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ESDL

Energy System Description Language

Een open-source taal (woordenboek en grammatica) waarmee je op een uniforme manier alle relevante informatie voor de energietransitie kunt beschrijven

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CHALLENGES

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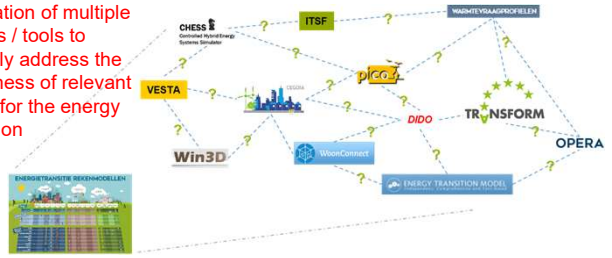
Integration of multiple models / tools to properly address the broadness of relevant topics for the energy transition



Assure different models that try to answer the same question, more or less produce comparable results (or understand why outcomes differ)

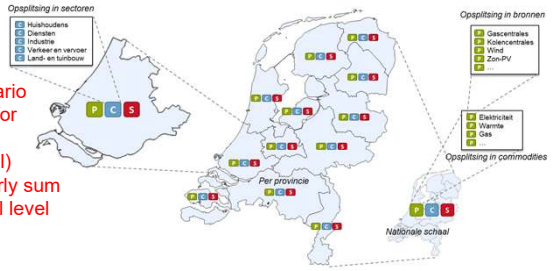
Planbureau voor de Leefomgeving

Warmtevoorziening gebouwen in 2050

	volgens CE Delft woningen	volgens Vesta woningen	volgens Opera LT-warmte
	(PJ/j)		
Warmtevraag	386	320	Finaal ca. 400
Besparing	24	140	
Elektrisch + WKO	73	70	190
Warmtenetten	222	105	80
Gas	66	5	100
Biomassa	0	0	30

Bron: Nico Hoogervorst (PBL), Het regeerakkoord en de energietransitie, Tweede PICO gebruikersbijeenkomst - Vrijdag 24 november 2017

Assure scenario calculations for different (geographical) scales properly sum up at national level



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ENERGY SYSTEM DESCRIPTION LANGUAGE

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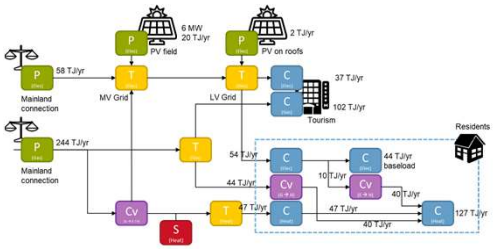
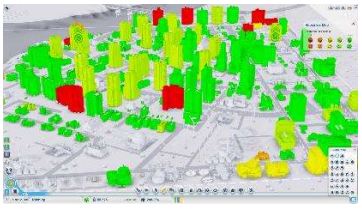
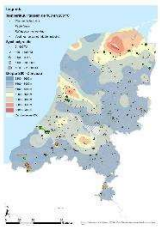
- Describe energy system components

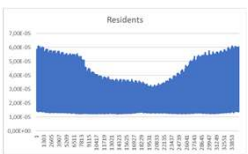


- Describe geographical information

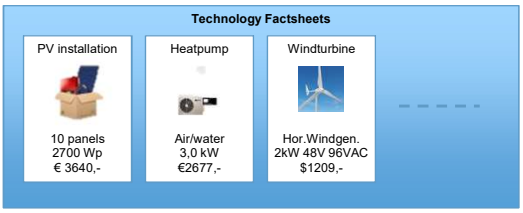


- Describe profiles and potential





- Describe solution space



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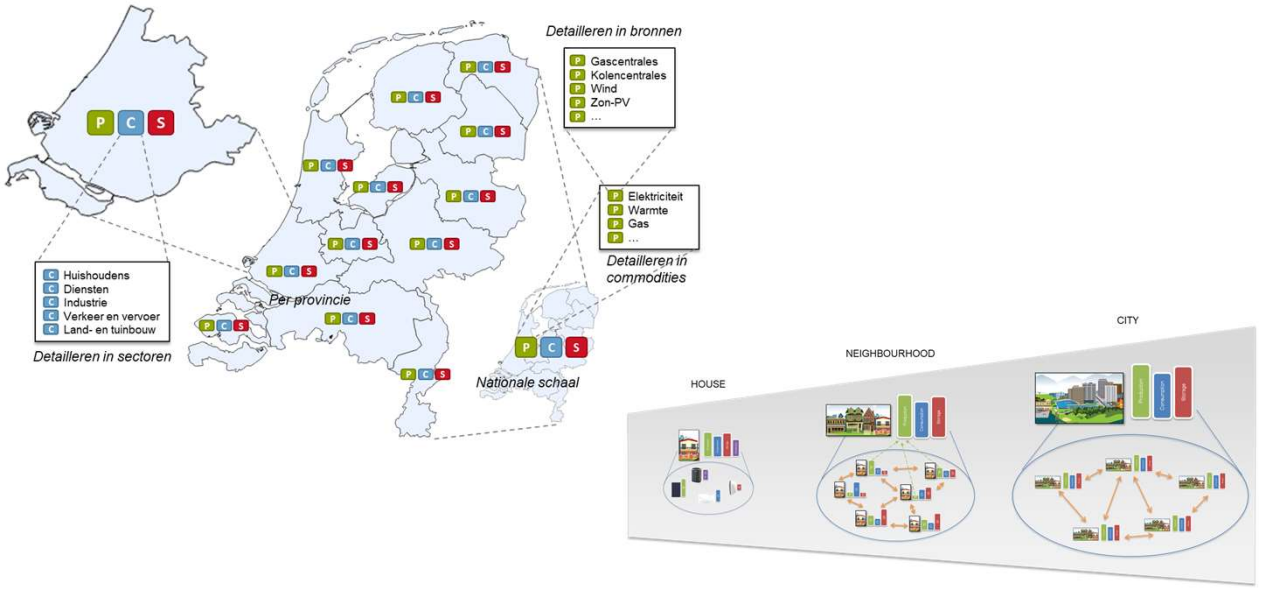
OPTELBAARHEID EN AGGREGEREN



