



100% Renewables in 1 Generation

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Olof van der Gaag, director NVDE



NEDERLANDSE VERENIGING DUURZAME ENERGIE

Presentation

1. Introduction
2. Clean energy in the NL
3. Energy Agreement
4. Next steps -> 100%
5. Positive trends

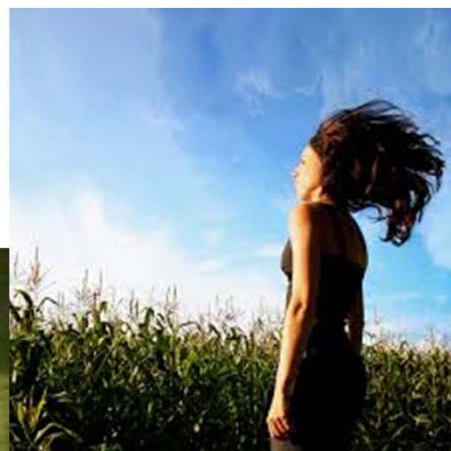




Goal NVDE: 100% renewable

2050: 100% renewable energy

- Heat
- Electricity
- Transport





1.000+ companies



Coöperation in the clean energy sector:
1 transition voice



Who do I call if
I want to call
Europe?

Bonn: UN climate change conference



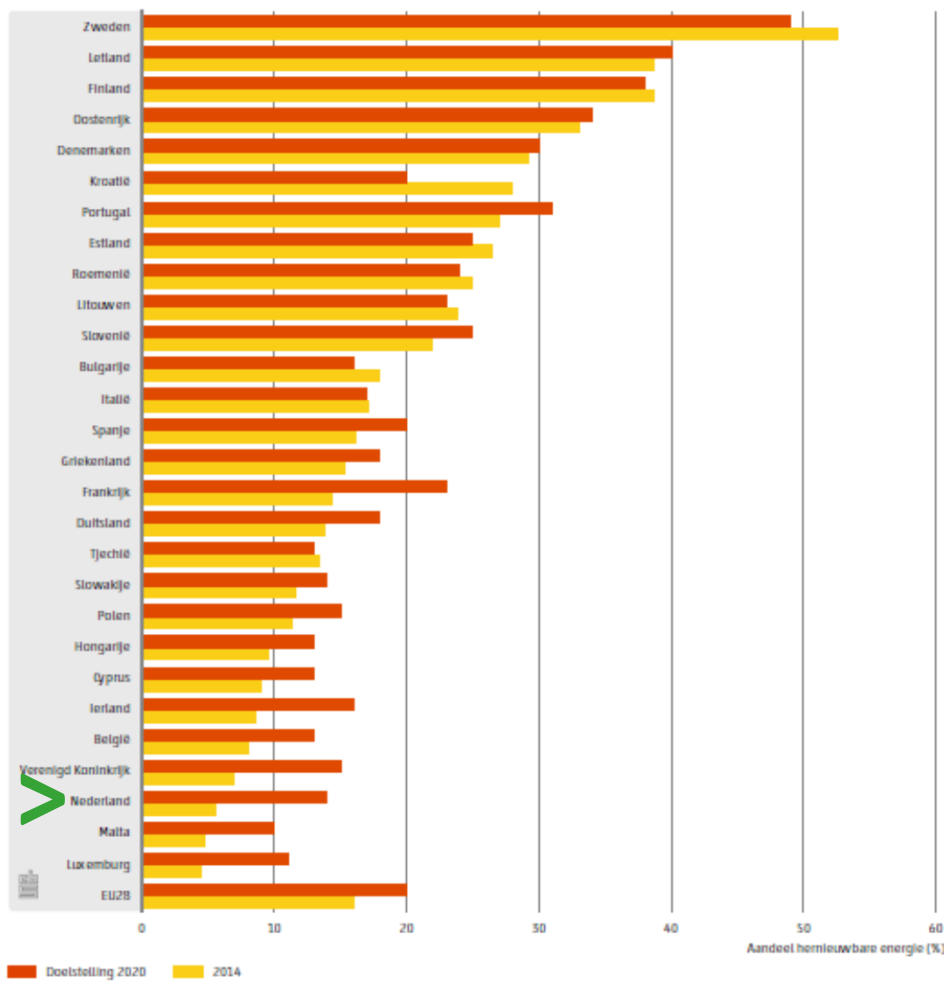
Next steps after 'Paris'

