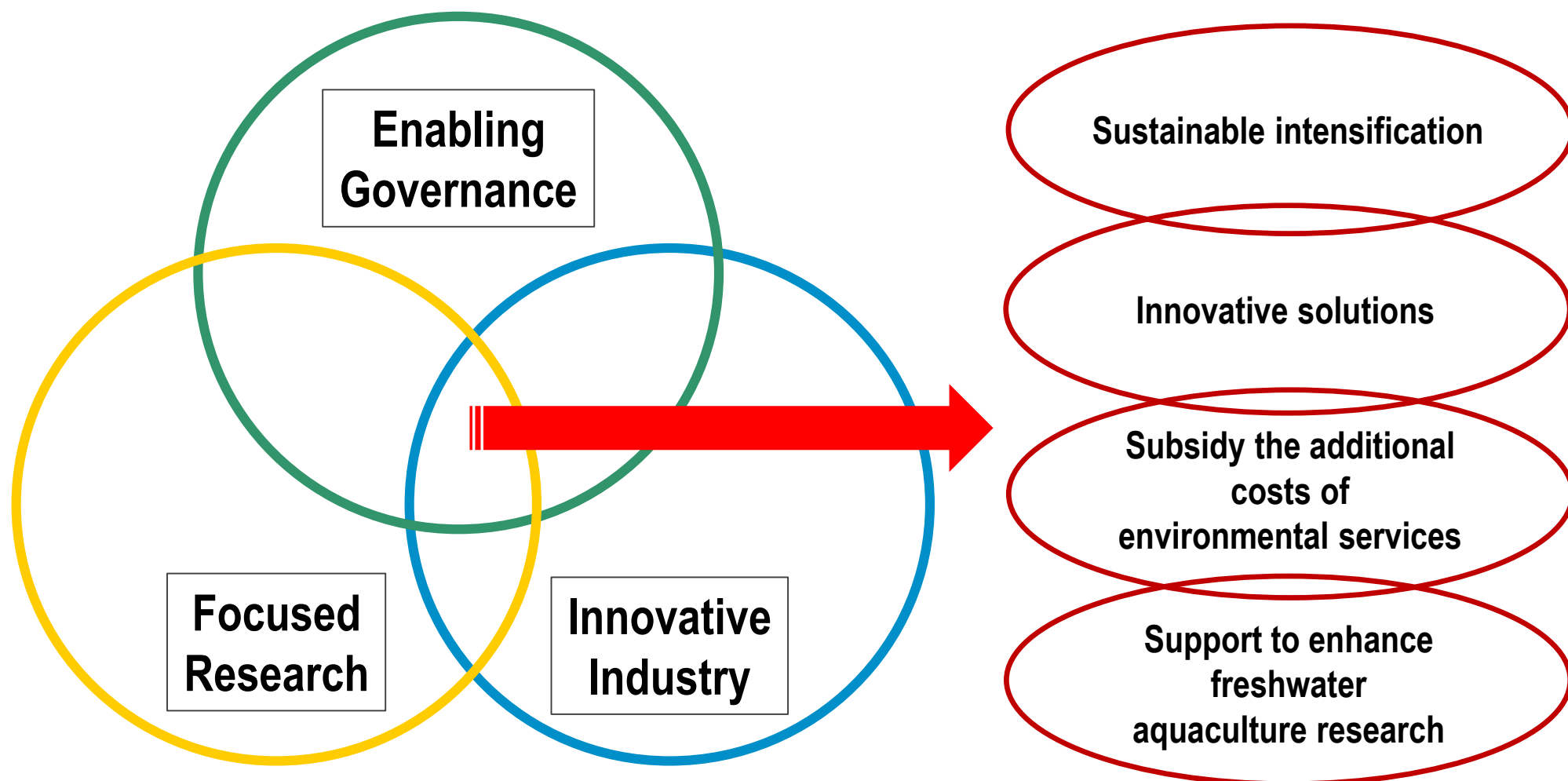


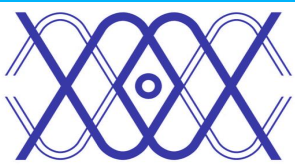
Pond fish farming contributes to achieve the goals of European Green Deal





