

AGROFORESTRY SYSTEMS AND INNOVATIONS

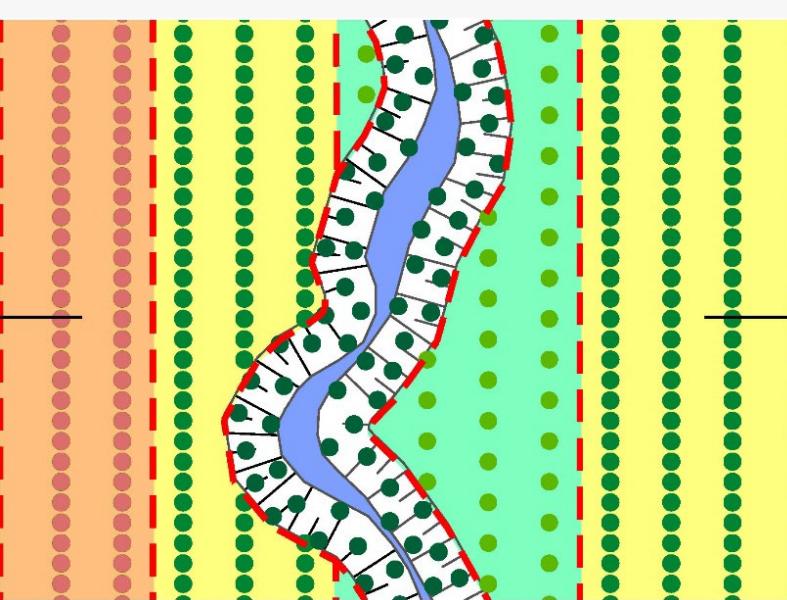


Agroforestry: New perspectives for water conservation, development and regional added value in rural economy

Results from two projects

Camilla Bentkamp, Zaira Ambu, Frank Wagener, Andreas Stowasser,
Lars Stratmann, Tabea Gerhardt, Peter Heck & Jörg Böhmer

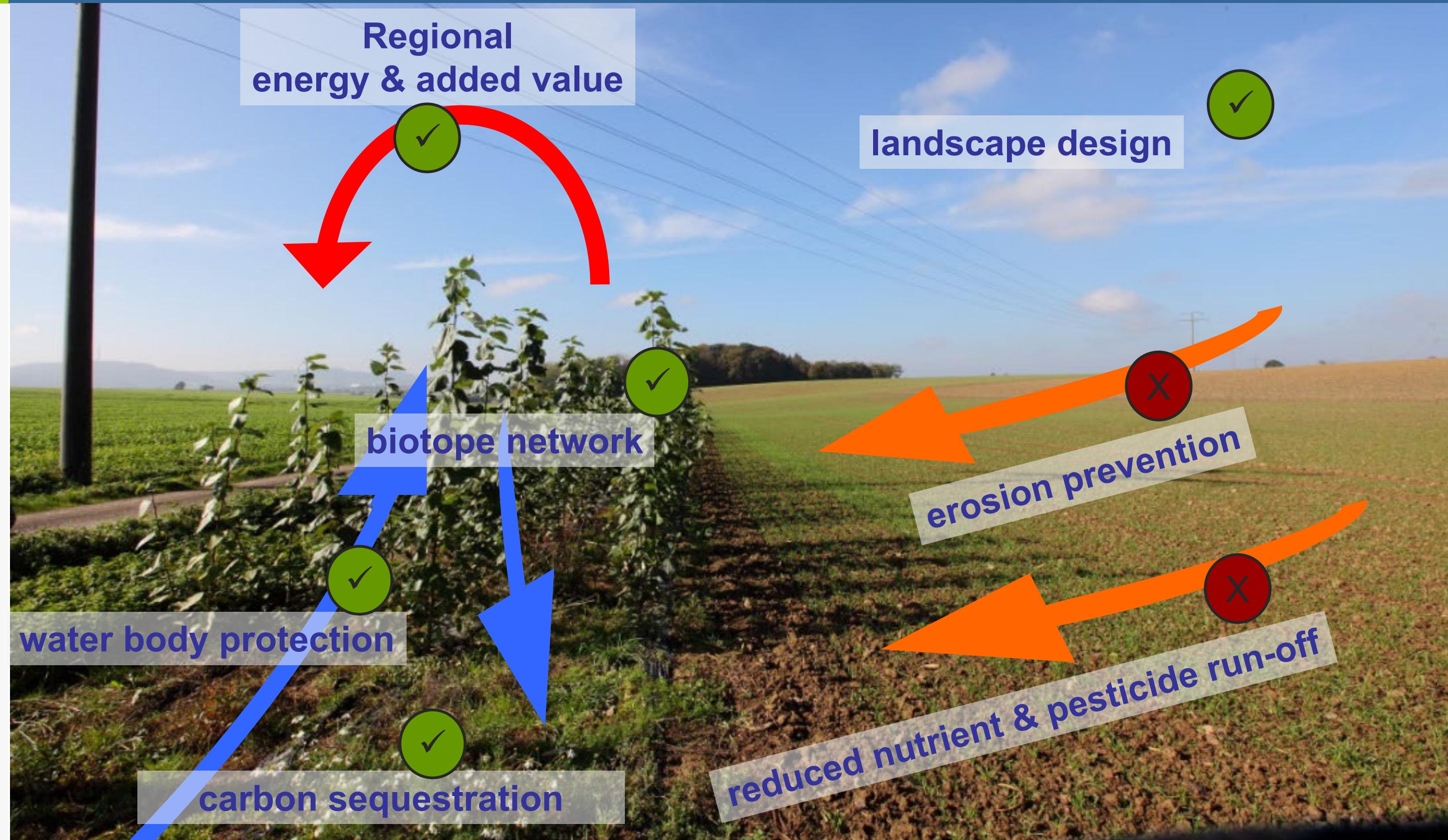
Challenges in water & land management (selection)



