



GWFF

GEOSPATIAL WORLD FORUM

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An aerial photograph showing a river on the left, a road in the middle, and a dense forest on the right. The river is dark blue-green, the road is grey with yellow lines, and the forest is lush green.

Accelerating energy transition at scales with geospatial innovations

Geospatial World Forum 2024, Utilities Summit

Cheng-Kai Wang

Geo-ICT Software Developer, Royal HaskoningDHV, The Netherlands

Software Engineer in the Energy Domain, TNO, The Netherlands (May 1st 2024)

15th May 2024, Rotterdam

- MSc Geomatics, TU Delft, The Netherlands
- Sr. Geo-ICT Software Developer, Royal HaskoningDHV, The Netherlands (till April 2024)
- Geospatial World Forum 2024 Rising Star
- Software Engineer in the Energy Domain, TNO, The Netherlands (May 1st 2024)



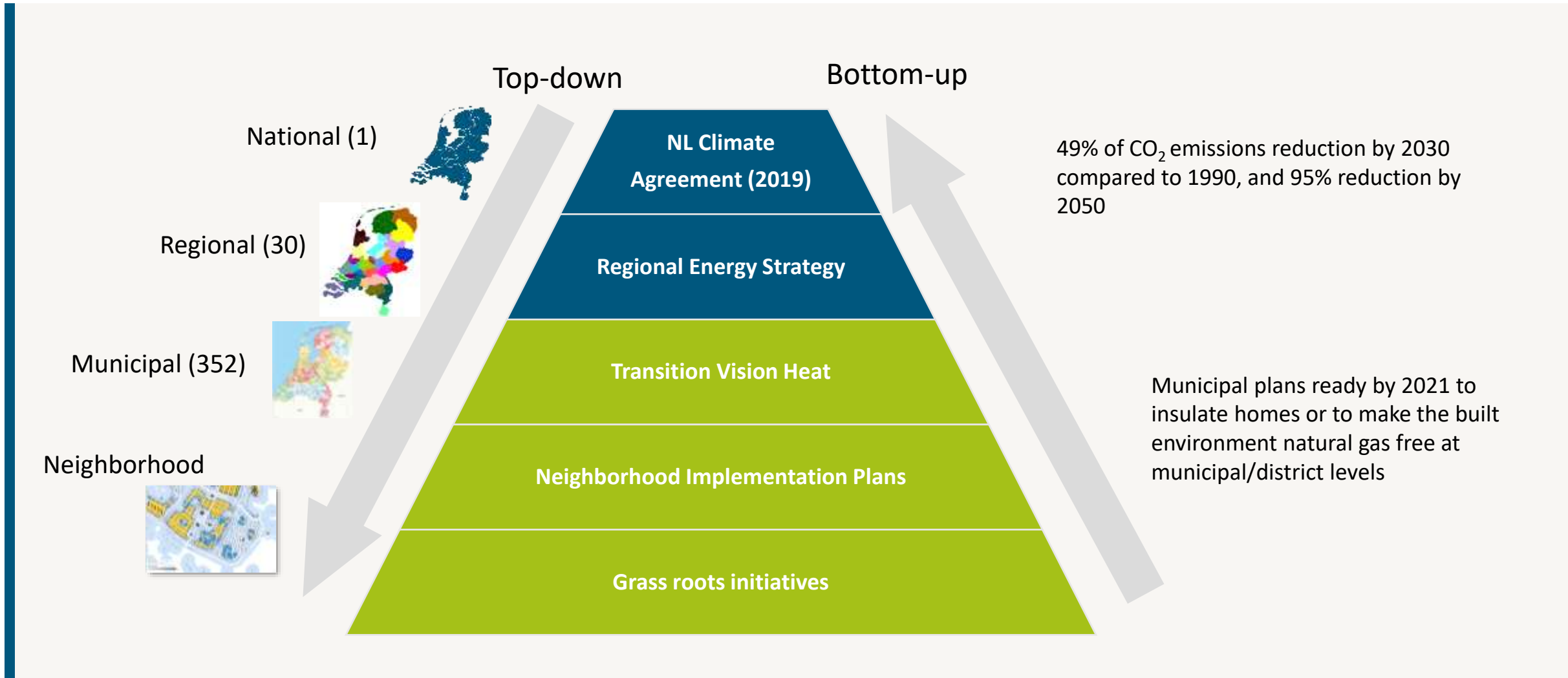
- Independent consultancy firm which integrates 140 years of engineering expertise with digital technologies and software solutions.
- 6000+ colleagues and operating in more than 20 countries
- **Specialties:** Climate resilience, Data centres, Intermodal transport hubs, Light industry, Maritime, Renewable energy & Decarbonisation of industry, Sustainable mobility, Tunnels & Structures, and Water technology



