

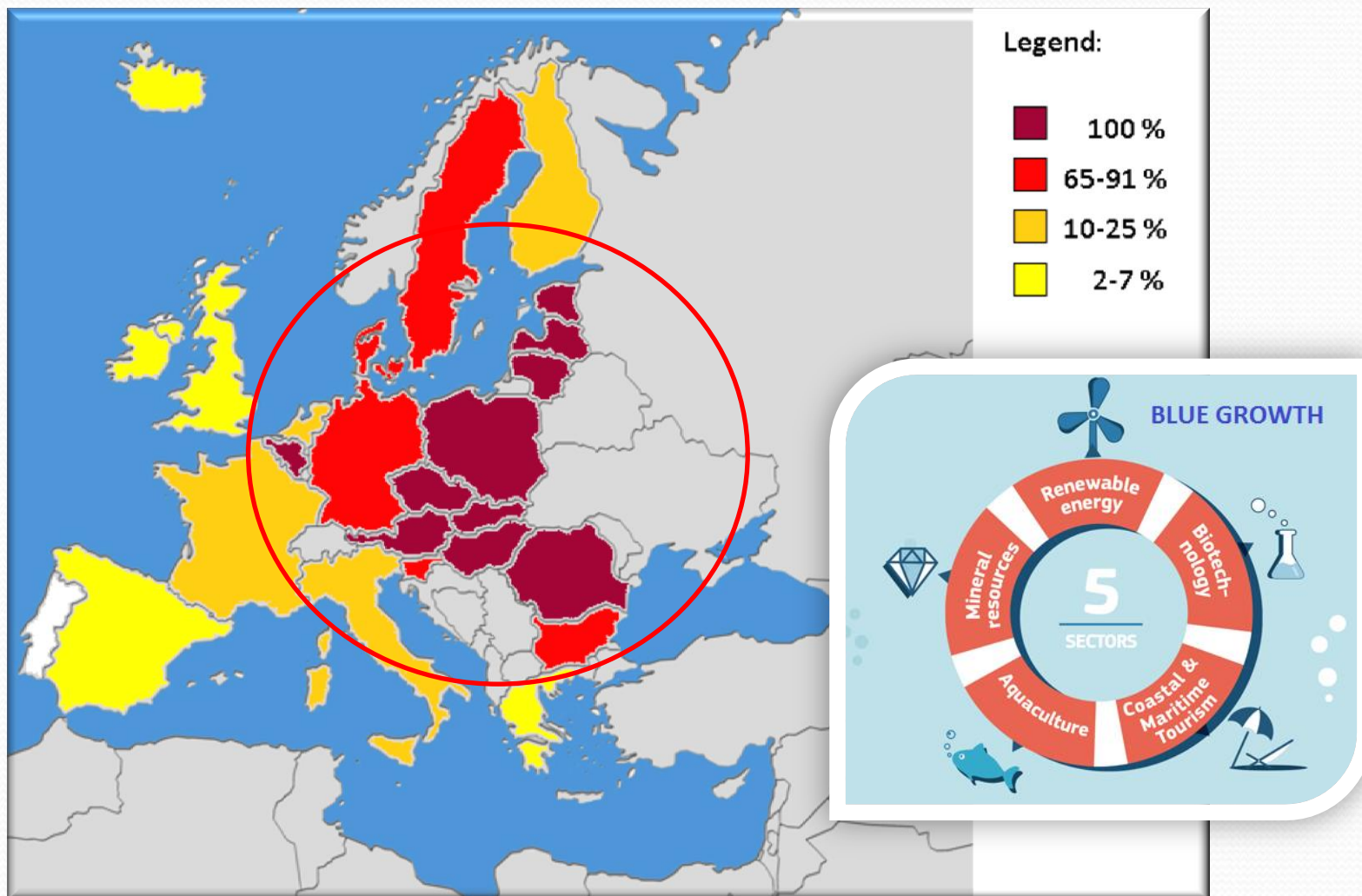
Wise use of natural resources in aquaculture: the possibilities of sustainable pond aquaculture intensification



Béla Halasi-Kovács
director

NAIK Research Institute for Fisheries and Aquaculture
(HAKI)

Freshwater aquaculture in EU countries, 2013



Source: FAO Fishstat Plus, 2013

Fish pond systems in Europe



~400 000 ha fish ponds in EU

27 000 ha fish ponds in
Hungary

maintained by fishermen



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



The special fish pond ecosystem



Natural wetland



Fish pond

- Comparable nutrient cycling processes.
- Artificially high nutrient level that will be removed by the harvested fish.
- It results steady state and high biomass in vegetation period.
- Planktonic predominance that maintained by the carp stock.
- Typical mosaic-complex that develops by the results of periodic water filling and drainage.