- implementation of EU water framework directive is severely delayed
- climate change is key challenge of our times
- many rural areas lack an economic perspective
- land availability for water body restoration is limited
- utilization (and reduction) of agricultural land leads to reduced income for farmers and/or intensification
- segregated land use options often do not work satisfactorily

- cooperative & multifunctional use needed
- protection goals have to be matched with productivity & regional value chains
- legal framework has to be adapted

Agricultural timber production along side water bodies



Multifunctionality – combining productivity, climate protection/mitigation and biodiversity enhancement



Compensation measure in a stream valley

- fast growing tree species in the riparian buffer

arable land

poplar and alder
in wide spacing
(primary
floodplain)

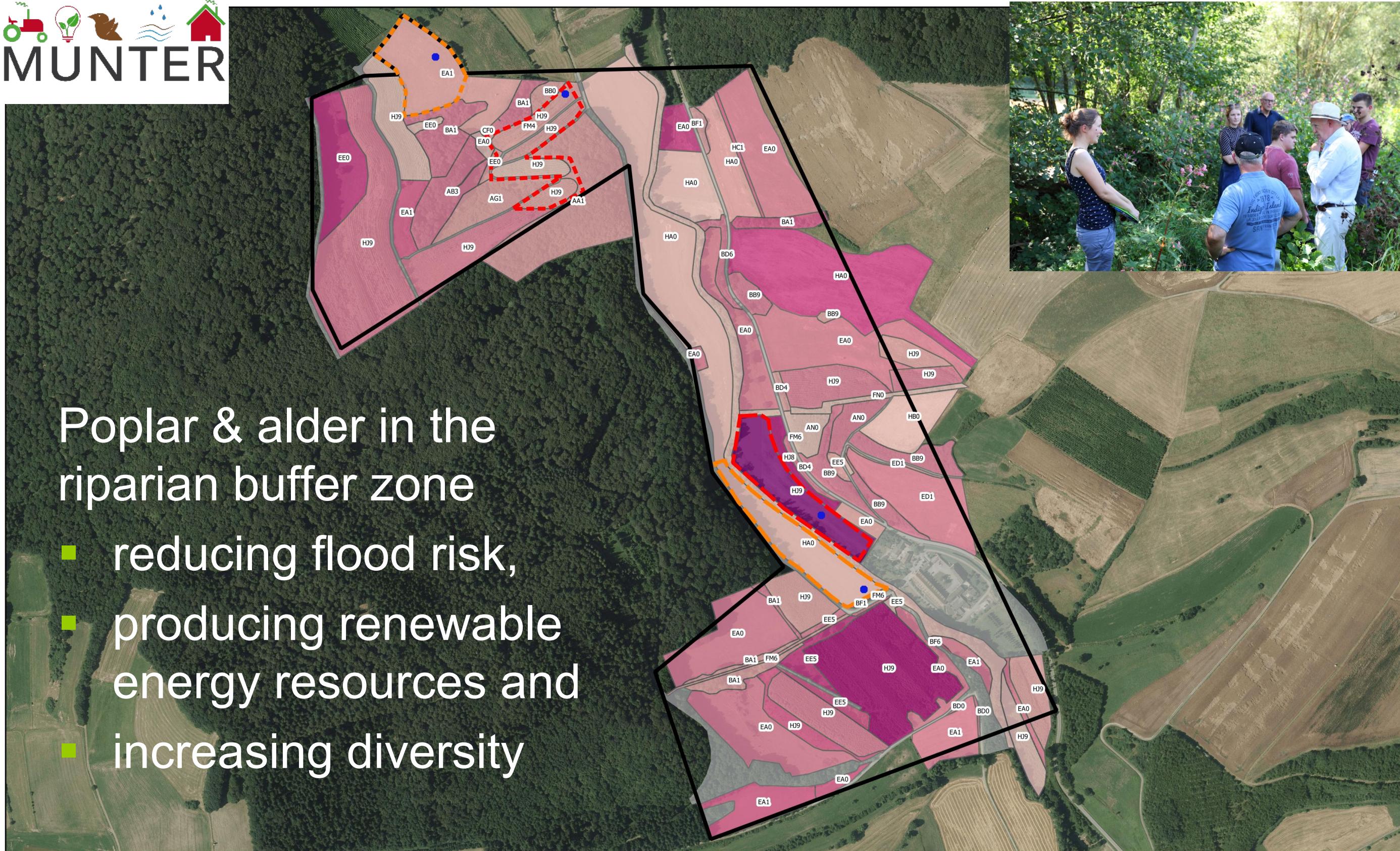
incoming wild growing
species welcome

meadows
(secondary
floodplain)

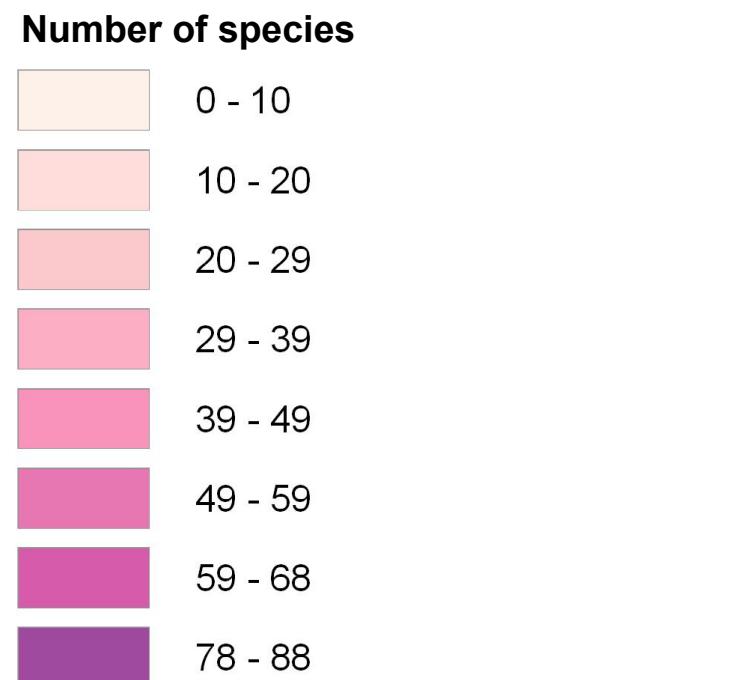
channel from water
body to retention area



Biodiversity effects from new crops



Study areas	
	total study area
	poplar & alder (riparian buffer)
	poplar & alder (plantation)
	reference area (arable land)
	reference area (grassland)