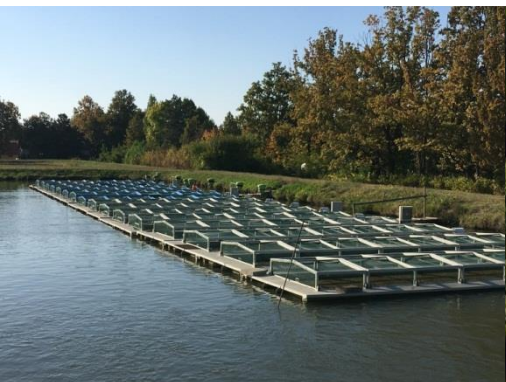
How the pond aquaculture can be boosted in the EU

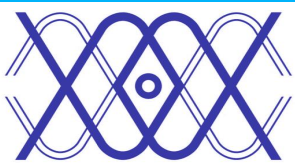




Sustainable intensification of pond aquaculture

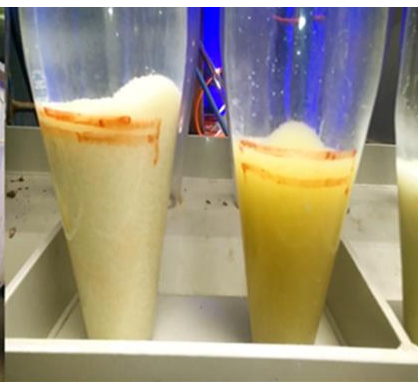
- Combining intensive-extensive systems
 - Pond in pond system
 - Cage in pond system
 - RAS-pond system
- Freshwater IMTA
- Multi-functional pond fish farming

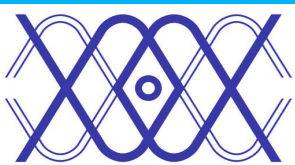




Innovative solutions for freshwater based bioeconomy

- **New species in intensive systems**
 - Pikeperch,
 - European catfish
- **Sustainable feed ingredients and additives**
 - Alternative protein sources,
 - Microalgae
- **Focusing on additional research**
 - Social acceptance
 - Processing and marketing (product diversification, by-products utilization)
 - Standardization, labeling





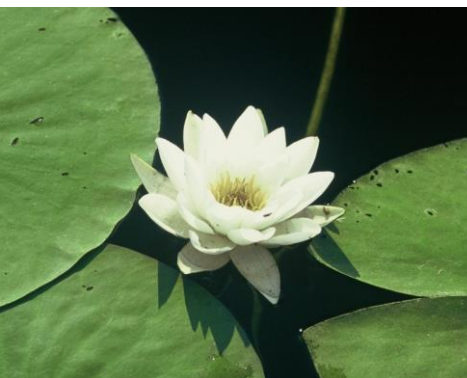
EU contributions: become flagship, no more rescue boat

„Blue pond” subsidy

- Subsidy the complex natural, environmental and social values created by pond aquaculture; interpreted as supporting maintenance of wetlands and rewarding so called „blue pond” technologies.

Support Research and innovation

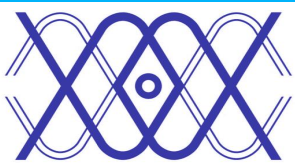
- Build up accessible and well targeted research and innovation funds to enhance the freshwater aquaculture sector.



A sunset scene over a body of water. The sun is low on the horizon, creating a bright orange glow that reflects on the water. The sky is filled with soft, orange and yellow clouds. In the foreground, there are dark, silhouetted reeds or grasses. The overall mood is peaceful and serene.

**Thank you for your
attention!**

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Main conclusions

- Pond aquaculture has remarkable share in global aquaculture that ensures its potential for European ones too.
- Pond aquaculture maintains complex natural, environmental values, it is an excellent example of circular economy.
- The pond aquaculture contributes to achieve the goals of European Green Deal
- The harmony of the three main elements – industry, research, governance – of freshwater aquaculture sector must be ensured in order to increase productivity.
- Pond aquaculture requires sustainable intensification and innovation, as the parts of freshwater-based bioeconomy.
- The additional research activities supported by the EU has also eminent role to fulfill the demands of pond aquaculture development.
- The maintenance of wetlands created by pond production needs the „blue pond” subsidy.