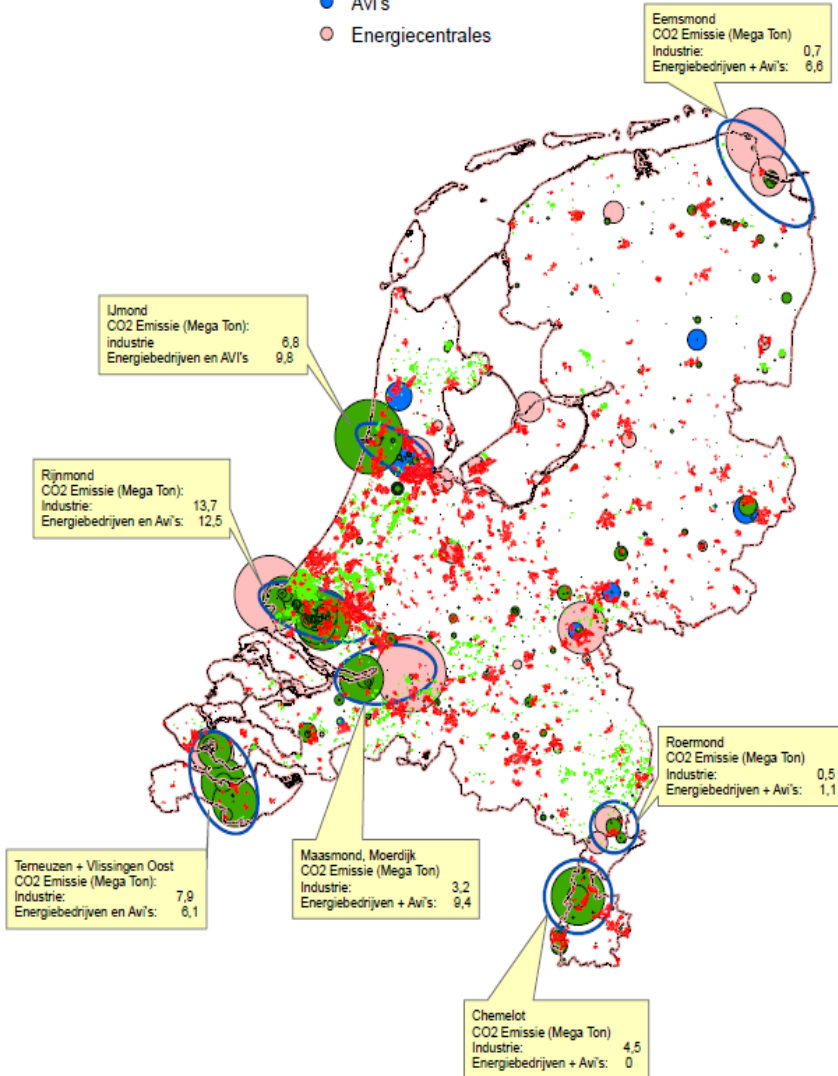


CO2 Emissie 2010 conform IPCC (Mega Ton):	
Nederland Totaal:	181,2
Industrie:	43
Energiebedrijven:	54,1
Wegverkeer:	33,8
Overige mobiele bronnen:	4,1
Huishoudens:	21
Handel, diensten, overheid:	13,1
Landbouw stationair (kassen):	8,6

Legenda

- Woongebieden
- Kassen
- Regio's
- Industrie, exclusief energiecentrales en avi's
- Avi's
- Energiecentrales



NL Agency
Ministry of Economic Affairs

Heat Mapping

Presentation at CA EED 2nd Plenary Meeting, Parallel Session CT7

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Hans-Paul Siderius
NL Agency
22 October 2013



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- Data collection and associated legislation
- Proces: From data collection to open source heat map tool
- Reality: Discrepancy between waste heat usage versus renewable heat usage.