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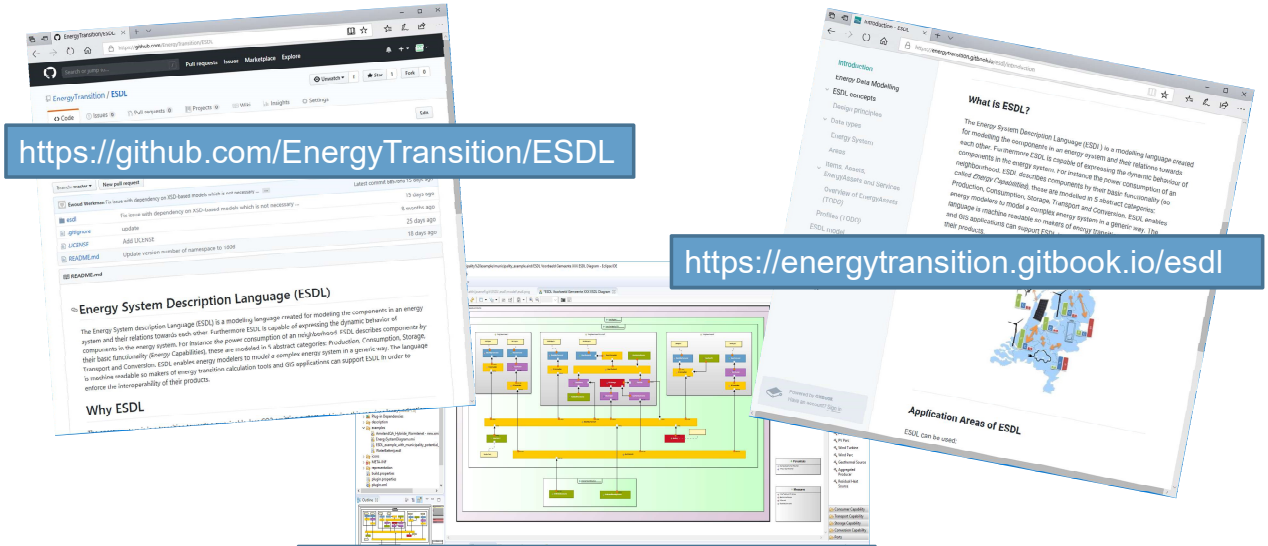
ESDL OPEN SOURCE



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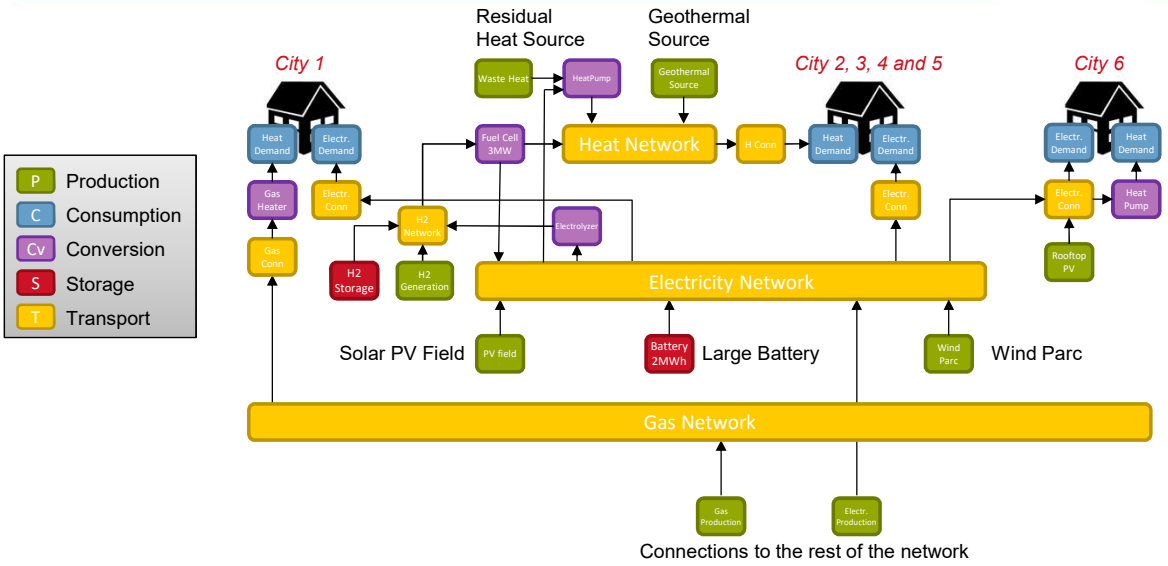
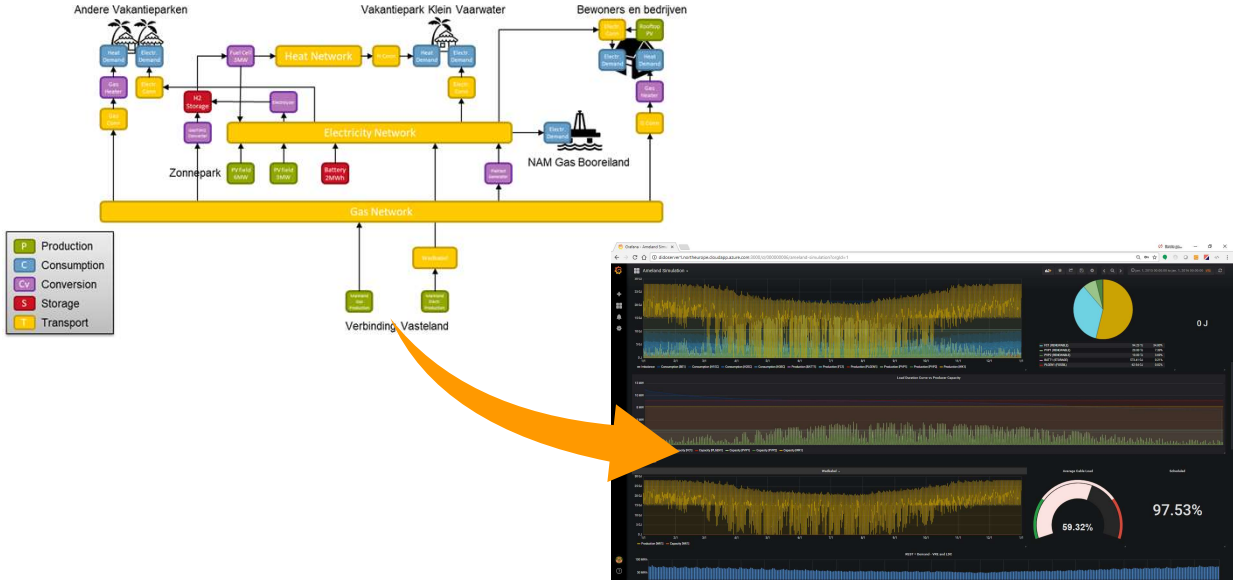
EXAMPLE ENERGY SYSTEM DESCRIPTION