Main challenge in the development of pond fish production

Increase production without negative impact on the environment and preserving service functions of fish ponds



Value of fish production:
4.830 €/ha/year

Value of ecosystem services:
52.857 €/ha/year

Source: Turkowski & Lirski, 2011



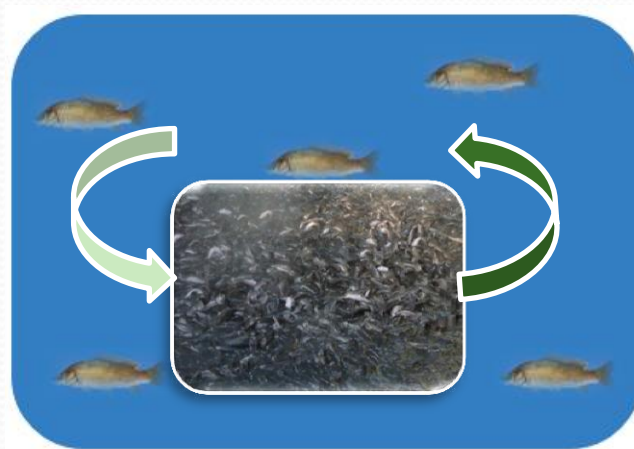
Sustainable intensification



Extensive pond fish production

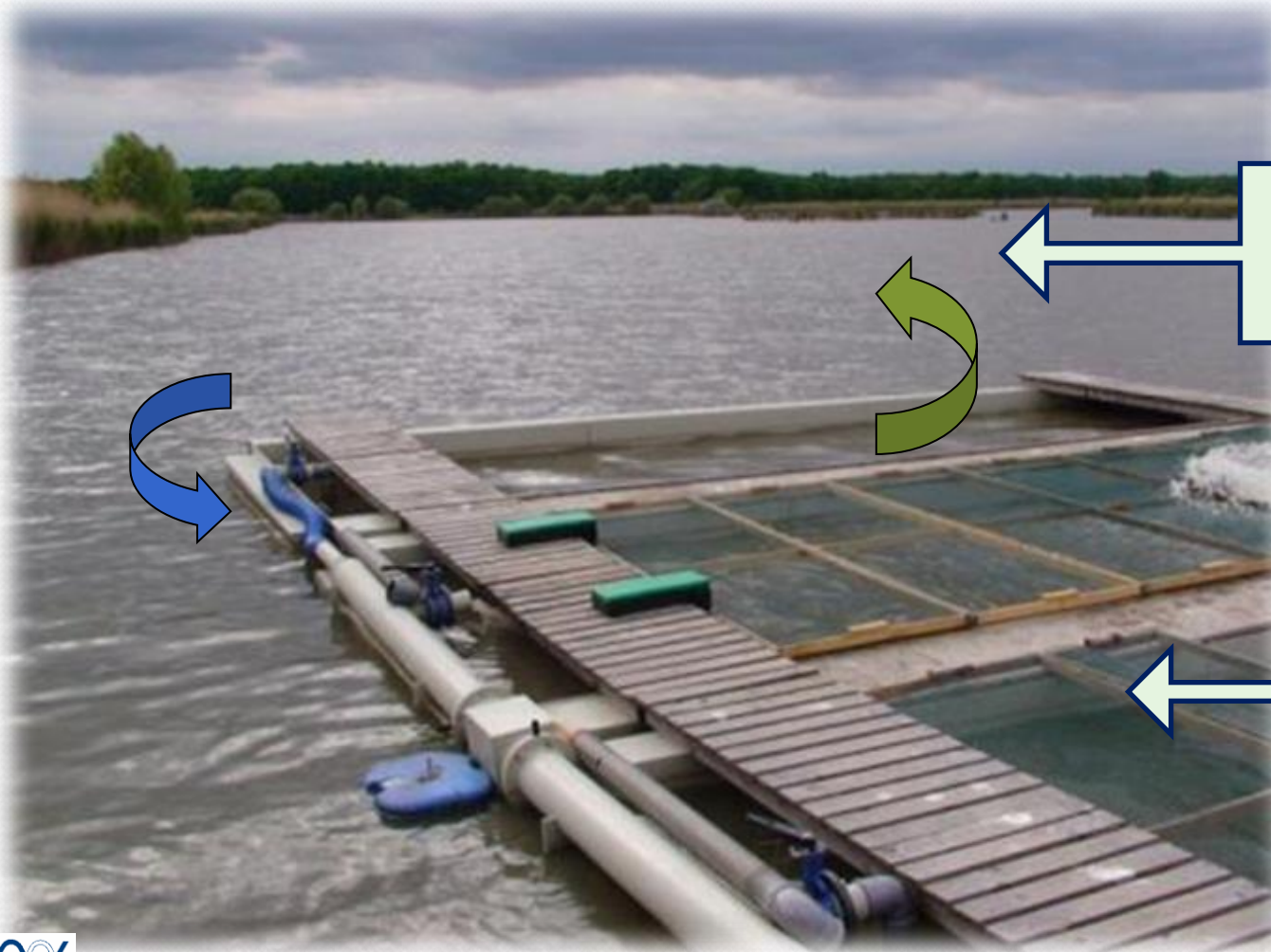


Intensive pond fish production



Combined Intensive-
Extensive
Production

„Pond in pond” system



Extensive unit:

