



IEA Technology Collaboration Programme

COUNTRY REPORT

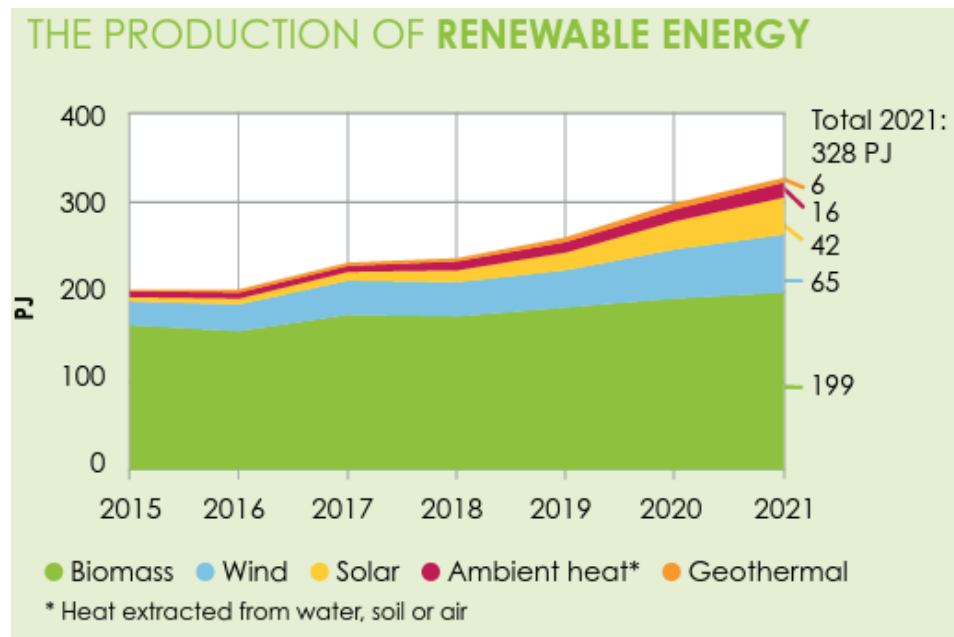
