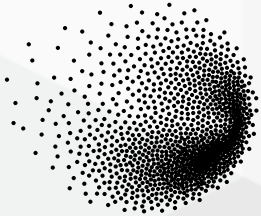


**PARTNERS**



**PSI**

**Partner**

<https://www.psi.ch>

**PROJECT**

**EU Programme:**

Horizon 2020 Innovation Action

**Coordination:**

City of Amsterdam

**Partners:**

29 partners, 10 countries

**European grant:**

19.6 M€

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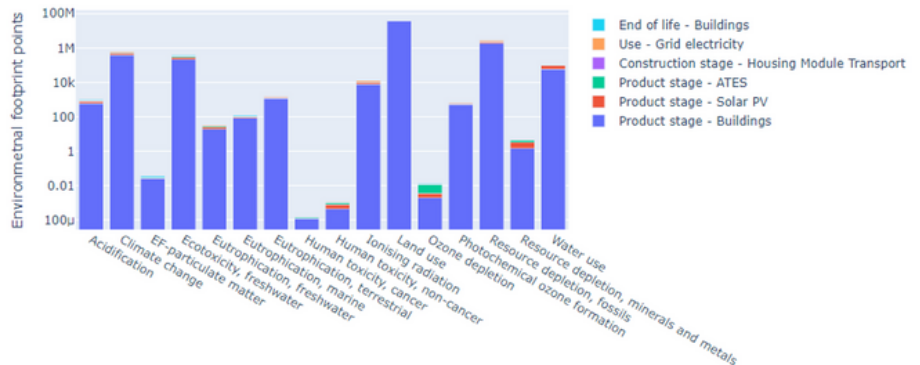
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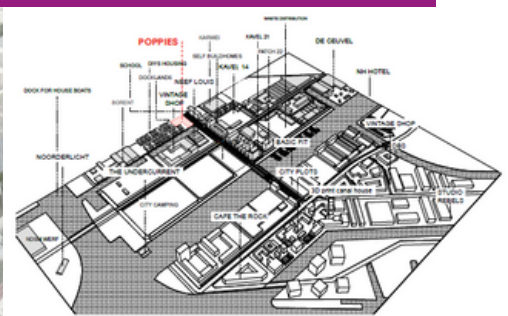
**Life Cycle Assessment (LCA)  
tool for Positive Energy  
Districts (PED)**

**Result in a nutshell**



- The LCA-PED tool is developed using the Python-based **open-source LCA framework**, Brightway2.
- By inputting life cycle inventory data on building material consumption, onsite energy system installation, and operational performance, the tool estimates **multiple life cycle impact results**.
- In the LCA of Poppies, a newly-constructed positive-energy district in Amsterdam, **building materials** ("Product stage - Buildings") **account for the majority of environmental impacts**, while other life cycle stages have minimal contributions (consistent with findings for most energy-efficient new buildings today).

**Demonstration site**



- Poppies is a mixed-use urban district in the city of Amsterdam with residential and commercial buildings.
- Wood is one of the main construction materials and solar PV and aquifer energy storage were foreseen.

# Detail on result

## Technical aspects:

- Buildings: construction materials consumption
  - housing modules (from Derix)
  - “skeleton” of buildings (Bouw Management Groen)
- Rooftop Solar PV:
  - 228 kWp, 40% of electricity generation for direct consumption onsite in Poppies
  - 1 replacement after 25 years
- Aquifer thermal energy storage (ATES) - assumed:
  - life cycle inventory (LCI) data from literature adapted to Poppies
  - LCI for unit thermal energy supply \* thermal energy consumption

## Technical requirements:

- Data collection for the analyzed urban district
- Installation of the dependent modules specified in the tool

## Advantages:

- Based on an open-source LCA analytical tool
- Flexible data structure that supports potential interoperability between data platforms and tools
- Abundant options for result visualization including interactive features

## Challenges:

- Time-consuming data collection that usually involves multiple parties
- Data interoperability
- Maintaining data confidentiality while still providing sufficient transparency and allowing different scenarios for alternative designs and operations

# Further development

## Potential for further development:

- Improved user interface development that allows a broader user base without programming skills
- Further integration to incorporate the use of national LCA databases

## Potential areas of applicability:

- Life cycle assessment of any sustainable urban district