

# Assessment of Nature-based Solutions in Headwater Catchments on Impact on Drought and Biodiversity

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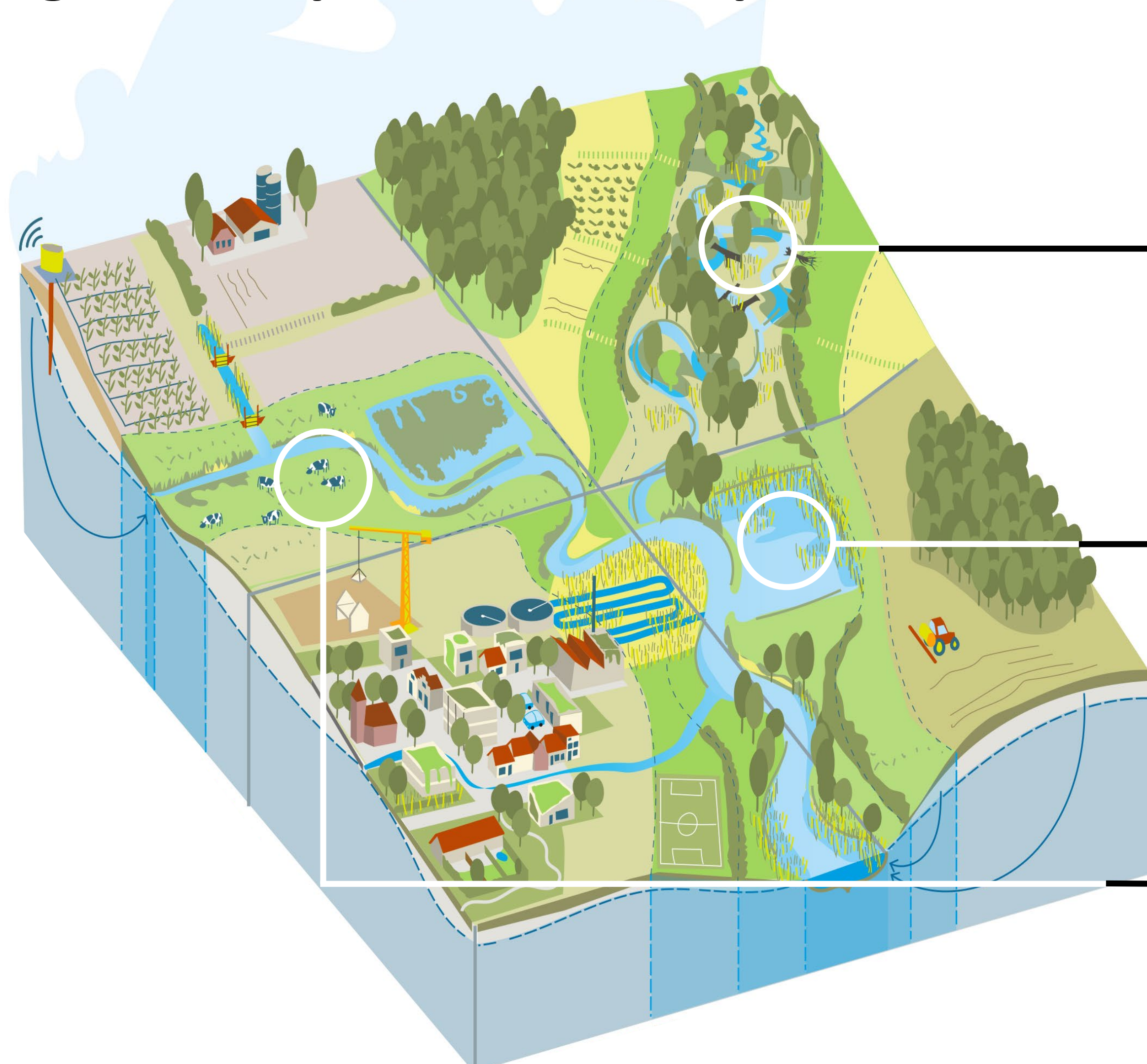




# Assessment of Nature-based Solutions in headwater catchments on impact on drought and biodiversity

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## Guiding landscape model for spatial climate adaptation

