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Fighting diffuse nutrient load: Multifunctional water management concept in natural reed beds



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Eutrophication in surface waters




High nutrient loads from catchment areas

Constructed wetland have been studied a lot, but...

- should the spotlight be reserved for man-made wetlands only?
- Natural wetlands are logically even more economical solutions
- "However, more studies are needed..."
- Search for the perfect mean is a wasted breath
 - obviously applicable solutions available





Multi-functional water management concept of using natural common reed (*Phragmites australis*) beds as a source of renewable energy and construction material takes several positive side-effects into account, including ecosystem services, surface water quality improvement, benefits to the community as well as biodiversity.

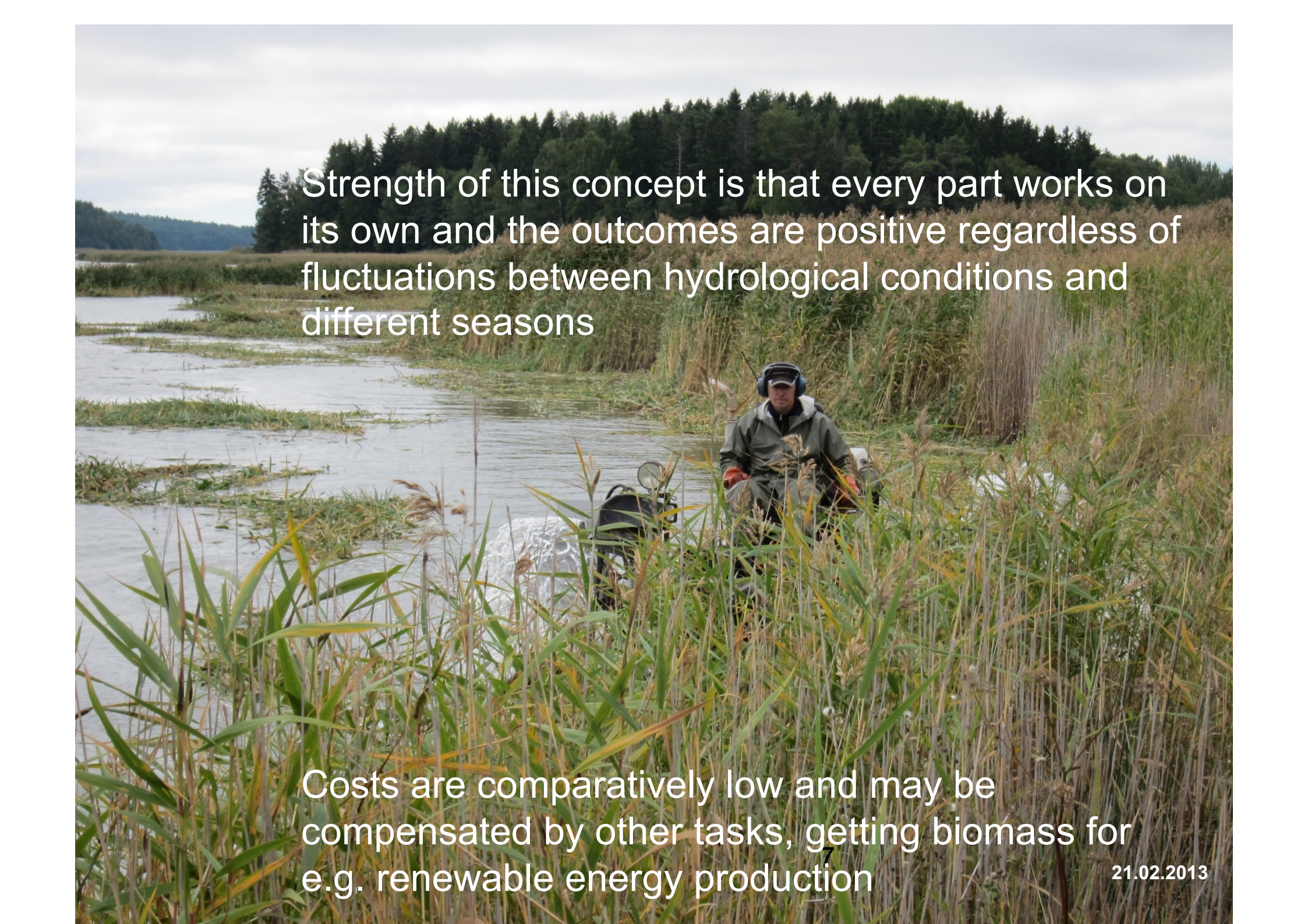


The concept is not tight to a particulate ecosystem as such, but instead can be applied to any coastal areas, modified according to the local conditions.



Natural wetlands are an affordable and effective solution to prevent diffuse eutrophication

Even though the nutrient binding efficacy and conditions in general may vary a lot from case to case, vegetation beds are a considerable way of combining multifunctional water treatment goals with numerous other benefits

A photograph of a person wearing a green wetsuit and a blue cap, operating a small motorboat through a marshy area. The boat is surrounded by tall, green and yellow reeds. In the background, there is a dense forest of evergreen trees under a cloudy sky. The water is calm and reflects the surrounding vegetation.

Strength of this concept is that every part works on its own and the outcomes are positive regardless of fluctuations between hydrological conditions and different seasons

Costs are comparatively low and may be compensated by other tasks, getting biomass for e.g. renewable energy production

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Although the exact amounts of compounds taken out of the system is not known and probably will never be due to wide variability in natural systems, we may rely on the existing knowledge and act instead of asking for further studies

Utilizing natural wetlands capacity by letting their natural processes work in nutrient removal is a way of managing diffuse pollution



Studies are needed in developing concepts that take all things into account and consider the output from many points of view

Most profitable wetlands provide many benefits to the communities, but require careful planning and regional collaboration



Thank You!

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