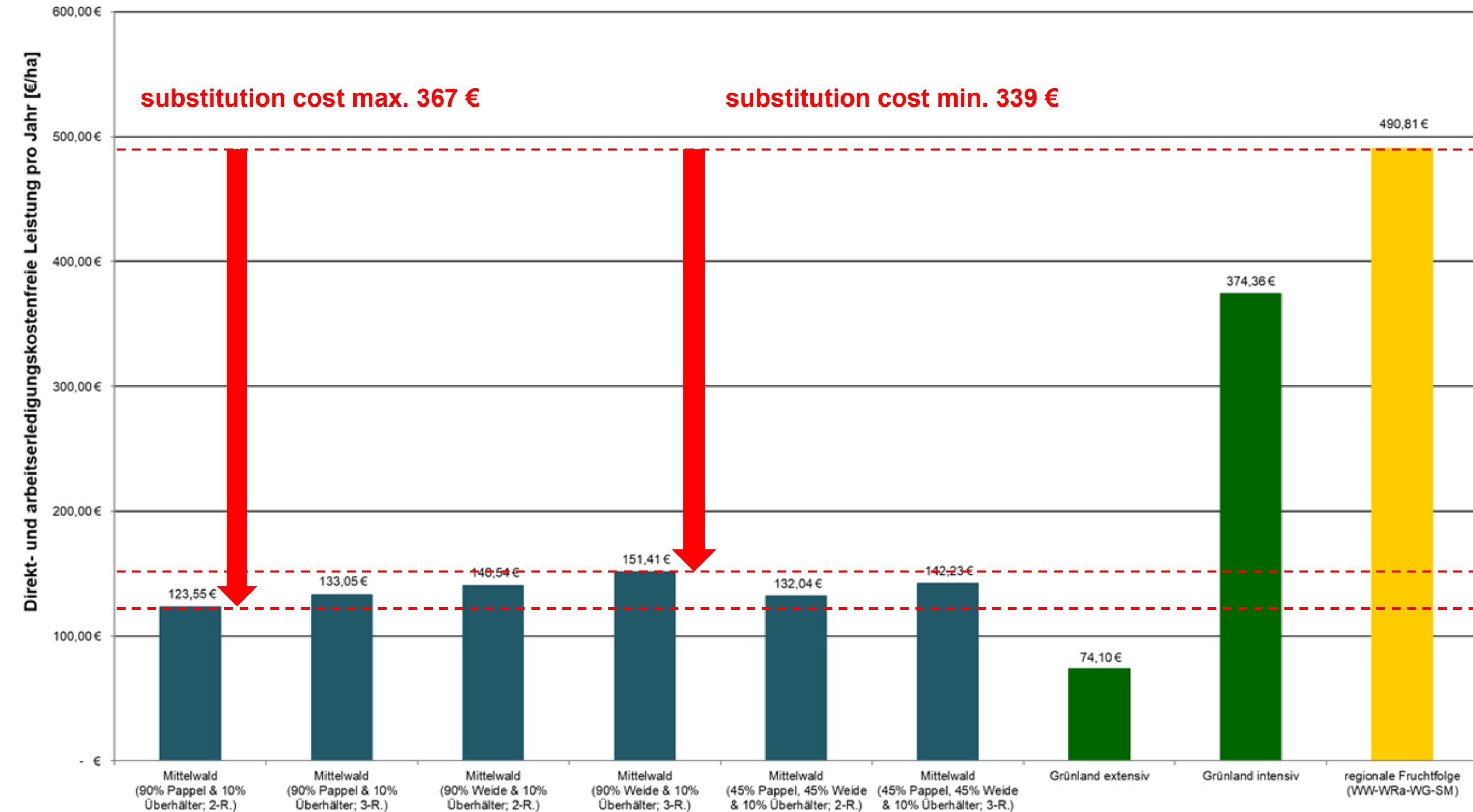
0 100 200 300 400 m



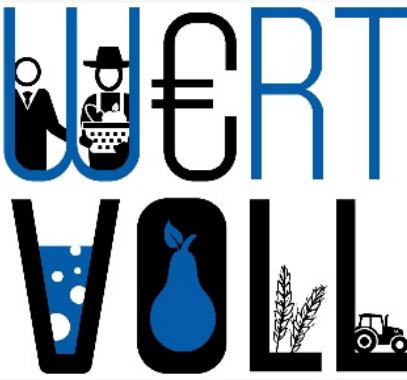
Land-use economics: substitution costs



Direct and labour cost-free performance at a calculation interest rate of 3%

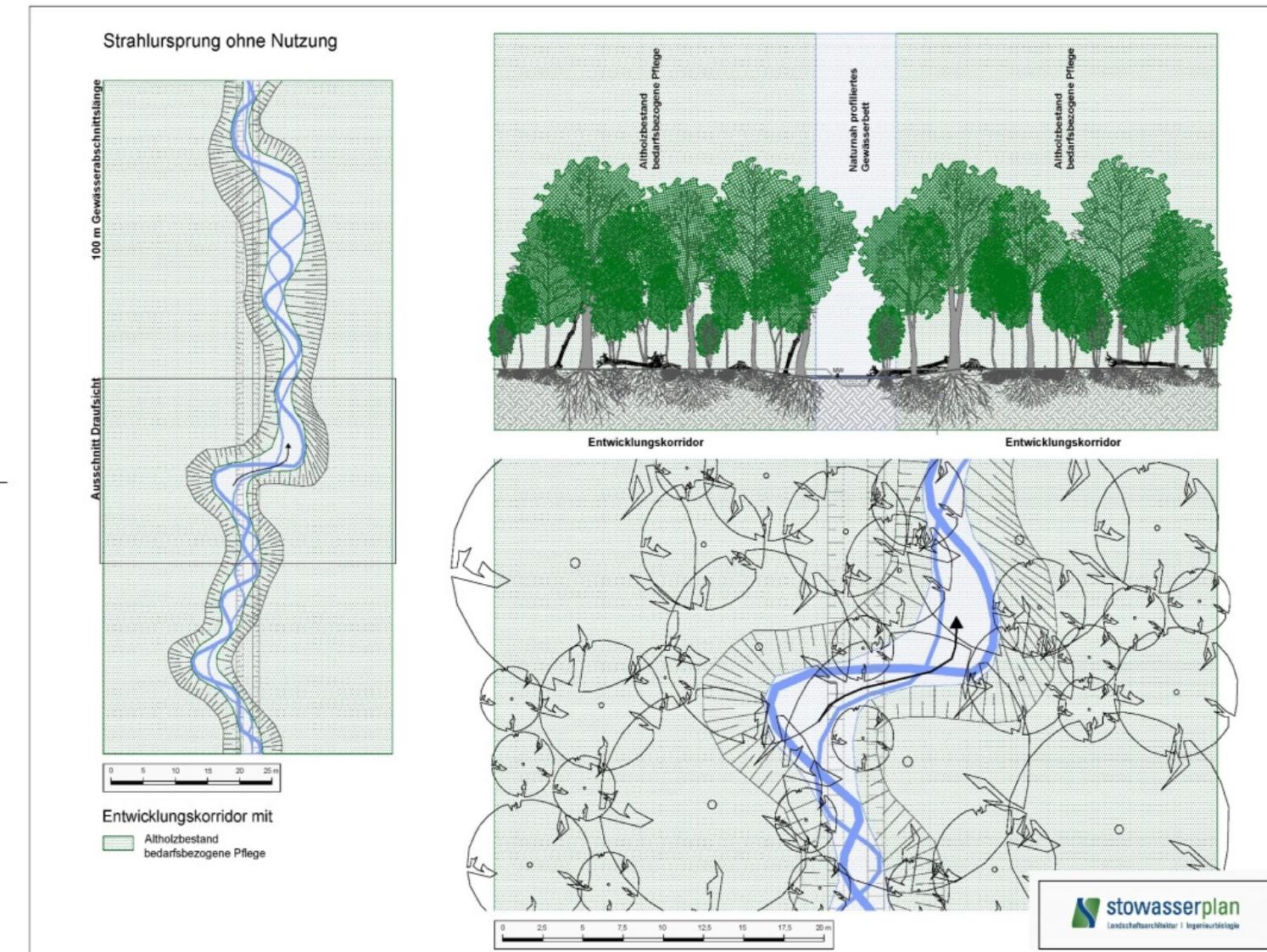


Integrated land use & water management = generating added value