Sense of urgency



- World Meteorologists:
'Hottest years since 1880: 2015, 2016, 2017'
- UN on 'Paris':
'even full implementation of current unconditional and conditional Nationally Determined Contributions makes a temperature increase of at least 3 °C by 2100 very likely'

2.5.1 Aandeel hernieuwbare energie in bruto energetisch eindverbruik



Bron: CBS voor Nederland, Eurostat (2016a) voor andere landen.

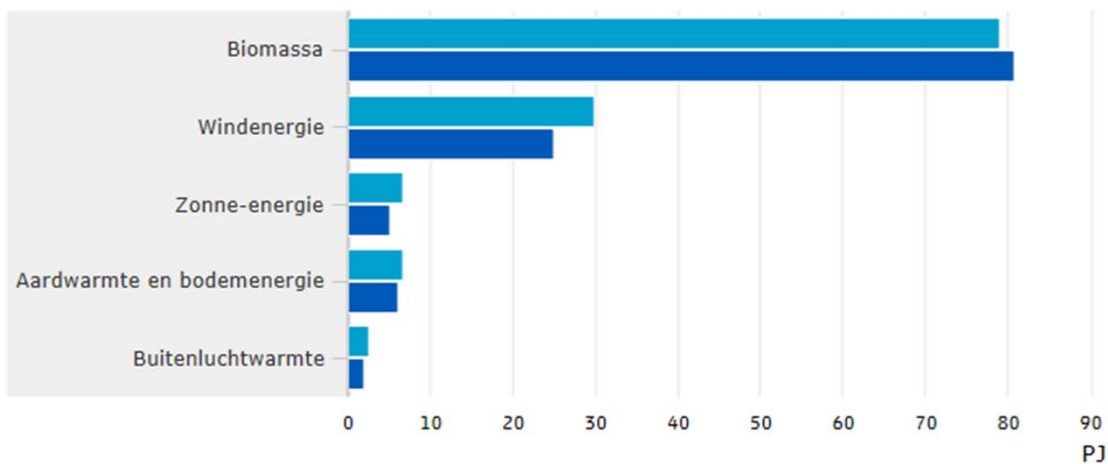
2. NL: underperforming



NEDERLANDSE VERENIGING DUURZAME ENERGIE

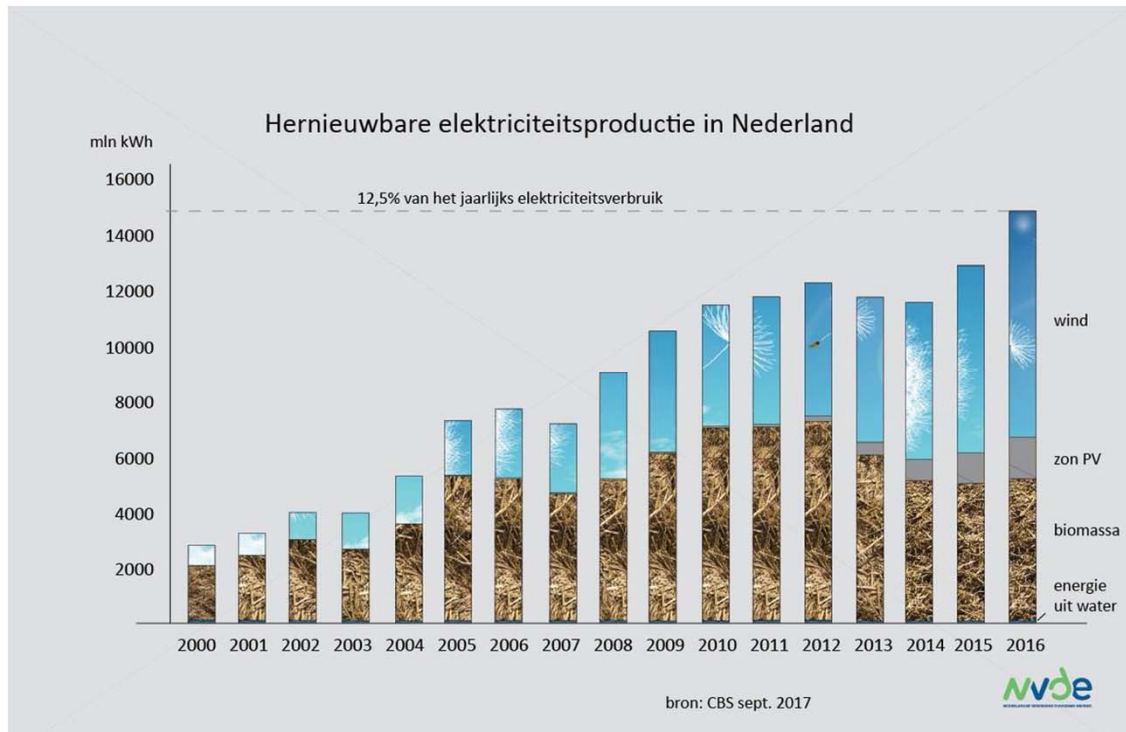
Renewables 2016 (6%)