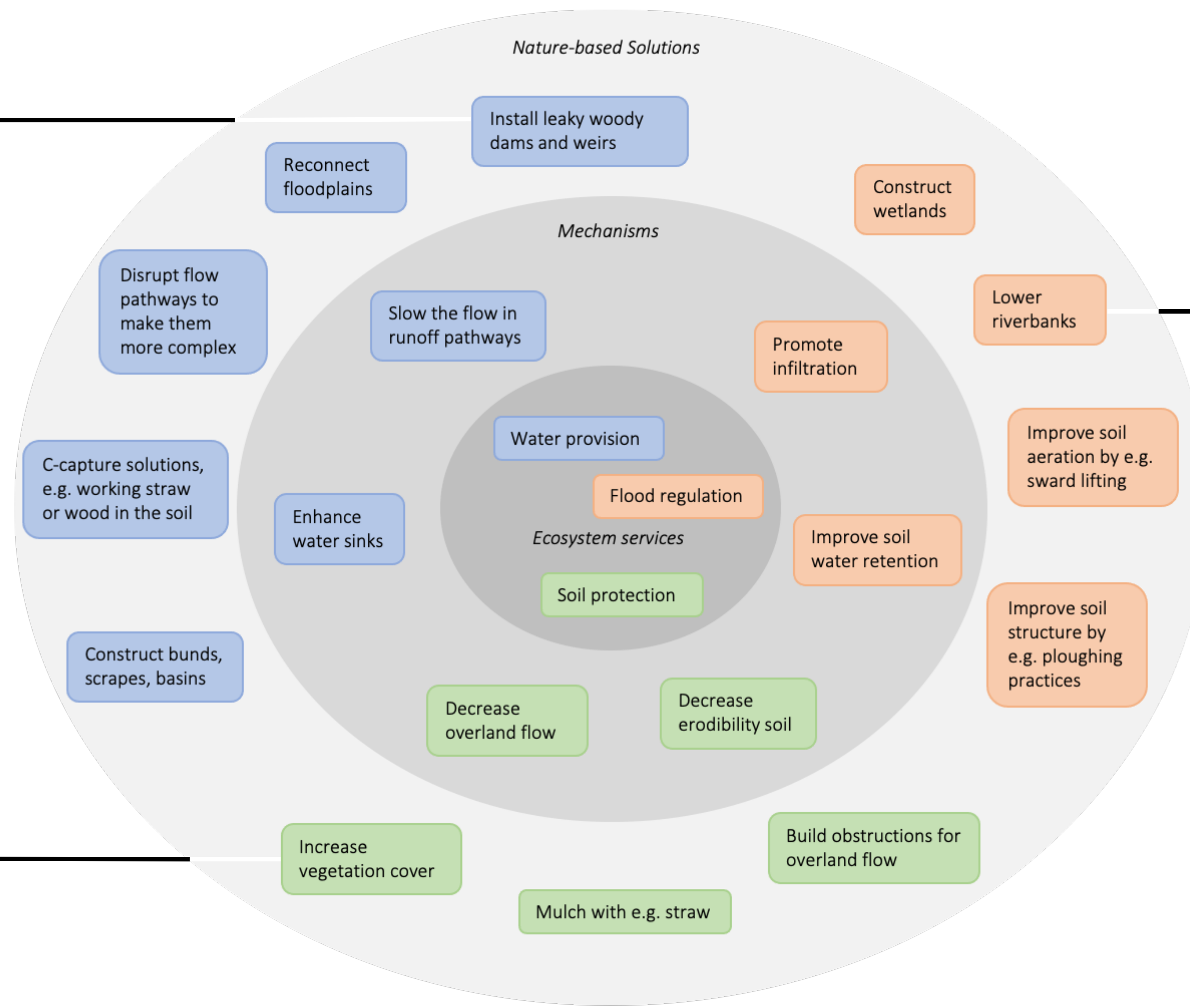


### Nature-based Solutions based on ecosystem services

- Leaky woody dams and weirs
- Disrupting flow pathways to make them more complex
- Floodplain reconnection
- Water storage solutions, e.g. bunds, scrapes, basins
- Gauge controlled drainage
- Sustainable drainage systems (SuDS)
- Keeping water levels higher in peat soils
- Cross slope hedges
- C-capture solutions, e.g. working straw or wood in the soil

- Riverbank lowering
- Improving infiltration
- Soil aeration, e.g. sward lifting
- Ploughing practices

- Increase ground surface roughness via installation of brash dams
- Hedgerows
- Grassland management
- Testing new plants and cultures that are working on soil structure
- Agroforestry



## Mechanisms



Photos: Co-Adapt field visits

## Categorization (adapted from Keesstra et al., 2018)

Location	NbS	Area of impact	Mechanism involved	Indicator
River	Leaky woody dams	↻ ↻	△	Runoff pathways
	Weirs	↻ ↻	△	Runoff pathways
	Disrupting flow pathways to make them more complex	↻ ↻ ↻	△	Runoff pathways
	Increase ground surface roughness via installation of brash dams	↻ ↻	🌳	Surface roughness
Riverbank	Riverbank lowering	↻	△	Runoff pathways
	Floodplain reconnection	↻ ↻	△	Water sinks
Wetland	Water storage solutions, e.g. bunds, scrapes, basins	↻	△	Water sinks
	Gauge controlled drainage	↻ ↻	△	Runoff pathways
	Hedgerows	↻	🌳	Vegetation cover
	Improving infiltration	↻ ↻	△	Water sinks
Dry area	SuDS	↻ ↻	△	Water sinks
	Water storage solutions, e.g. bunds, scrapes, basins	↻	△	Water sinks
	Keeping water levels higher in peat soils	↻	△	Water sinks
	Gauge controlled drainage	↻ ↻	△	Runoff pathways
	Cross slope hedges	↻ ↻	△	Hillslope morphology
	C-capture solutions, e.g. working straw or wood in the soil	↻	🌱	Soil organic matter
	Grassland management	↻	🌱	-
Testing new plants and cultures that are working on soil structure	↻	🌱	Soil structure	



### Legenda

↻	Ecosystem service water provision
↻ ↻	Ecosystem service soil protection
↻ ↻ ↻	Ecosystem service flood regulation
△	Geomorphological processes
🌳	Surface processes
🌱	Soil processes
↻	= local; ↻ ↻ = bigger area; ↻ ↻ ↻ = entire catchment