ENERGY SYSTEM SIMULATOR



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GEIS

Geografisch Energie Informatie Systeem

De 'basisregistratie' voor het energiesysteem van Nederland

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GEOGRAPHICAL ENERGY INFORMATION SYSTEM

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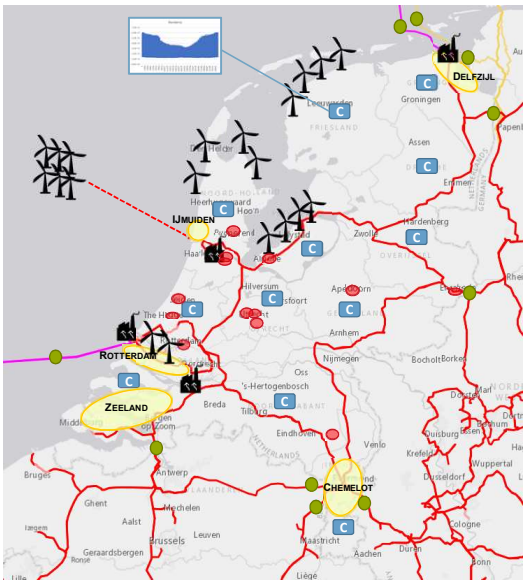

- **Actuele registratie** van het energie systeem van Nederland (statische informatie)
  - Incl. alle relaties
  - Met semantische afspraken
- Koppeling met het **gebruik** van het systeem (dynamische informatie)
- Koppeling met **potentie** (zon, wind, H2, geo, …)
- **Scenario's** voor de toekomst

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GEIS DATABASE & REPOSITORY

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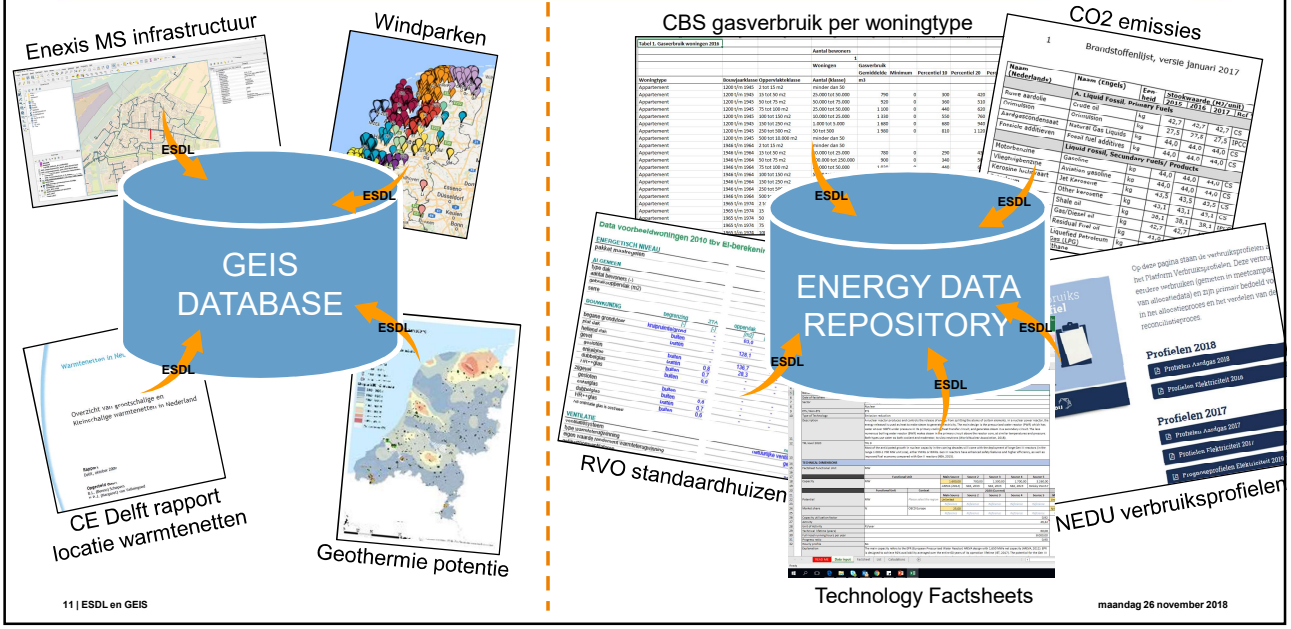

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GEIS FUNCTIONAL ARCHITECTURE