Verbruik van hernieuwbare energie naar energiebron



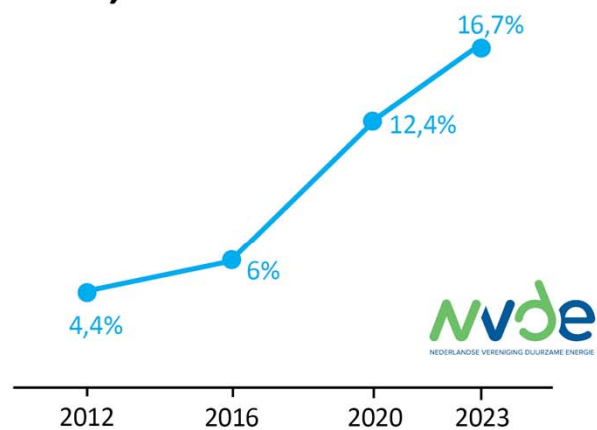
■ 2016* ■ 2015

Ren. electricity 12.5%



Forecast

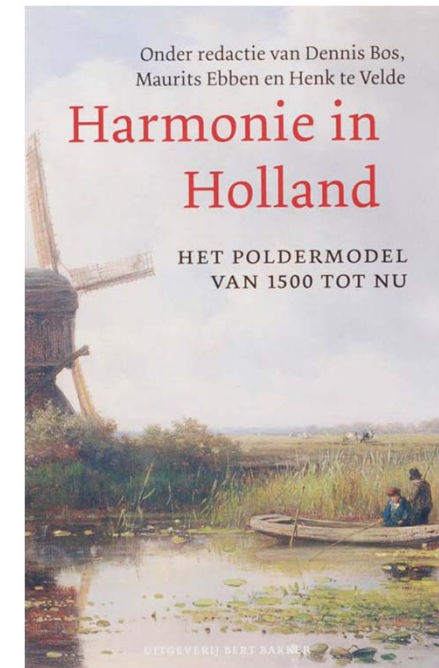
van 4,4% naar 16,7%
Bedankt!



Aandeel hernieuwbare energie in Nederland
bron: Nationale Energieverkenning 2017

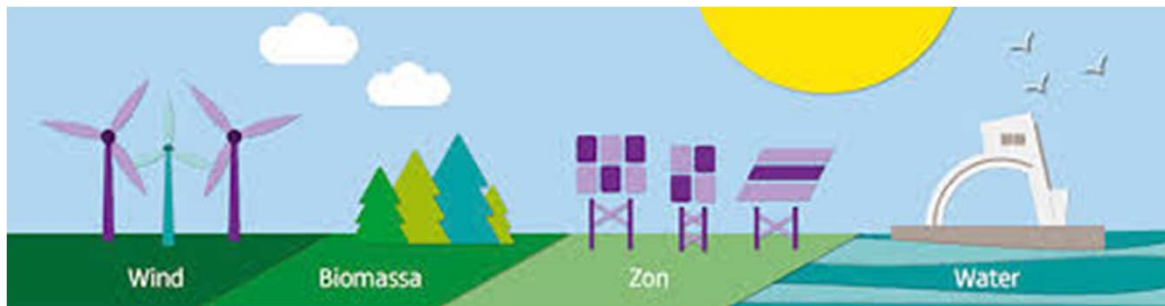
2. Energy agreement (2013)

