Smart renovation of residential real estate and neighbourhoods

"An exploratory research into the possibilities of open data to support the renovation process in the initiation phase"

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Introduction
Problem statement

Need for energetic sustainability

Renovation process of existing urban fabric & real estate

Initiation

Planning

Realisation

Maintenance

Generation of data in and on cities

Implementation of technology in cities

Open data by Dutch government

Transparency

Internal efficiency

External re-use

End of lifespan

Reduce CO₂ emission

Rising energy prices

Serial renovation

Policies and covenants

Energetic sustainable renovation

Available open data

Research design | Research findings | Research synthesis | Conclusions
Research question

How could open data be used to reduce bottlenecks in the initiation phase of a renovation project of residential real estate and neighbourhoods focussing on energetic sustainability in the Netherlands?
Definitions

- Open data
- Bottleneck
- Initiation phase
- Renovation
- Energetic sustainability
Research objective
1. What are the key process steps in the initiation phase of the renovation process?
2. What are the key involved stakeholders in the initiation phase of the renovation process?
3. What bottlenecks can be identified in the renovation process?
4. What open data is available in the Netherlands that could facilitate to reduce the bottlenecks in the renovation process?
5. What steps are needed to implement open data in the renovation process?
Research approach
The renovation process
The renovation process
Stakeholders
Bottlenecks
Open data

- Transparency
- Internal efficiency
- External re-use

+ Governance

Source: Backx (2003)
Relation of bottlenecks to data

7 categories of data sets:
• Data about residents
• Data about the neighbourhood
• Data about the climate
• Data about energy use
• Data about energy saving measures
• Data on subsidies
• Data on companies
Available open data sets analysis

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Available open data sets analysis

- Data regarding resident: 24 data sets
- Data regarding the neighbourhood: 15 data sets
- Data regarding climate: 2 data sets
- Data regarding energy use: 12 data sets
- Data regarding energy saving measures: 0 data sets
- Data regarding subsidies: 1 data set
- Data regarding companies: 3 data sets

☑️: Available
☒: Not available
Re-use of data

• 57 data sets were found that comply with the bottlenecks
• 50 of these are web service based
• 8 of the data sets on energy use are web service based
• 4 of the data sets on energy use are only available for the municipality Apeldoorn
Conclusions

*How could open data be used to reduce bottlenecks in the initiation phase of a renovation project of residential real estate and neighbourhoods focusing on energetic sustainability in the Netherlands?*

- No direct link between bottlenecks and data
- Software tool
- Awareness
- Transparency
- Transition
Wrap-up

- To make energetic sustainability in renovation process possible a process transition is necessary
- 22 bottlenecks are identified in this process
- No direct link between bottlenecks and open data can be found
- There is data available that might help the process
- Translation of this data is necessary before it can be re-used
- Awareness, transparency and a transition are needed to make the use of open data in the process possible