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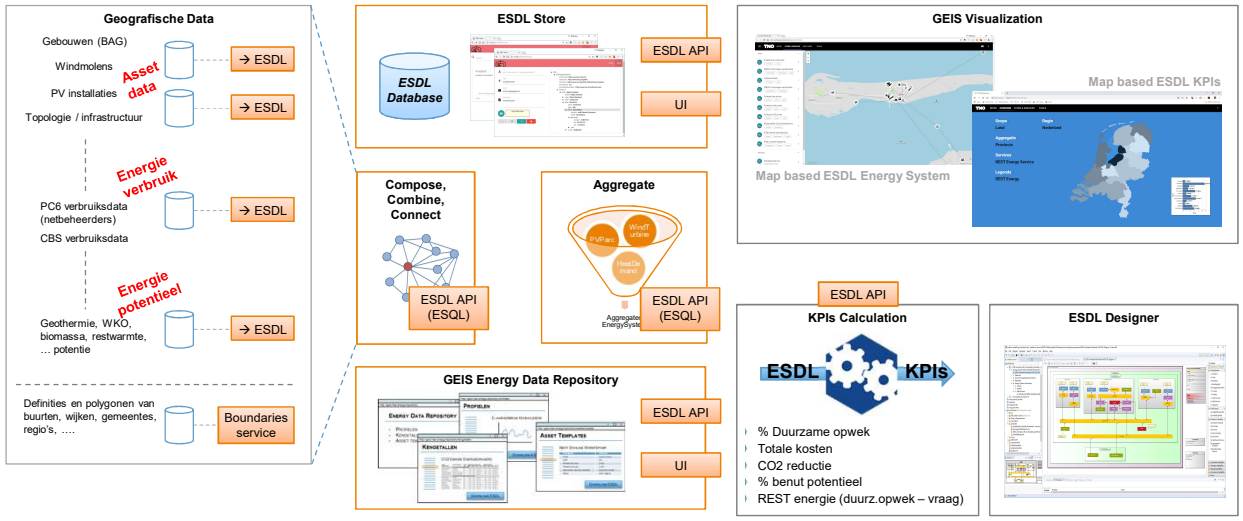

