



Nature-Based Solutions for Reducing Floods and Droughts in Small Rivers

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Highlights

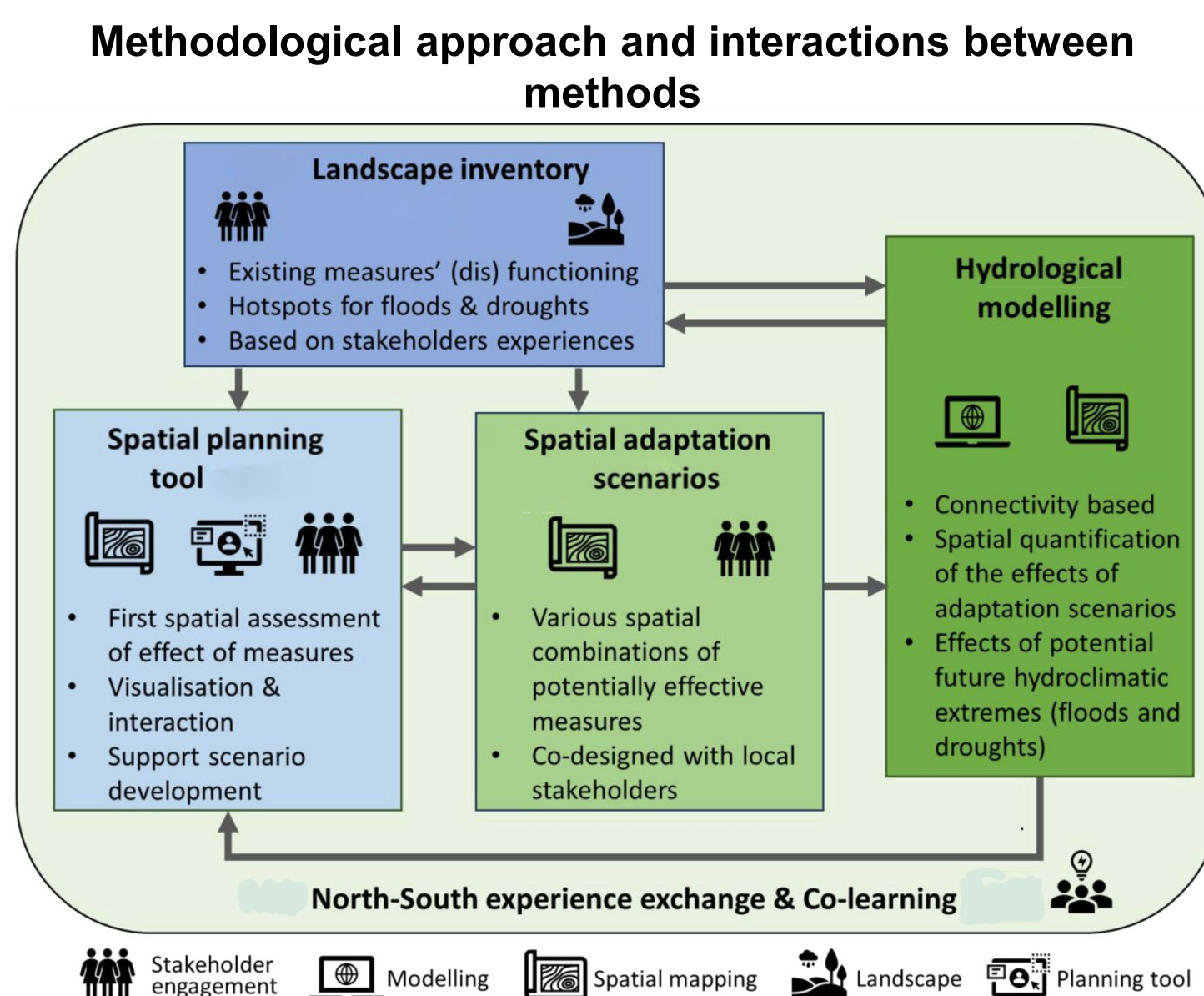
Trelleborg has long-term success with **community-led** implementation of NBS to address various environmental and societal goals. The case study shows how collaborating on NBS in small streams can **boost resilience** to climate change, support **biodiversity**, and enhance **health** and well-being. Through co-learning and co-creation,

communities can develop precise and **effective** strategies that consider local challenges and perceptions.