- Civil society: 40+ organisations
- 10 year: 4% -> 16% renewables
- 100 PJ efficiency in 2020



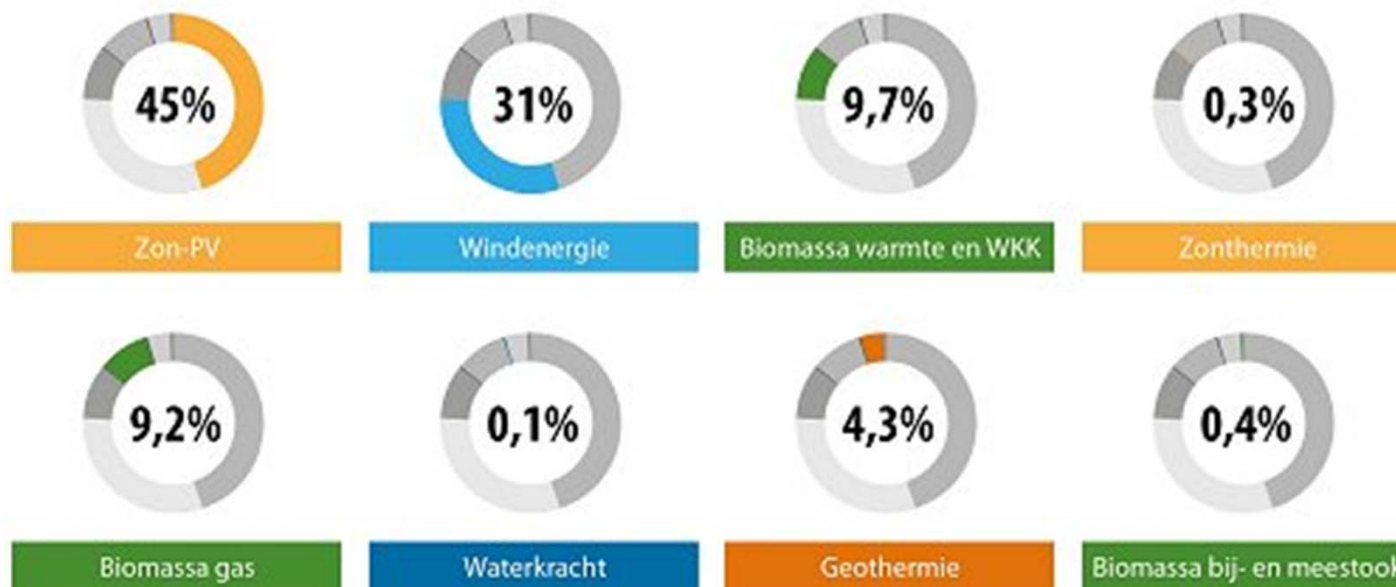
Subsidising renewables

- 2017: SDE+ €12 billion -> 15 year exploitation
- Open competition all techniques
- Fee on energybills (ODE)



SDE+ early '17: 45% Solar

Verdeling aangevraagd budget SDE+ voorjaar 2017 in % per categorie



Highlight: offshore wind

- Predictability: Subsidies & Tenders
- Procedures: Perfectly organised
- Grid connection
- Costreduction 40% 2014 - 2024

Tabel 4.1 – Aanbestedingspad wind op zee

Aanbesteden in	Windvermogen	Operationeel in
2015	450 MW	2019
2016	600 MW	2020
2017	700 MW	2021
2018	800 MW	2022
2019	900 MW	2023

Succes offshore wind



- 2013: **12,5** cent per kWh
(excl. grid, ~1,5 cent per kWh)
- 2016: **7,27** cent per kWh (Dong - Borssele)
- Early 2017: **5,45** cent per kWh (Shell, Eneco - Borssele)
- Late 2017: **free of subsidy?**



Home- production



- PV taxfree production/ consumption (salderen)