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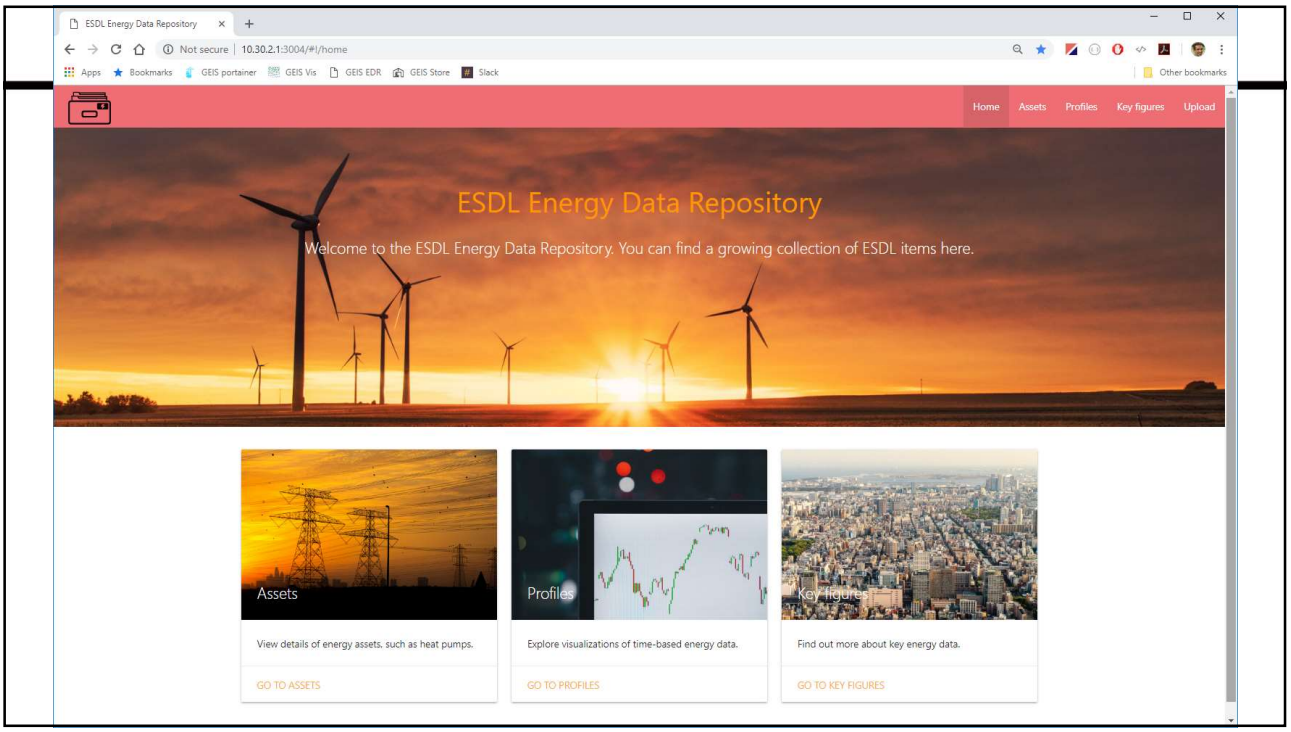
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View details of energy assets, such as heat pumps.
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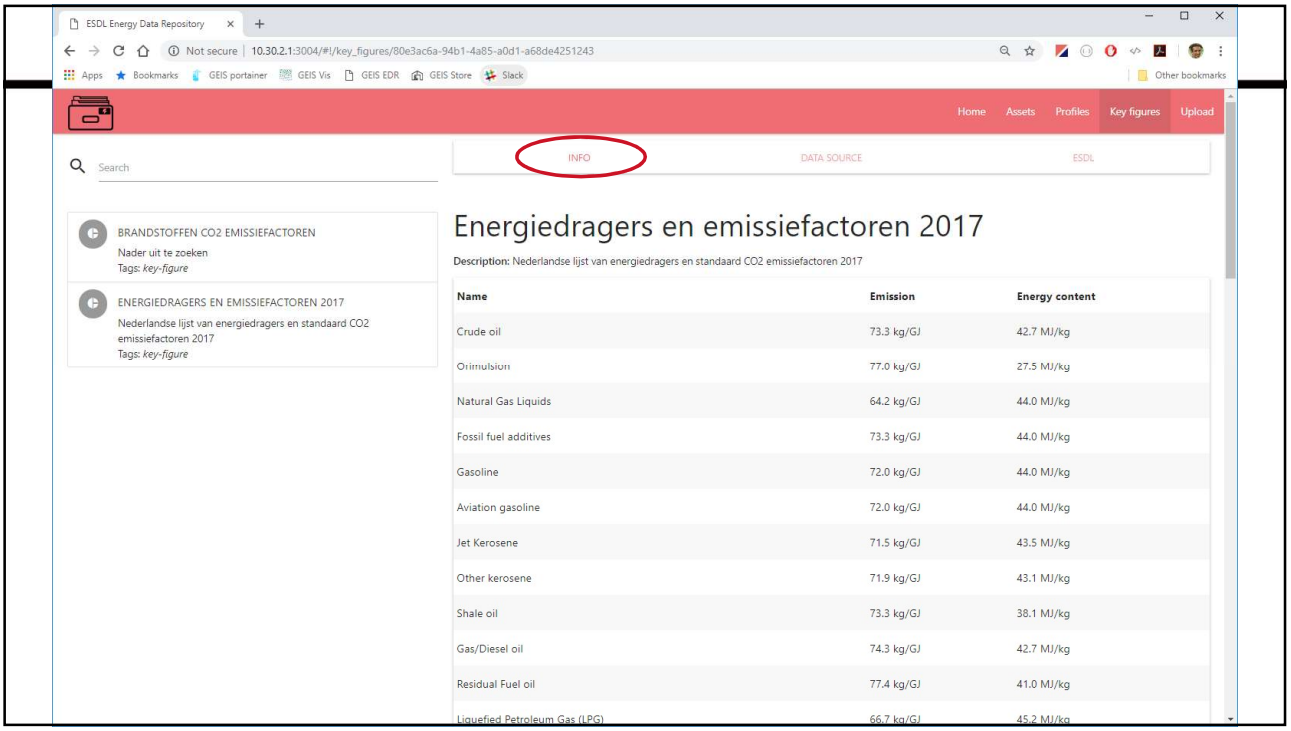
Key figures
Find out more about key energy data.
GO TO KEY FIGURES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BRANDSTOFFEN CO2 EMISSIEFACTOREN
Nader uit te zoeken
Tags: key-figure
ENERGIEDRAGERS EN EMISSIEFACTOREN 2017
Nederlandse lijst van energiedragers en standaard CO2 emissiefactoren 2017
Tags: key-figure
Energiedragers en emissiefactoren 2017
Description: Nederlandse lijst van energiedragers en standaard CO2 emissiefactoren 2017
Name
Emission
Energy content
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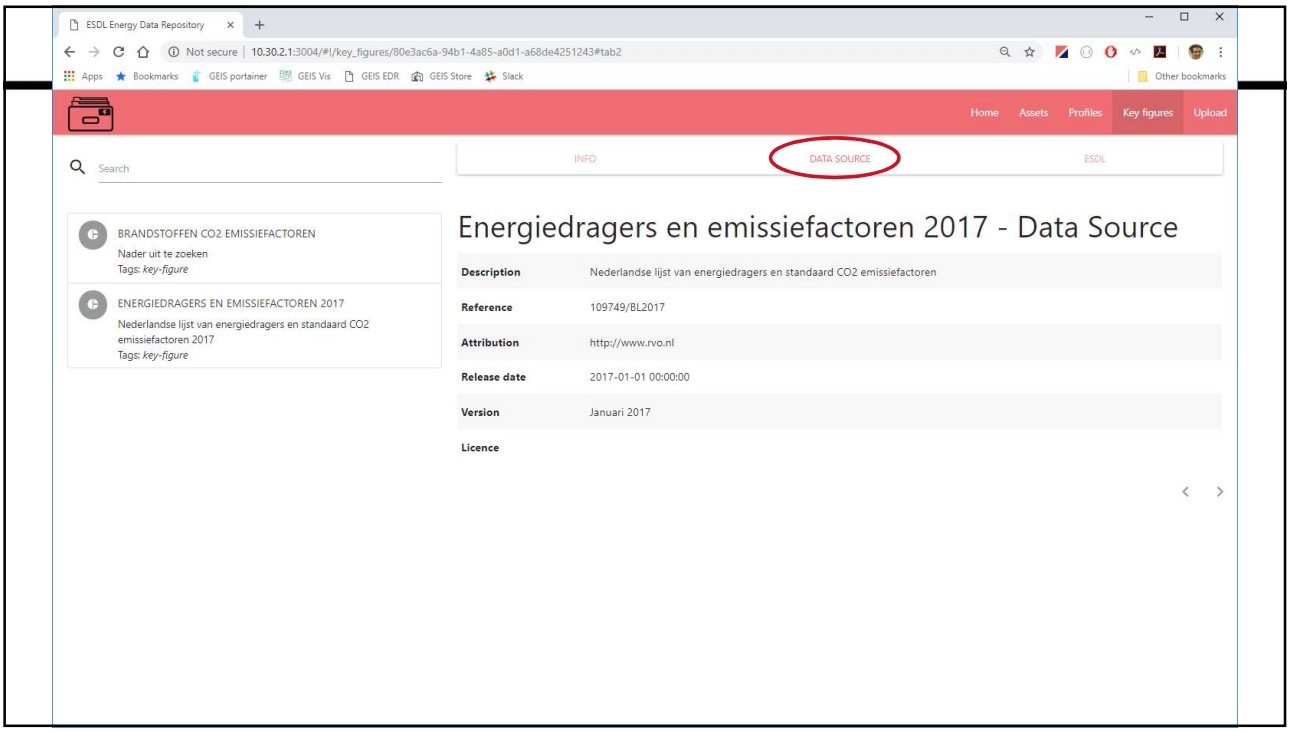
42.7 MJ/kg
Orimulsion
77.0 kg/GJ
27.5 MJ/kg
Natural Gas Liquids
64.2 kg/GJ
44.0 MJ/kg
Fossil fuel additives
73.3 kg/GJ
44.0 MJ/kg
Gasoline
72.0 kg/GJ
44.0 MJ/kg
Aviation gasoline
72.0 kg/GJ
44.0 MJ/kg
Jet Kerosene
71.5 kg/GJ
43.5 MJ/kg
Other kerosene
71.9 kg/GJ
43.1 MJ/kg
Shale oil
73.3 kg/GJ
38.1 MJ/kg
Gas/Diesel oil
74.3 kg/GJ
42.7 MJ/kg
Residual Fuel oil
77.4 kg/GJ
41.0 MJ/kg
Liquefied Petroleum Gas (LPG)
66.7 kg/GJ
45.2 MJ/kg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ENERGIEDRAGERS EN EMISSIEFACTOREN 2017
Nederlandse lijst van energiedragers en standaard CO2 emissiefactoren 2017
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Description Nederlandse lijst van energiedragers en standaard CO2 emissiefactoren
Reference 109749/BL2017
Attribution http://www.rvo.nl
Release date 2017-01-01 00:00:00
Version Januari 2017
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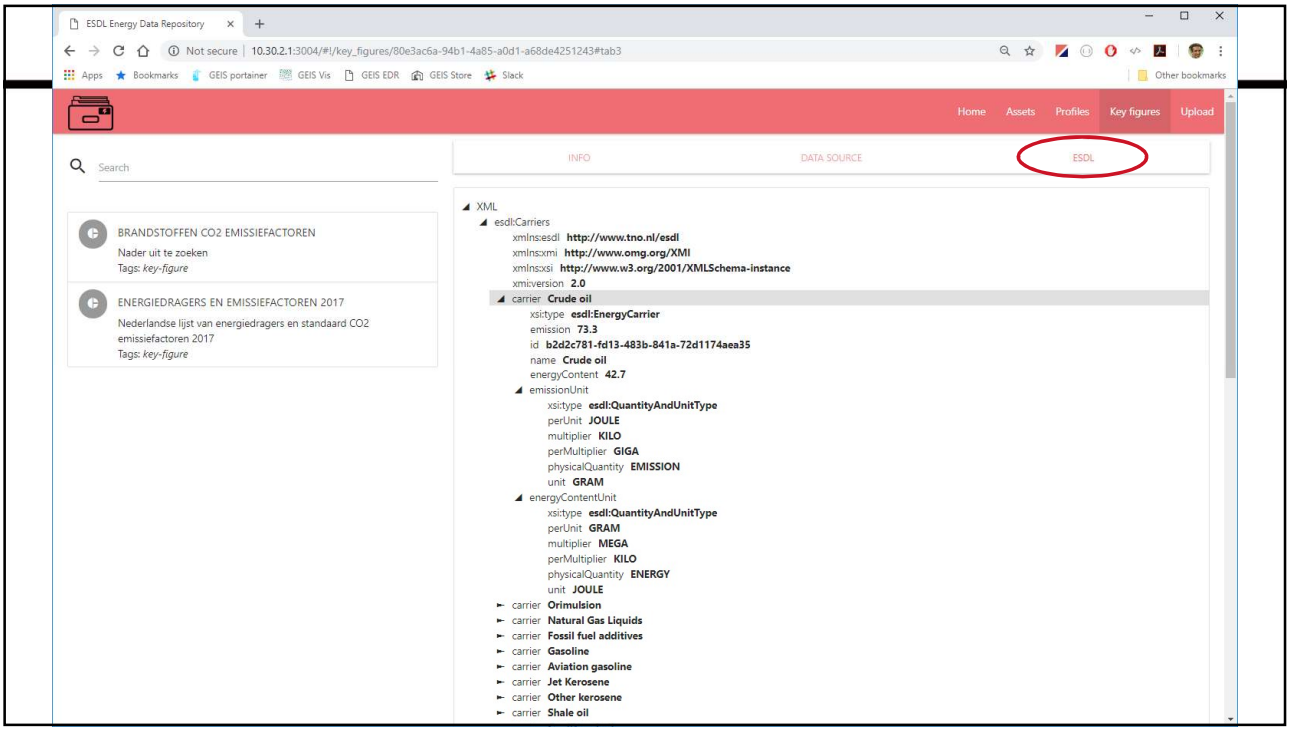
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ENERGIEDRAGERS EN EMISSIEFACTOREN 2017
Nederlandse lijst van energiedragers en standaard CO2 emissiefactoren 2017
Tags: key-figure
XML
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xmlns:xmi http://www.omg.org/XMI
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energyContent 42.7