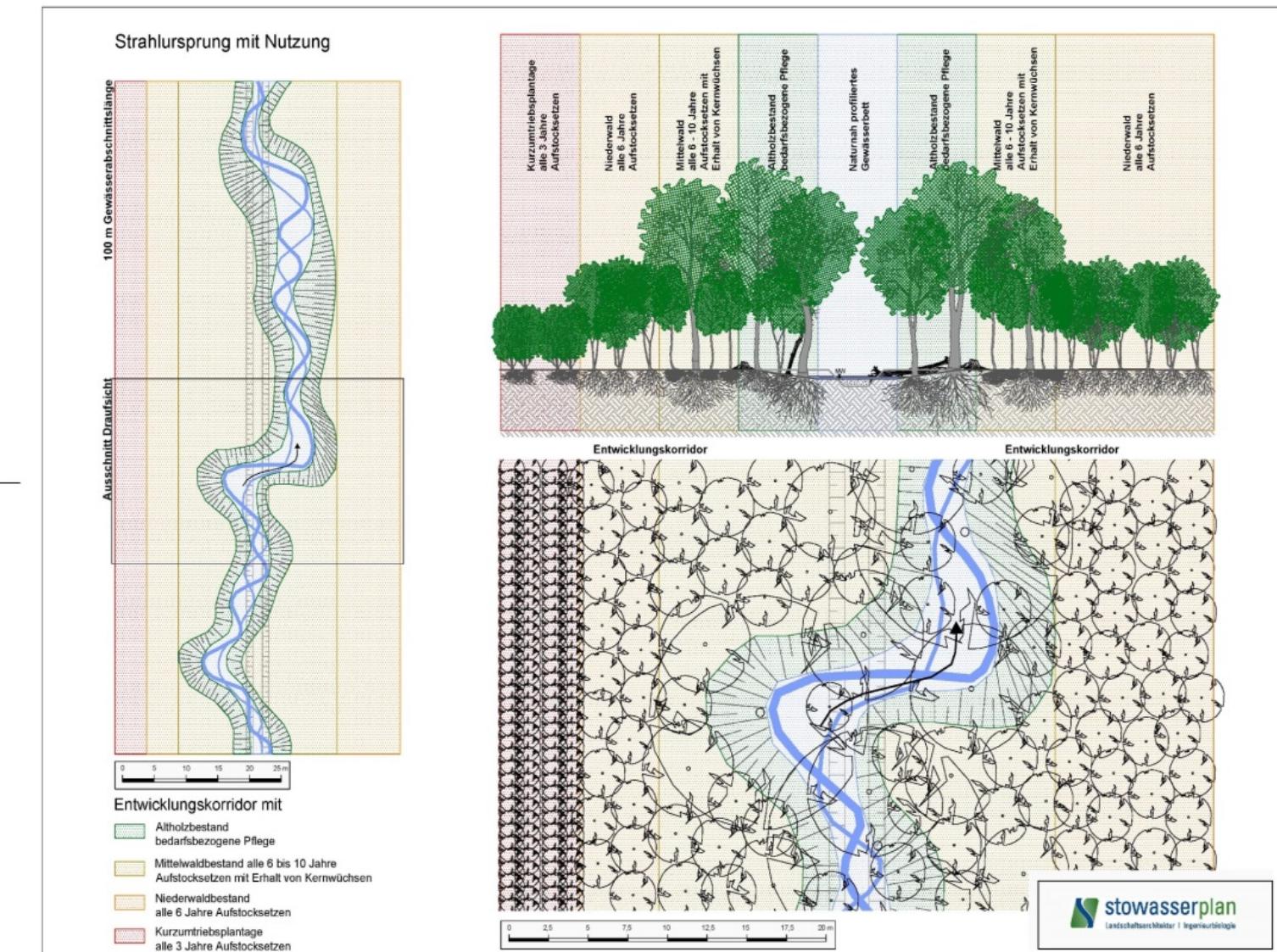


total area used for protection = lost for production

1/3 of the area remains in use = added value	1/3 of the area lost for production = used for protection	1/3 of the area remains in use = added value
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Source: LfULG Sachsen (2017): Erste Ergebnisse aus dem laufenden F+E-Vorhaben „Entwicklung eines aktiven und mehrschichtigen Handlungsrahmens zur Umsetzung der Ziele der EG-WRRL im Freistaat Sachsen – Projekt ElmaR“ (unveröffentlicht). Ausführender: Stowasserplan GmbH & Co. KG, Radebeul.