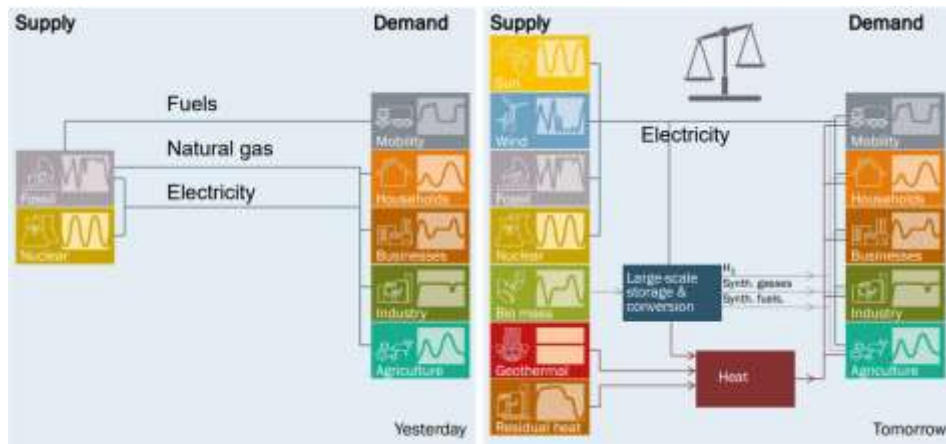
- Independent organization for applied research
- 5000+ colleagues and mainly located in the Netherlands
- **Specialties:** Public safety, Defence, Safety and Security, Healthy living, Food, Dealing with changing society, Accessibility, Living with water, Energy (management), High-tech systems processes & materials, Industrial Innovation, Built Environment, Mobility, Information Society, and CO2reduction



National context of the energy & heat transition in The Netherlands



Challenges



- Affordable and secure energy supply in complex and interconnected renewable energy system



- Energy modeling and decision-making require significant amounts of geo-data



- Data at different spatial-temporal scales
- Data interoperability
- Transparent and informative communication with stakeholders

Our Solution - SETuP

From fragmented geo data to actionable insights



Datasets

- BAG (Basic Registration of Addresses and Buildings)
- 3D BAG
- RVO (The Netherlands Enterprise Agency) energy labels
- NWB (National Road Database)
- CBS (Statistics Netherlands) administrative boundaries
- Vesta MAIS energy key figures
- Domain key figures
- ...