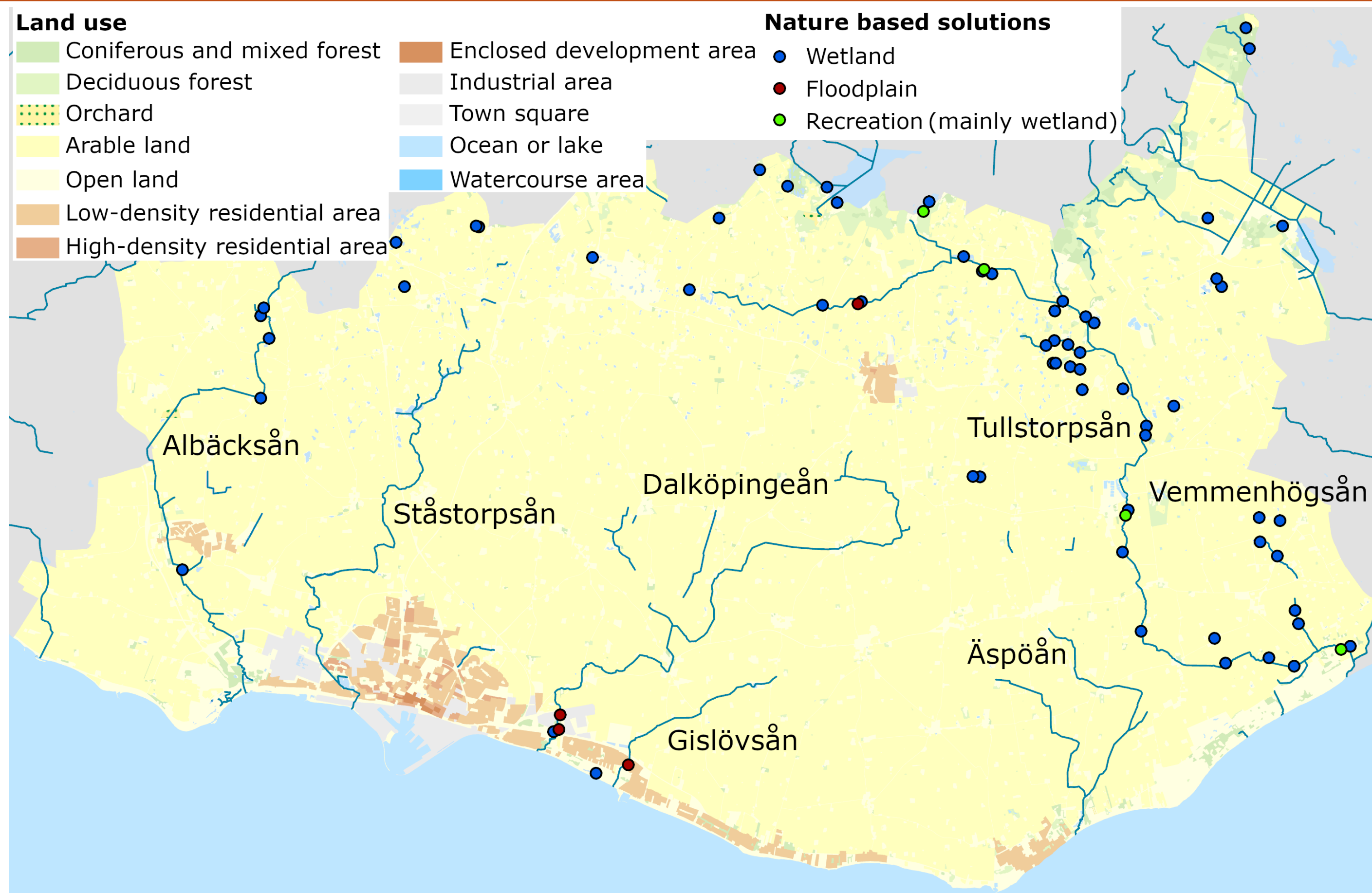
Acknowledgment: This research is part of the LandEX project.