Dynamic river restoration with agricultural timber production

approx. 38 m wide – after 5 years

different types of management

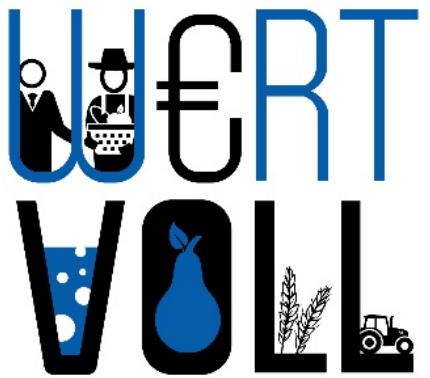
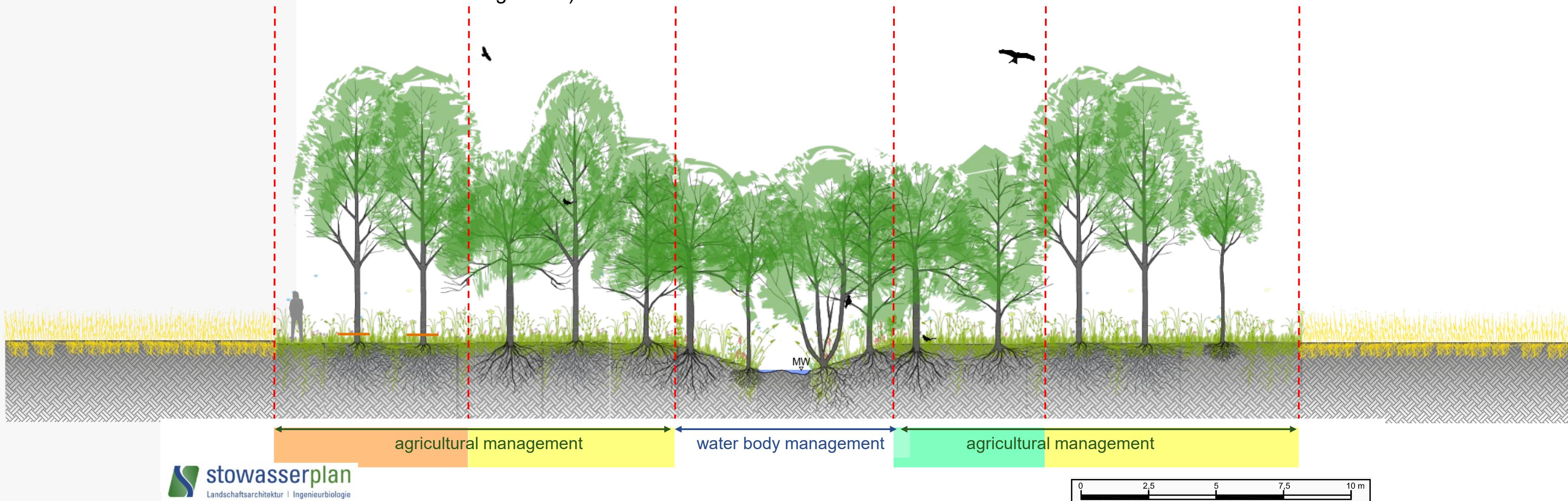
agricultural timber
medium rotation
(harvest after
5 years)

agricultural timber
medium rotation
(harvest after
10 years, 10%
species from
potential natural
vegetation)

Natural vegetation
natural profiled
watercourse bed

agricultural timber
(harvest after
10 years with
10% canopy
cover trees)

agricultural timber –
long-term rotation
(harvest after
10 years, with 10%
species from
potential natural
vegetation)



Conclusion



- Many positive functions of agroforestry in combination with water management are evident
- EU Water Framework Directive can only be implemented successfully and micro-/macro-economically feasible if water management, farmers & municipalities search for integrated solutions in a cooperative manner
- Pilot projects are emerging (e.g. municipality of Lossatal, Saxony/Germany, is currently implementing a riparian buffer design with agroforestry)
- Valorization of products is key for implementation!!!
- German parliament has instructed the Federal Government of Germany on Jan. 13th 2021 to develop support mechanisms for agroforestry

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Jörg Böhmer, Dipl.-Ing. agr.

Trier University of Applied Sciences – Environmental Campus Birkenfeld
Institute for Applied Material Flow Management – IfaS
Biomass and Cultural Landscape Development

phone: +49 (0) 6782 17 - 2626
j.boehmer@umwelt-campus.de

www.stoffstrom.org
munter.stoffstrom.org
wertvoll.stoffstrom.org