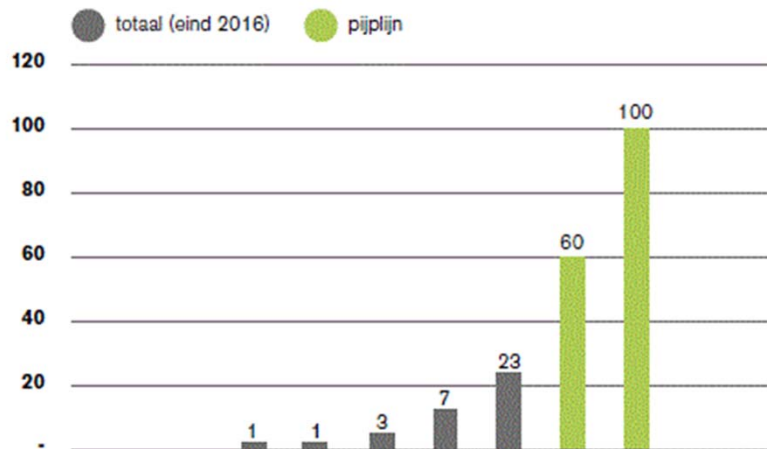
500.000 houses, payback time 7 years

- Heat: yearly investment subsidy €90 million

Solar Heat – Heatpump - Biomass

Energy coöperations

- Challenge: awareness & participation



2011 35 coöperations
2016 313 coöperations
50.000+ members (citizens)

- > need for structural 'start-up' support
- > improved 'postcode arrangement'

3. Next steps: up2 100%



Political choices



Exit Obama legislation



Sweden fossil-free 2045

Accelerators



1. Long term targets, climate law
2. Taxing CO2
3. Performance targets
4. Stable (declining) subsidies
5. Scaling up - 'Kafka-free'



Energy		Fridge-Freezer
Manufacturer Model		
More efficient	A	A
	B	
	C	
	D	
	E	
	F	
Less efficient	G	
Energy consumption kWh/year <small>(Based on standard test results for 2019)</small>		325
<small>Actual consumption will depend on how the appliance is used and whether it is loaded.</small>		
Fresh food volume l		190
Frozen food volume l		126
Noise <small>(dB(A) re 1 pN)</small>		44
<small>Further information is contained in product brochures.</small>		
<small>Marked with the CE mark Regulation (EU) 2015/1095</small>		

Dutch politics



4 party government

Coalition Agreement

- -49% CO2 in 2030; maybe -55%
- Climate law & new climate-/ energy-agreement
- Minimum CO2-price €43/ ton in 2030
- Reforming 'saldering'
- Pilots, innovation, capacity building: 4x 300 million €
- Coal phase out before 2030
- End of subsidy biomass in coal plants after 2024
- 20 Mton CCS, SDE+ funded (~ 1 billion per year)