emissionUnit
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perUnit JOULE
multiplier KILO
perMultiplier GIGA
physicalQuantity EMISSION
unit GRAM
energyContentUnit
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perUnit GRAM
multiplier MEGA
perMultiplier KILO
physicalQuantity ENERGY
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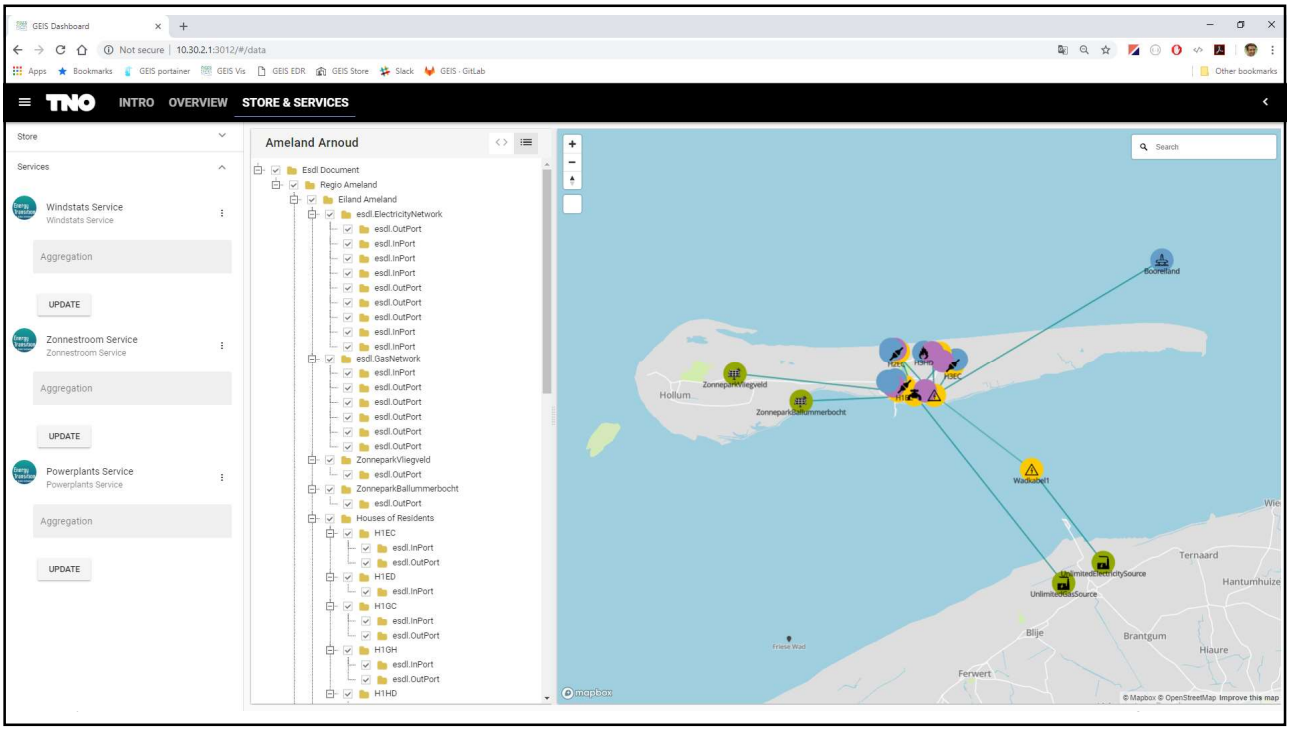
carrier Jet Kerosene
carrier Other kerosene
carrier Shale oil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Windstats Service
Aggregation
UPDATE
Zonnestroom Service
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Aggregation
UPDATE
Powerplants Service
Powerplants Service
Aggregation
UPDATE
Ameland Arnoud
Esdl Document
Regio Ameland
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ZonneparkBallummerbocht
Houses of Residents
H1EC
H1ED
H1GC
H1GH
H1HD
Search
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Wadkabelt
Ternaard
Hantumhuize
Brantgum
Hiaure
Ferwert
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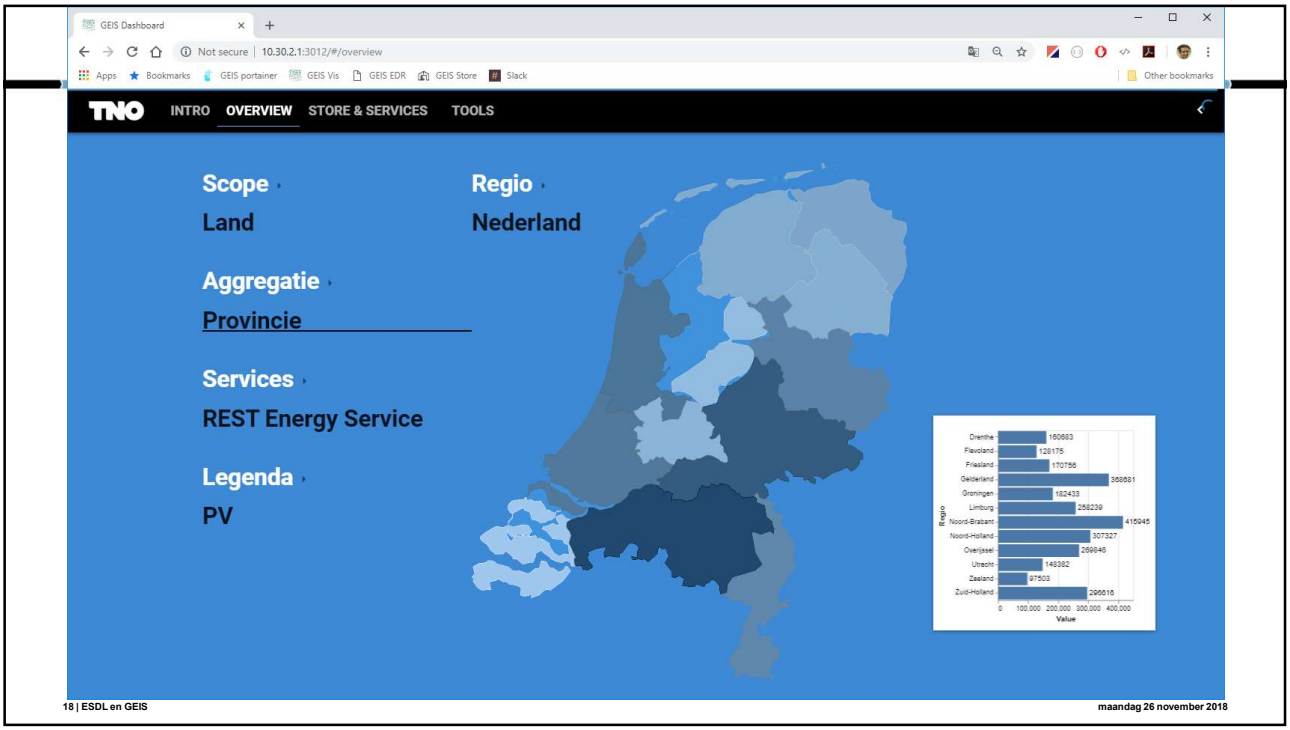
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STORE & SERVICES
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Regio
Nederland
Aggregatie
Provincie
Services
REST Energy Service
Legenda
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Flevoland 128175
Friesland 170766
Gelderland 358681
Groningen 182433
Limburg 258239
Noord-Brabant 415945
Noord-Holland 307327
Overijssel 299846
Utrecht 148382
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Zuid-Holland 295616
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Value
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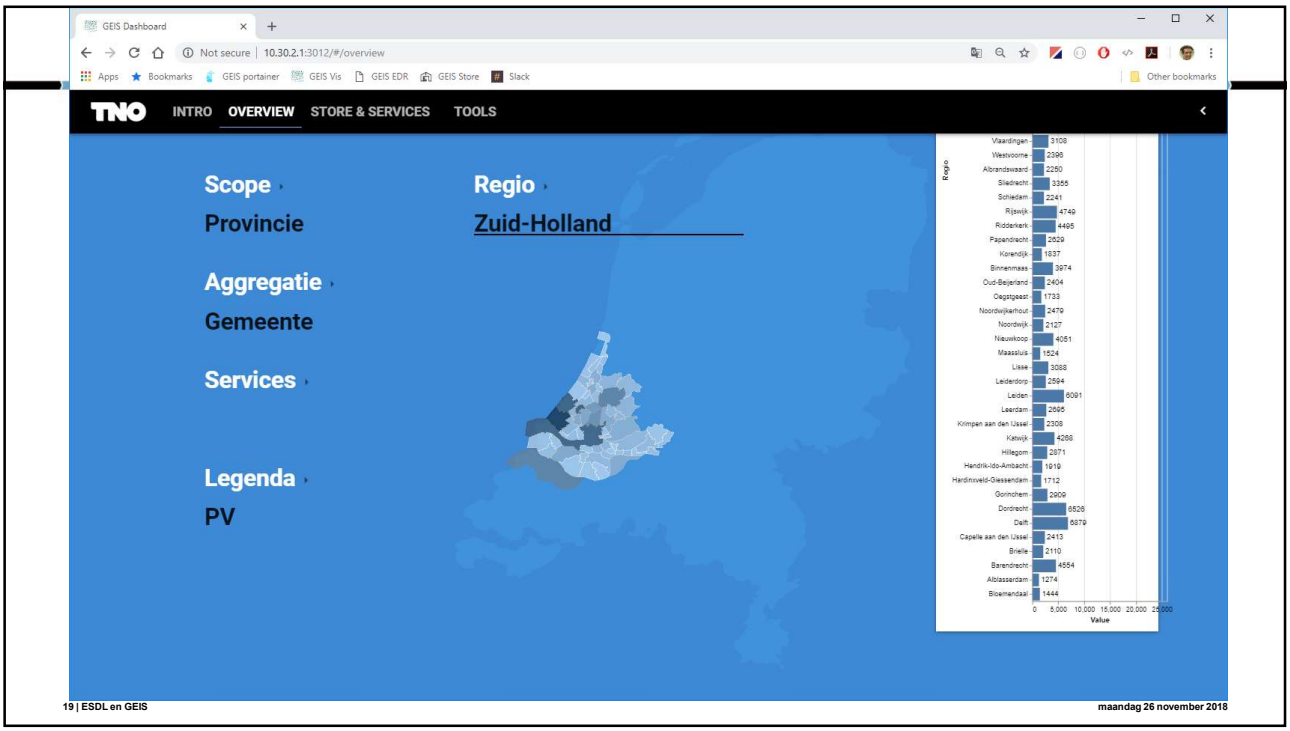
maandag 26 november 2018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Legenda
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Regio
Value
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OVERVIEW
STORE & SERVICES
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Provincie
Services
REST Energy Service
Legenda
REST Energy
Regio
Nederland
Regio
Value
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REGIONAL ENERGY TRANSITION