- Ecological services
- Nutrient recycling
- Fish production

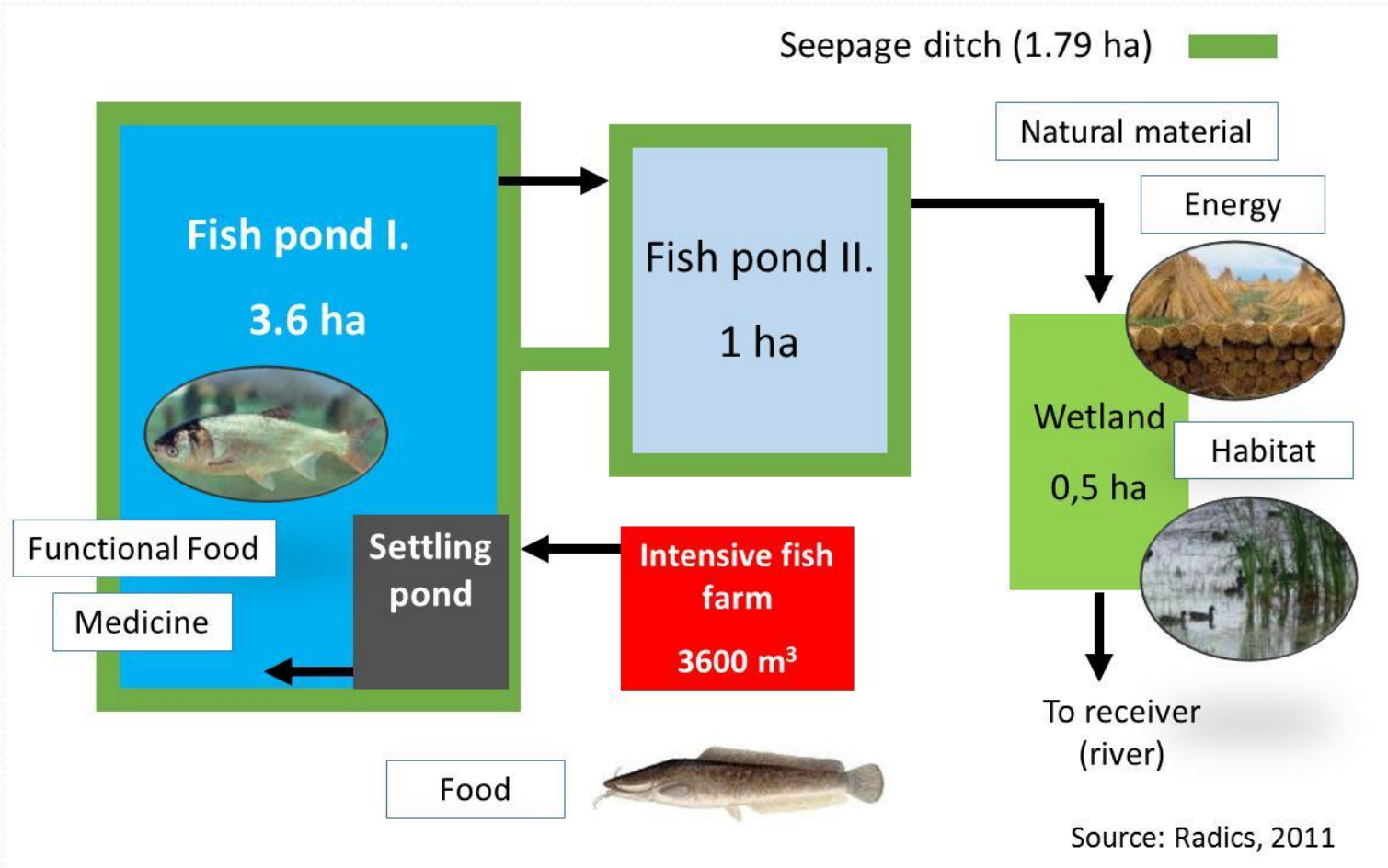


Intensive unit:

Production of high value species



Freshwater Integrated Multitrophic Aquaculture IMTA system



A serene sunset scene over a body of water. The sun is a bright, glowing orb on the horizon, casting a shimmering reflection down the center of the water. The sky is filled with soft, wispy clouds in shades of orange, yellow, and grey. In the foreground, the dark silhouettes of reeds or grasses are visible, adding texture to the bottom of the frame. The overall mood is peaceful and contemplative.

Thank you!

halasi.kovacs.bela@haki.naik.hu