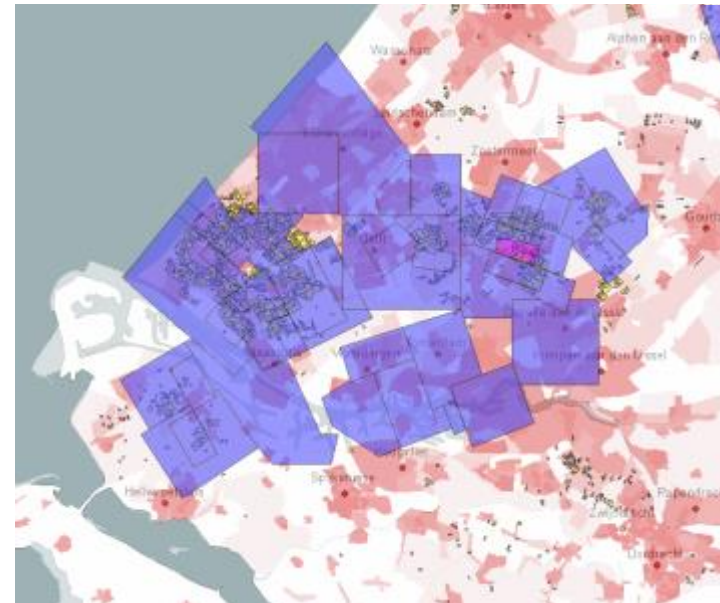


Heat mapping

Heat potential



Heat demand





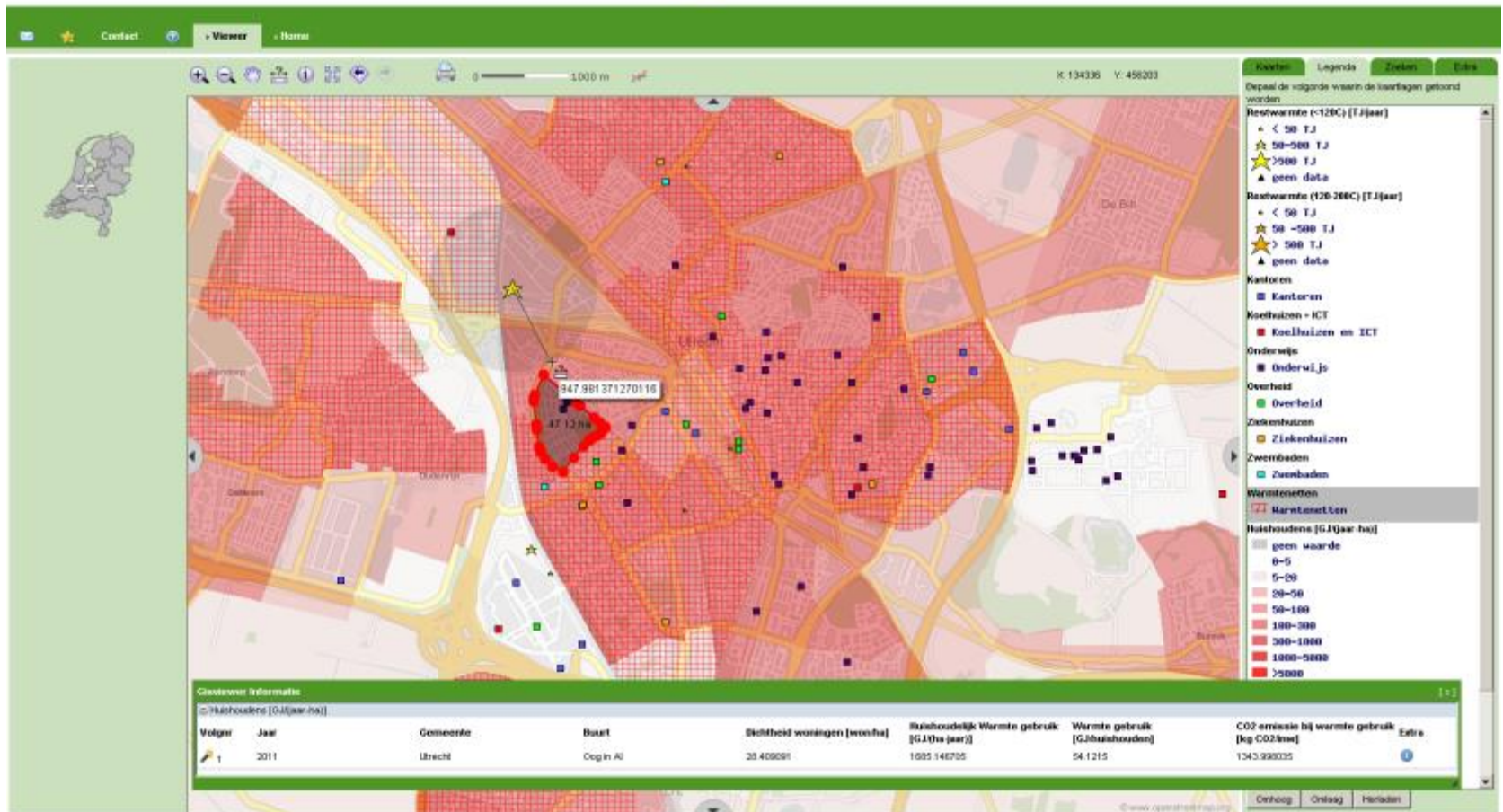
Possibilities and usage

Heat potential

- Waste heat of all large industrial and power plants (one point per plant)
 - with indication of temperature
 - > <120 °C
 - > 120-200 °C
 - > >200 °C
 - with indication of amount of heat
 - > <50 TJ
 - > 50-500 TJ
 - > >500 TJ
- Potential Geothermal heat
- Potential Biogas

Heat demand

- Heat usage Industry
 - with indication of temperature