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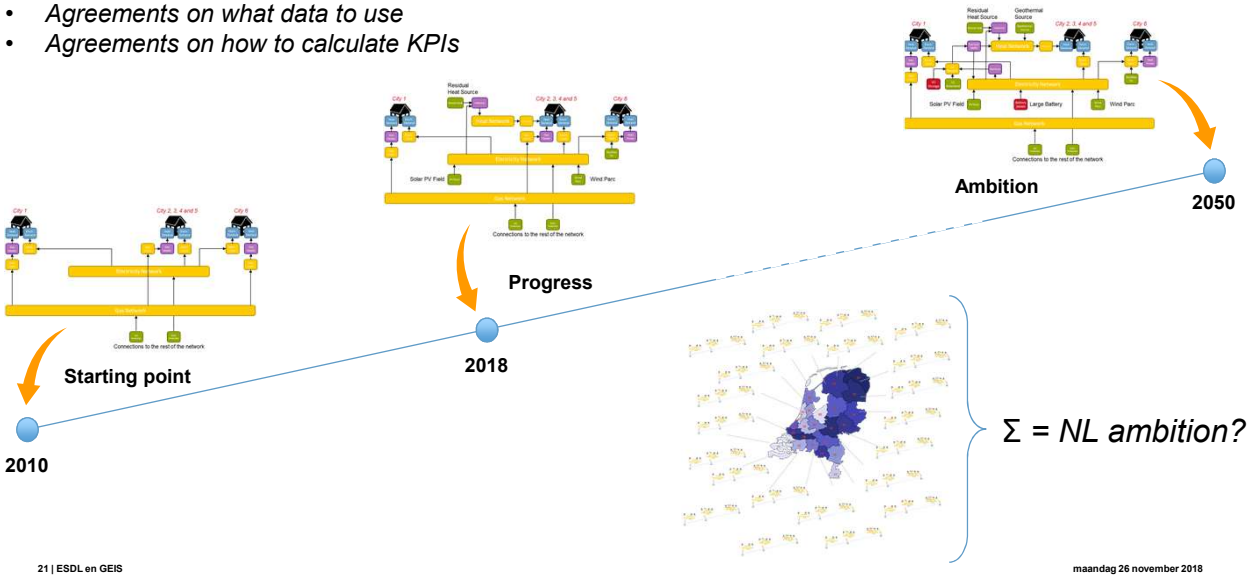
Current discussions:

