## ORGANIZATION / INITIATIVE LEAD

**White Arkitekter — Scandinavian architecture practice integrating design, research and innovation to advance climate-neutral and regenerative buildings, neighbourhoods and cities.**

## TECHNICAL SOLUTION NAME

Climate-Neutral and Regenerative Architecture

## HIGHLIGHT TITLE

Pioneering timber construction and regenerative design, with a vision for all its architecture to be regenerative and climate neutral by 2030.

## SHORT DESCRIPTION

White Arkitekter combines bio-based construction, adaptive reuse, circular design and nature-based solutions to reduce climate impact while supporting biodiversity, resilience and quality of life. Its methodology integrates whole-life carbon assessment, research and community-centred design across buildings, neighbourhoods and public spaces, guided by a vision for climate-neutral and regenerative architecture by 2030.

## EXTENDED DESCRIPTION

Cities must reduce emissions while adapting to climate change, restoring biodiversity and improving everyday life. White Arkitekter addresses these interconnected challenges through an integrated architectural methodology combining bio-based materials, circular design, adaptive reuse, nature-based solutions and evidence-based design.

Each project adopts a whole-life perspective, considering life-cycle assessment, material flows and climate impact from the earliest design stages. Timber plays a central role where its low embodied carbon and carbon storage potential offer environmental value, alongside building reuse, other low-carbon materials and resource-efficient design.

The approach connects environmental performance with social value, functionality and architectural quality. At neighbourhood and city scales, it brings together green-blue infrastructure, sustainable mobility, biodiversity and public space. Research through White Research Lab, Innovation Lab and international collaborations supports practical methods for circular construction, healthy environments and climate adaptation.

Applications include Sara Cultural Centre, a high-rise timber cultural building; Magasin X, a timber office with low embodied carbon and energy demand; and Stockholm Wood City, a mixed-use district planned around timber construction. Healthcare projects explore bio-based materials and healthy environments, while Slussen in Stockholm combines flood protection and water management with public-space transformation.



TERRA50

# White Arkitekter
Regenerative Architecture

## DEMONSTRATED METRICS

- Sara Cultural Centre: approximately 75 m tall, with reported embodied carbon around 50% below conventional construction
- Sara Cultural Centre: a reported 50-year carbon balance of 5,631 $tCO_2e$ emitted, compared with 10,190 $tCO_2e$ offset through timber carbon storage and on-site renewables
- Magasin X: approximately 80% lower structural-frame embodied carbon, from around 130 to 28 kg $CO_2e/m^2$ GFA, using timber instead of concrete
- Magasin X: 40% lower overall climate impact and operational energy approximately 60% below Swedish BBR requirements
- Slussen: discharge capacity increased from approximately 300 to 1,400 $m^3/s$, helping protect drinking water for around 2 million people
- The Erven: 519 homes, with nature-based solutions covering at least 80% of the area

## REAL IMPACT

White Arkitekter's projects demonstrate how architecture can reduce climate impact while strengthening biodiversity, climate resilience and quality of life. Timber construction, adaptive reuse and circular design address material-related emissions, while green-blue infrastructure supports water management and adaptation.
Its contribution extends beyond individual buildings. Research, interdisciplinary collaboration and knowledge sharing help translate project experience into methods that can be applied across different sectors and locations, including housing, healthcare, workplaces and urban development.
The practice's 2030 vision provides a shared direction for this work: making all its architecture regenerative and climate neutral. The reported project results illustrate different aspects of that transition; they represent project-specific assessments rather than a single performance standard across the portfolio.

## IMPLEMENTATION LOCATION & DATE

Applied across the Nordic countries and internationally, through a methodology developed over decades of research and practice. Examples include Skellefteå, Uppsala and Stockholm (Sweden), Hoofddorp (Netherlands), Cardiff (United Kingdom) and Hamburg (Germany).

## TECH LEVEL

Medium–High Tech

## COST OF THE SOLUTION

**Not specified**. Costs depend on project scale, building type, materials, reuse opportunities and environmental performance requirements.

## MITIGATION / ADAPTATION

Mitigation & Adaptation

## MAIN CATEGORY

**Primary**: Infrastructure & Building
**Secondary**: Energy & Environment

## BASE INFORMATION SOURCES

- White Arkitekter — Official website
- Sara Cultural Centre
- Magasin X
- Project information supplied for the Terra50 profile

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