 - > <120 °C
 - > 120-200 °C
 - > >200 °C
 - with indication of amount of heat
 - > <50 TJ
 - > 50-500 TJ
 - > >500 TJ
- Heat usage Residential area's
 - Including number of houses
 - Including number of habitants
 - Including construction year, m² floor area and addresses of individual houses
- Heat usage Greenhouses
- Heat usage Buildings





Spatial planning 2020 (province)





Spatial planning 2050 (province)





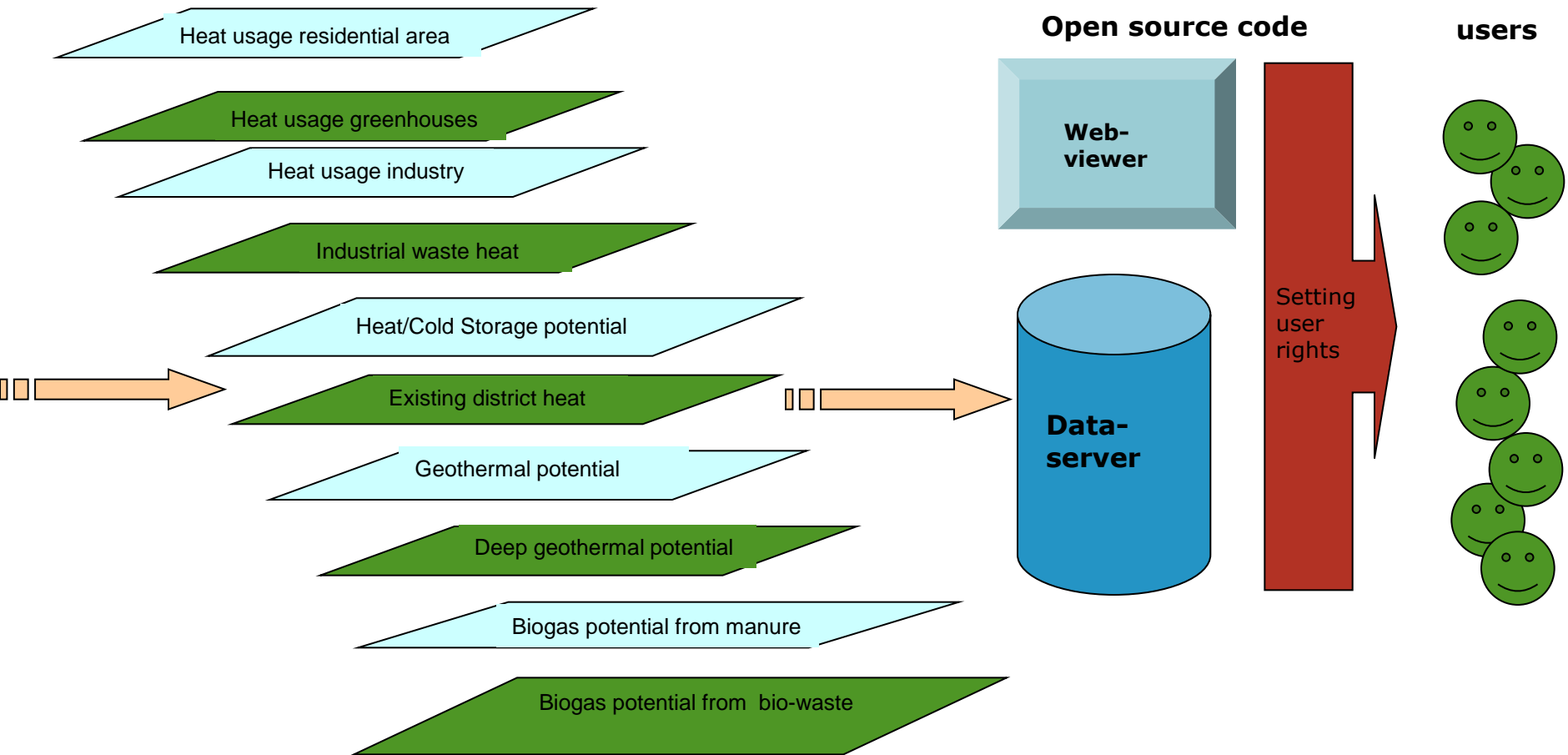
Heat mapping, data collection and associated legislation