Practical Implications of Co-learning and Co-creation

Case study: Trelleborg municipality



Mapping of Implemented NBS



Overview of implemented NBS locations (centroid). Wetlands tend to be small (39% <1 ha, 14% >5 ha. Sources: Lantmäteriet (2019); SMHI (2023), Vattenatlas (2025)

Implemented NBS per catchment reported by stakeholders

| Albäcksån 37,49 km2 | Ståstorpsån 41,03 km2 | Dalköpingeån 65,49 km2 | Gislövsån 14,08 km2 | Åspöån 17,81 km2 | Tullstorpsån 62,05km2 | Vemmen- högån 22,63 km2* |
|--|---|--|---|---|--|---|
| Wetland Meandering Floodplain/ stormwater pond Two- step ditch Tree canopy cover Urban NBS Restoration of natural dune environments | Wetland Meandering Floodplain/ stormwater pond Two- step ditch Tree canopy cover Urban NBS Cover crops (drought) Erosion control using vegetation | Wetland Meandering Floodplain/ stormwater pond Tree canopy cover Cover crops (drought) | Wetland Meandering Tree canopy cover | Wetland Meandering Two- step ditch Green flood areas or stormwater park Cover crops (drought) Erosion control using vegetation | Wetland Meandering Floodplain/ stormwater pond Two- step ditch Tree canopy cover Urban NBS Swale Cover crops (drought) Erosion control using vegetation | Wetland Meandering Floodplain/ stormwater pond Tree canopy cover Green flood areas or stormwater park Cover crops (drought) Erosion control using vegetation |

* Size partly shared with Tullstorpsån



Stakeholder Goals and Outcomes

| Goal | Wetland data* | Stakeholder survey | Outcomes |
|---|------------------|---|---|
| Water quality (mainly nutrients) | 71 % of wetlands | All catchments | Largely ineffective or unclear effectiveness with Vemmenhögån as exception: 90% reduction in pesticide leakage |
| Biodiversity | 20 % of wetlands | All catchments, most mentioned goal | Largely effective, with successful conservation of orchid species (Gislövsån), fish and bird species (Ståstorpsån), and trout populations (Dalköpingeån) as results |
| Flood management | 18 % of wetlands | Tullstorpsån and Ståstorpsån, 3rd most mentioned goal | Perceived good effectiveness but rarely evaluated. Modeling of one wetland (Lysedammen) in Ståstorpsån show reduced flood risk by 30 cm in the urban downstream area |
| Recreation | 4 % of wetlands | Relevant for Tullstorpsån | Even when recreation is not the goal, creating new NBS has led to new recreational areas in several catchments. Important for a region with few opportunities for recreation (agriculture). |

* Percentage is only given when information about the goal or wetland type was given, which was available for around 65% of wetlands. Sources: SMHI (2023), Vattenatlas (2025), and stakeholder survey and interviews

Multifunctional benefits of NBS in Trelleborg

- Decreased hazard risk → improved food and water security
- Improved biodiversity → improved local fishing tourism, and educational opportunities
- New recreational areas → improved access to green areas (remains low; almost no residents have access to urban green areas with at least 30% tree cover.

Combining local knowledge with data and hydrological modeling

- A **more complete understanding** of local circumstances, improves ecosystem service mapping and effectiveness when using local expertise and feedback
- Boost stakeholder **acceptance** and NBS knowledge
- Enhanced project **quality** and management **efficiency**
- Help with overcoming planning challenges
- Support **adaptive management** tailored to local contexts

Stakeholder involvement

- Builds **local pride**: farmers see themselves as community contributors instead of “the bad guy”
- Deepens **understanding** of nature and biodiversity
- Facilitates dialogue on trade-offs for more resilient management
- Clarifies **barriers**, **trade-offs**, and **preferences** for NBS location and type, aligning implementation with local socio-economic and ecological conditions, addressing known risks, and effectively framing projects to secure funding

References

Lantmäteriet (2019) *GSD-Fastighetskartan vektor*
SMHI (2023) *Anlagda våtmarker* <https://vattenwebb.smhi.se/wetlands/>
SMHI (2024) *Modelldata per område* <http://vattenwebb.smhi.se/modelarea/>
Vattenatlas (2025) <https://vattenatlas.se/>