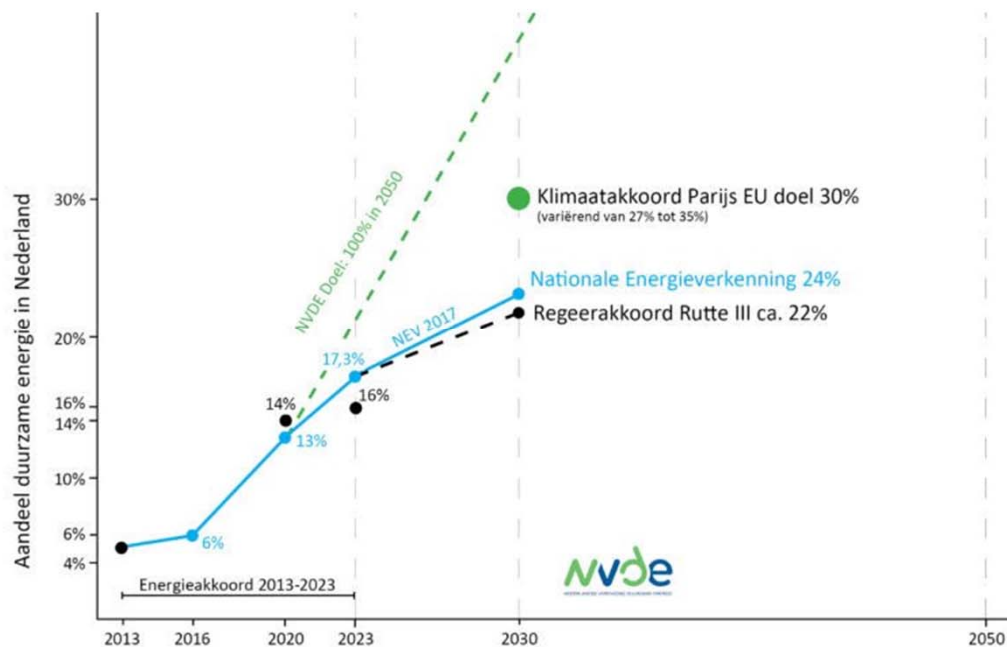
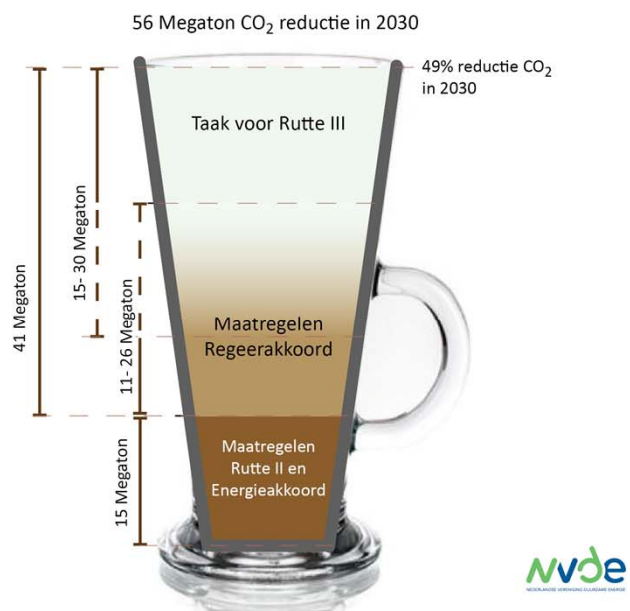


49% CO₂-reduction

Label: Indicatieve toedeling 49%-reductieopgave in 2030

Domein	Reductie in 2030 (Mton)	Maatregelen
Industrie	1	Recycling
	3	Procesefficiency
	18	Afvang en opslag koolstofdioxide
Transport	1,5	Zuiniger banden, Europese normen, elektrische auto's
	2	Biobrandstoffen en maatregelen steden
Gebouwde omgeving	3	Optimalisatie energiegebruik kantoren
	2	Isolatie woningen, warmtenetten en warmtepompen
	2	Zuiniger nieuwbouw
Elektriciteit	1	Zuiniger verlichting
	12	Sluiten kolencentrales
	2	Afvang en opslag koolstofdioxide in AVI's
	4	Extra wind op zee
	1	Extra zonne-energie
Landgebruik en landbouw	1,5	Slimmer landgebruik
	1	Minder methaanuitstoot
	1	Kas als energiebron