- *Agreements on what data to use*
- *Agreements on how to calculate KPIs*



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TOEPASSINGEN / MEERWAARDE GEIS

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- Data portaal en visualisatie omgeving voor allerlei geografische energie informatie
  - Alle informatie als ESDL beschikbaar
- Inzicht geven in allerlei geografisch gerelateerde energievraagstukken
  - Verplaatsingseffecten (compenseren overschotten en tekorten)
  - Warmtevraagstuk (waar is er een hoge warmtevraag, waar is (rest)warmte beschikbaar)
- Vastleggen van (regionale) energiesystemen en interactie ertussen
  - T.b.v. het monitoren **EN** bijsturen van energietransitie (RES-sen)
  - Toekomstige 'landschappen' in kaart brengen
  - Uniforme databron voor KPI- en rekenmodellen

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ESDL RELATED PROJECTS

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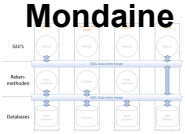
Mondaine



Mondaine PoC

EYE

ENERGY MARKET MECHANISM TOOL

DIDO

AGENT-BASED ENERGY TRANSITION MODEL

CHESS

GEIS

GEOGRAPHICAL ENERGY INFORMATION SYSTEM

ESDL

ENERGY SYSTEM DESCRIPTION LANGUAGE

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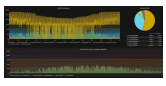

ENERGY SYSTEM SIMULATOR

Grootschalige Energieopslag (AGS)

WaterBatterij

Quickscan ESDL impact OPERA (ETS)

(Warmtevraag Profielen Generator)

...

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