



Water & ecosystems in delta's using aquatic ecosystems to solve water quality and quantity issues

Ralf Verdonschot
Wageningen Environmental Research

ralf.verdonschot@wur.nl





Effects of aquatic ecosystems on water quality

- Biological purification: *reduction of nutrient/organic load in rivers by improving nutrient cycling by aquatic biota*
 - Flow-through wetlands and riparian zones and their role in nutrient cycling
 - Biocascades: self-purification by biotic components of river ecosystems





Effects of aquatic ecosystems on water quantity

- Nature-based solutions to improve a watersheds' capacity to retain water:
decrease in peak discharges & low flows, ground water recharge
 - Innovative 'Building-with-Nature' measures, e.g.
sand suppletion, woody debris addition, adjusted vegetation mowing regimes





Research questions

- Further quantification of processes and pathways is needed
 - Which species combinations, and especially surface areas are needed to maximize self-purification in rivers?
 - How can results from local case studies be applied on a broader scale?
- Sustainability of nature based solutions in multi-stressed and heavily modified rivers on the longer term