- E-PRTR and European directive on industrial emissions.
 - Definition “emission” and “pollutant” include emission of heat to water and air
 - *But* no emission limit value is given for waste heat.
- Arhus convention
- European Energy Efficiency Directive art 14: new installations with waste heat look for useful applications > **maps of heat usage are given from industry, utility, residential area and greenhouses**
- ETS Emission Trading System (use of waste heat has a value)
- Member State target on renewable energy in 2020 (subsidies of renewable gives competition with industrial waste heat); > **potential maps of biogas, geothermal heat, heat storage, waste heat from**
- European Inspire Directive; EU initiative to establish an infrastructure for spatial information in Europe that will help to make spatial or geographical information more accessible and interoperable for a wide range of purposes supporting sustainable development.
- NL National Open source policy



Data “inspire” wms/wfs services

Build a heat map webviewer





Reality: Financial and policy discrepancy renewables and waste heat

- Exchange of steam already occurs because no discrepancies exist.
- Renewable heat and waste heat have the same heat consumers (greenhouses and residential area's)
 - Greenhouses:
 - » with the existing CO₂-price, often renewable heat has a competitive advantage compare to industrial waste heat.
 - Residential area:
 - » present gas pipes are not yet depreciated.
 - » consumers often not appreciate the dependency to a district heating.
 - » consumers prefer renewable heat
- Member State targets of renewable energy
 - » the use of fossil waste heat has no impact; not on the renewable energy and not on the final energy use.



With the cooperation of :

- Ministry of Economic Affairs
- Ministry of Infrastructure and Environment
- IPO Inter Provinciaal Overleg (provinces)
- Province of Zuid-Holland
- RIVM
- Tennet
- CBS
- DCMR
- TNO
- If-technologie



More info

Heat map webviewer:

<http://www.warmteatlas.nl>

Open source code of webviewer “Flamingo-geocms” download:

<https://github.com/flamingo-geocms/flamingo>

Open source code of wms-dataserver “CDS-Inspire” download:

<http://www.inspire-provincies.nl/en/>

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Items for discussion

- Include a emission limit value in the European directive on industrial emissions to increase waste heat monitoring data.
- Competition between CO2 emission reduction by using fossil waste heat and geothermal “heat mining”. Isn't it more sustainable to use waste heat first?