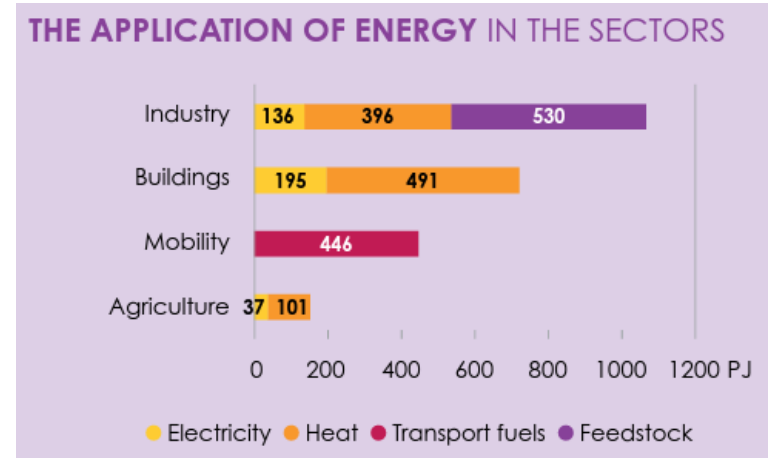
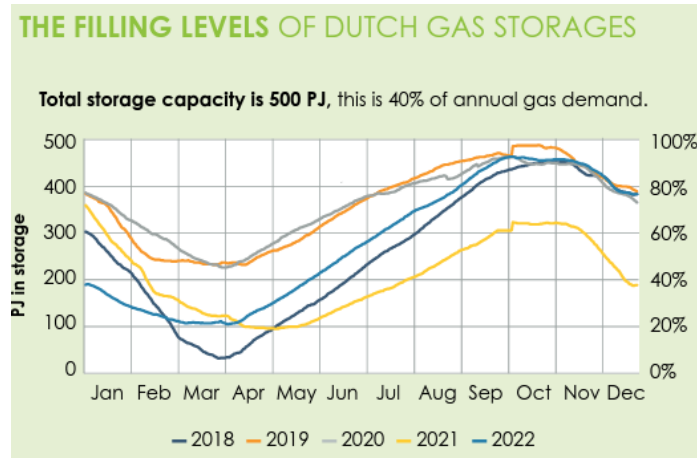
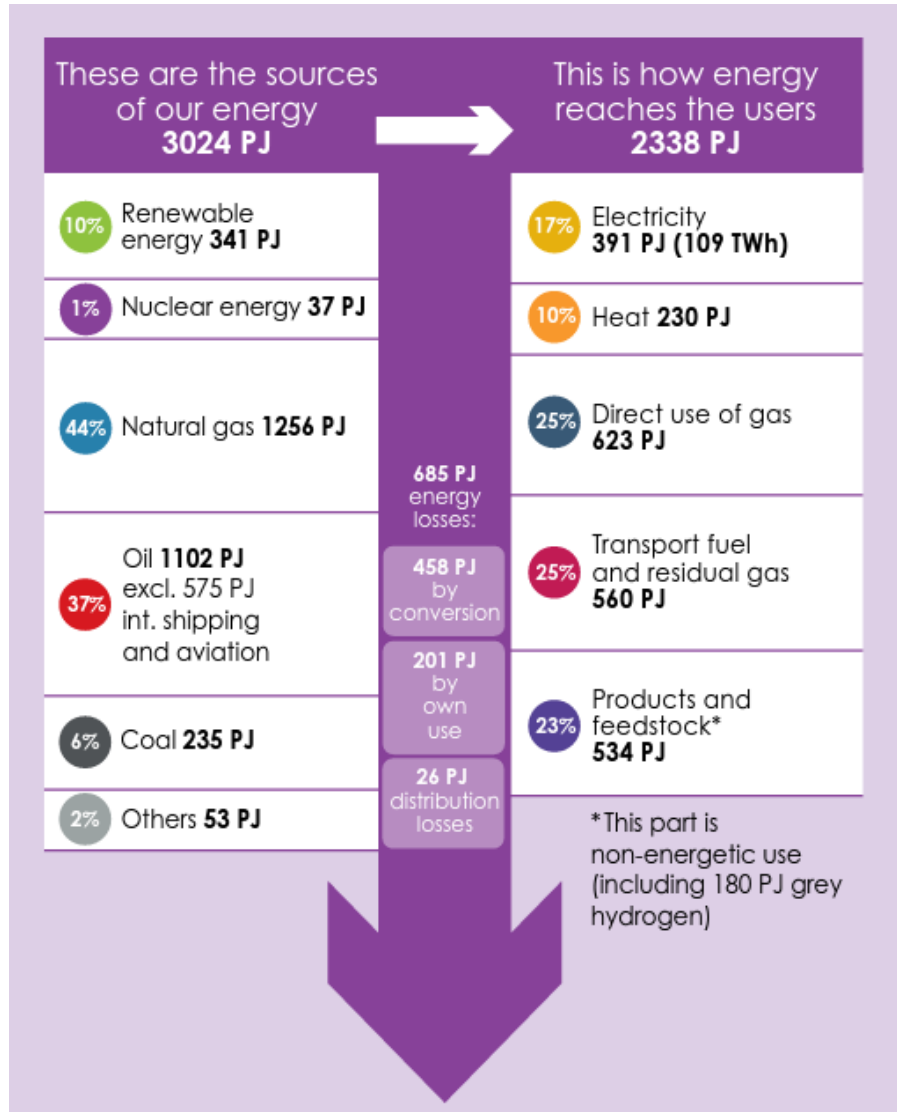
Netherlands

