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CITIZEN PARTICIPATION IN LOCAL RENEWABLE ENERGY SYSTEMS PLANNING: A SERIOUS GAMING APPROACH

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TWO CONTRASTING FINDINGS FOR THE NETHERLANDS AMBITIONS OR LARGE EUROPEAN CITIES TO REDUCE GHG EMISSIONS 2013

from Reckien et al. 2014
TWO CONTRASTING FINDINGS FOR THE NETHERLANDS
PROPORTION OF ELECTRICITY GENERATED FROM RENEWABLE SOURCES, 2014
(% OF GROSS ELECTRICITY CONSUMPTION)

MAIN REASONS FOR LIMITED IMPLEMENTATION OF RENEWABLE ENERGY SYSTEMS

- limited institutional capacities of local decision makers (Breukers and Wolsink 2007)
- Low level of social acceptance of renewable energy (Devine Wright 2011).

(Wuestenhagen et al. 2007).
STAKEHOLDER COLLABORATION FOR RENEWABLE ENERGY PLANNING

- Interactive planning support tool for participatory allocation of renewable energy systems within cities/regions
- Implemented on a maptable
- Small group face2face interaction
- Gaming approach
- Awareness raising, social learning

COLLAGE – COLLABORATIVE LOCATION ALLOCATION GAMING ENVIRONMENT

COLLAGE MODEL INTERFACE

Intuitively to use
MODEL WORKFLOW

INPUT
- Solar rooftops of different intensity (100, 60, 30 %) mapped as building footprints
- Solar farms (in- & extensive) 1 ha intensive= 835 MWh/a
- Wind turbines 193 m wind turbine, 8800 MWh/a 132 m wind turbine, 4400 MWh/a

OUTPUT
- Total Capacity of Renewable energy 1MWh/a
- Land consumption
- Costs and benefits
- Environmental impacts
- ...

CASE STUDY ENSCHEDE, NETHERLANDS
- Around 150,000 inhabitants,
- Covenant of Mayors signatory
- Goal: RE in 2030 at least 12 %, in 2050 at least 27 %
- Limited space available for wind turbines
- Strong public opposition towards wind turbines,
- Previous public hearings on RE revealed various NIMBY phenomena
STAKEHOLDER WORKSHOPS

Workshops

- In total 5 workshops, each about 15 local participants, 5 per maptable
- Each workshop 2.5 hours,
  - Introduction to topic, goal and tool (10 minutes of practice)
  - Goal setting for each mapping session
  - 1 round: neighbourhood level, goal: 20% of
  - 2 round: city wide, wind and solar farms
  - wrap up, summary in plenary
- Stakeholder discussion recorded
- Questionnaire: participants perception of RE usability of the tool, lessons learned, etc.

WORKSHOPS RESULTS

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>General Description</th>
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<tbody>
<tr>
<td>1. Solar panels along the A15</td>
<td></td>
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<tr>
<td>2. Solar Park Airport</td>
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<tr>
<td>3. Small/medium Cluster Twente</td>
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<tr>
<td>4. Large Turbine Middenweide</td>
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<td>5. Solar Farm Twente</td>
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<td>6. City A</td>
<td></td>
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<tr>
<td>7. Solar panels along the N511</td>
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<tr>
<td>8. Small/medium Cluster north</td>
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<tr>
<td>9. Wind farm in the middle</td>
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<tr>
<td>10. Solar panels along the N57</td>
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<tr>
<td>11. Small/medium Cluster west</td>
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<tr>
<td>12. Large Turbine Ruurlo</td>
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<tr>
<td>13. Small/medium Cluster east</td>
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<tr>
<td>14. Wind farm near A15</td>
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<tr>
<td>15. Wind farm in the south</td>
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<tr>
<td>16. Small/medium Cluster south</td>
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<tr>
<td>17. Solar farms in the west</td>
<td></td>
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</tbody>
</table>

Red = Wind turbines, Orange = Solar farms
WORKSHOPS RESULTS
A TOOL FOR SOCIAL LEARNING

CONCLUSIONS

- A tool for learning: for Whom?
- Citizens: a better understanding about implications of RE
- Municipality: better understanding of citizens perceptions and ideas
  - An additional layer of information in the process of RE planning
- We, the researchers: usability of the tool, e-planning tools that work
- Maptable useful to stimulate interaction, (age dependent)
- Problems: participants taking the word gaming too literally

- Next steps: regional level, adding more RE sources, open source
The end.
Thank you!

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