Data pipeline

- Processing
- Enrichment
- Aggregation
- Storage



Calculation engine

- Algorithm
- Business logics



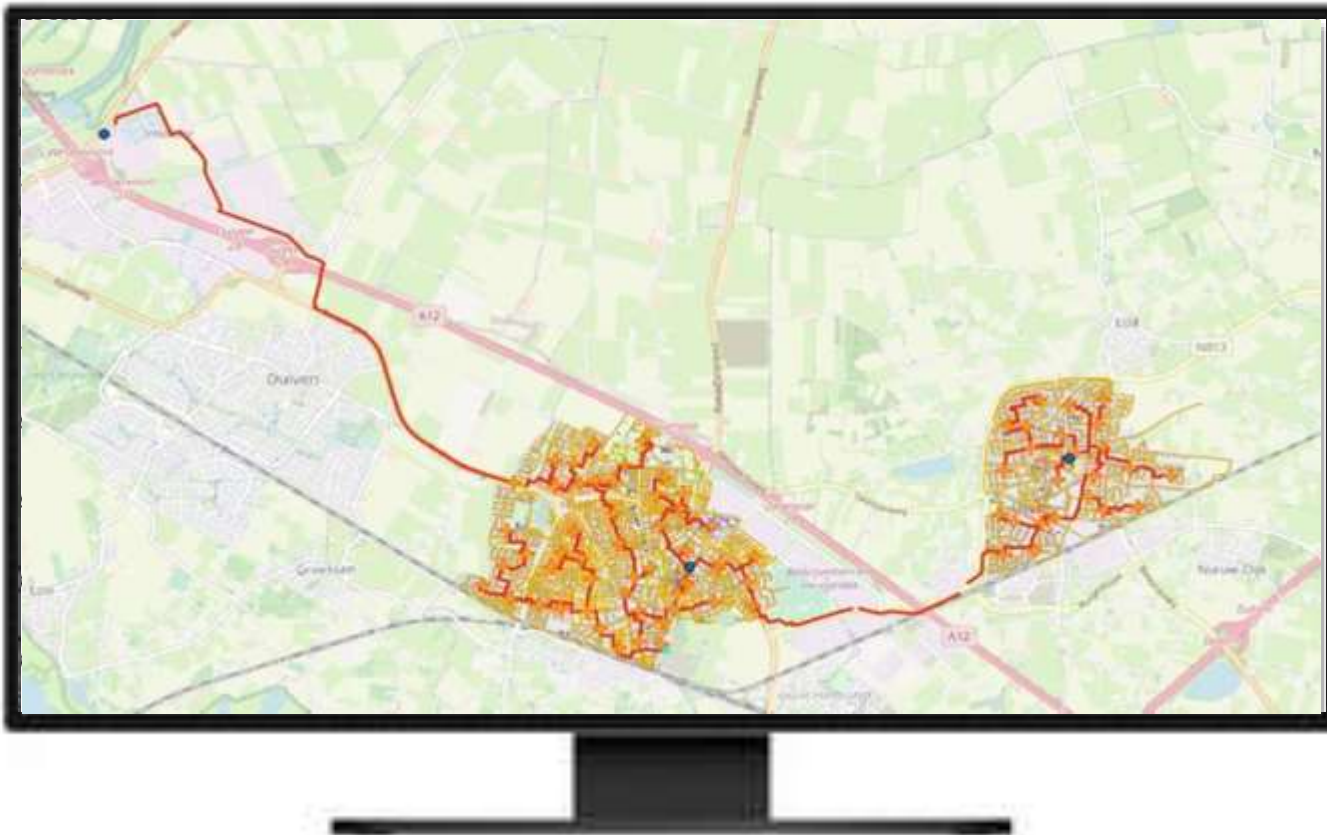
Visualization & Analytics



Provide our users with consistent, enriched, and high-quality information to efficiently advise municipalities on the way forward to a natural gas free built environment.

Our Solution - SETuP

From fragmented geo data to actionable insights



Fast modeling and analysis for district heating network sketch design



Interactive interface for energy assets modification



Inputs for business case feasibility study



Exchangeable outputs for further desktop (GIS) analysis



Impacts

- Consistent and quality results
- Significant time saving
- Helped municipalities to establish Transition Vision Heat plans by 2021
- Advised municipalities on Neighborhood Implementation Plans; home insulation and measures cost scenario analysis
- Performed several district heating network quick scans and feasibility studies



Thank you!

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