2023, June

Delegate: Stan van den Broek
Netherlands Enterprise Agency

Country Specific Information

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RDD information

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- Public-private innovation agenda setting, “mission-oriented”
- Early 2023, 43 storage-focused innovation projects were active with 81M€ grant funding

fase 1 Fundamenteel Onderzoek	fase 2 Onderzoek & ontwikkeling	fase 3 Demonstratie	fase 4 Opschaling & marktintroductie
NWO	MOOI	DEI+	VEKI
		Hernieuwbare Energie	EIA, MIA/VAMIL
	WBSO	Topsector Energiestudies Industrie	SDE++

Landscape of climate goal-focused subsidy schemes and (fiscal) incentives for energy innovation

- Growth Fund programs on collective heating (200M€), hydrogen (73M€ + 250M€) and battery technologies (TBD)
- IPCEI Hydrogen, 595M€ available for import & storage

Energy Storage Landscape

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- 40% of yearly gas demand stored underground, new LNG terminal in 2022
- Grid congestion major driver for Li-ion batteries at C&I
- Grid-scale batteries increasingly capitalize on balancing services
 - >30 GW of applications at TSO/DSOs
 - 2 GW calculated to be economically viable, TSO expects 10 GW by 2030
- Home battery uptake still held back by net metering (>2000 systems 2021)
- 3.000+ ATES, 80.000 BTES installed
- 20+ applications for industrial e-boilers



Policies & Market: National Roadmap

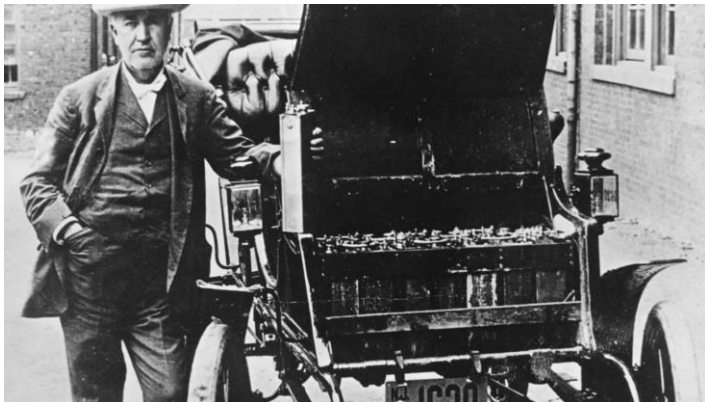
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- Electricity, molecule and thermal storage is complementary and everything is needed: 3 equally valued pillars with attention to interlinkages (P2H)
- Electricity:
 - Guidance needed to prevent battery sprawl and optimize societal value
 - Longer duration options needed (at lower cost), huge potential V2G but long way to go
 - Societal value of home/neighbourhood batteries unclear
- Molecule: technological uncertainties AND rapid decision-making needed
- Thermal:
 - Seasonal storage needed, but more knowledge and regulatory reform required
 - Effects shorter-term storage c/w P2H should be better acknowledged
 - General unawareness hampers uptake and limits societal value

Top 3 cases / projects

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- Battolyser
- Ni-Fe battery optimized for H₂ production
- Plans for 1GW production facility in 2024
- CESAR
- Thermal storage in steel slugs up to 500°C
- P2H integrated
- Latest pilot supplies heat to 22 apartments year-round (75 MWh)
- Innovahub Stellendam
- Hylife, ABB, Giacomini
- Multi-carrier pilot for year-round energy supply to 21 dwellings
- Assets include PV, batteries, electrolysers, fuel cells, H₂-boiler



Other relevant information

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- Roadmap Energy Storage (link will follow)
- General energy data/figures via <https://www.ebn.nl/feiten-en-cijfers/>
- Various factsheets / informative web pages via websites Energy Storage NL, TKI Urban Energy, TNO
- Summaries of innovation projects via <https://projecten.topsectorenergie.nl/>