Impact assessment



-> PBL: goal half within in reach

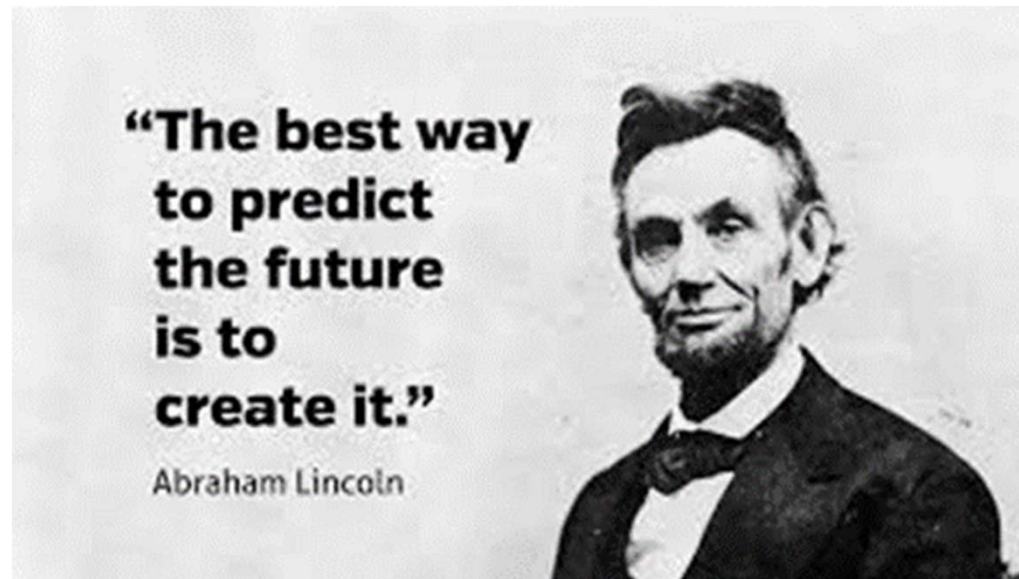
-> ~23% RE in 2030



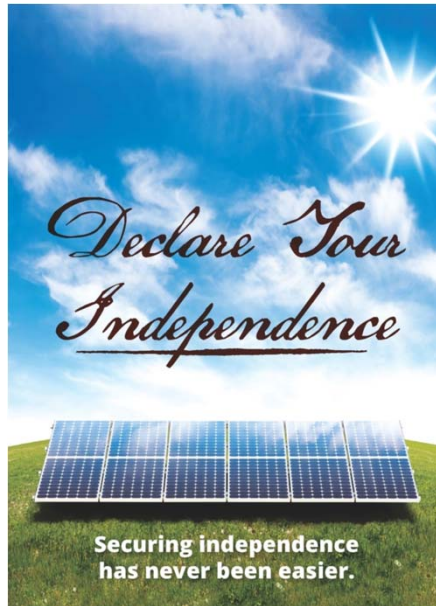
New energy-agreement



4. Strengthening trends



Energy independence



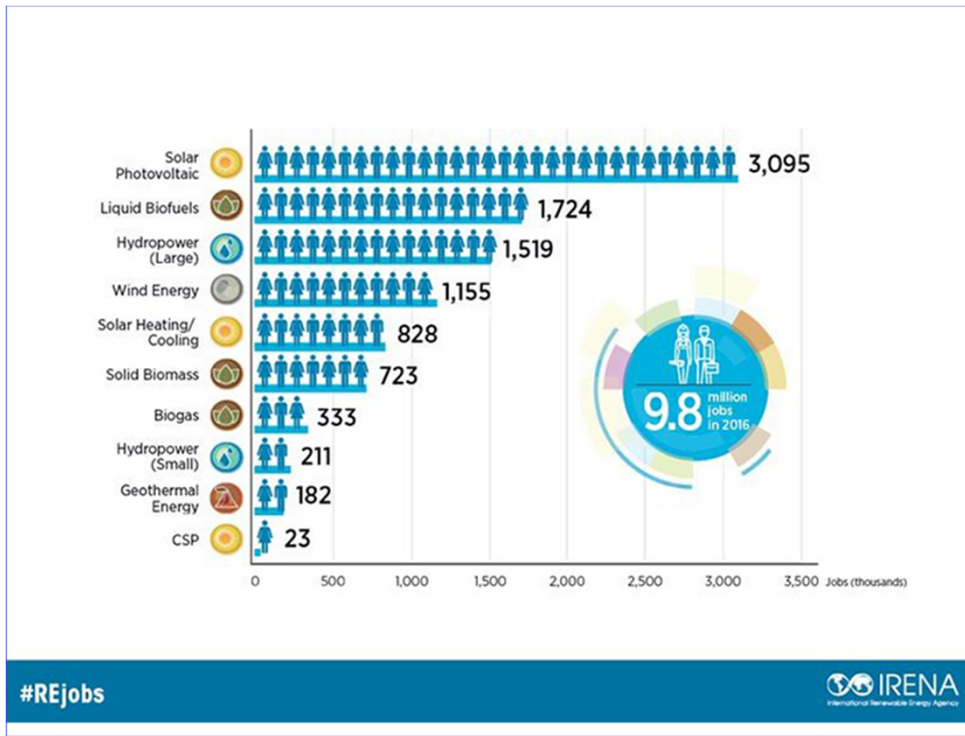
A lot to earn



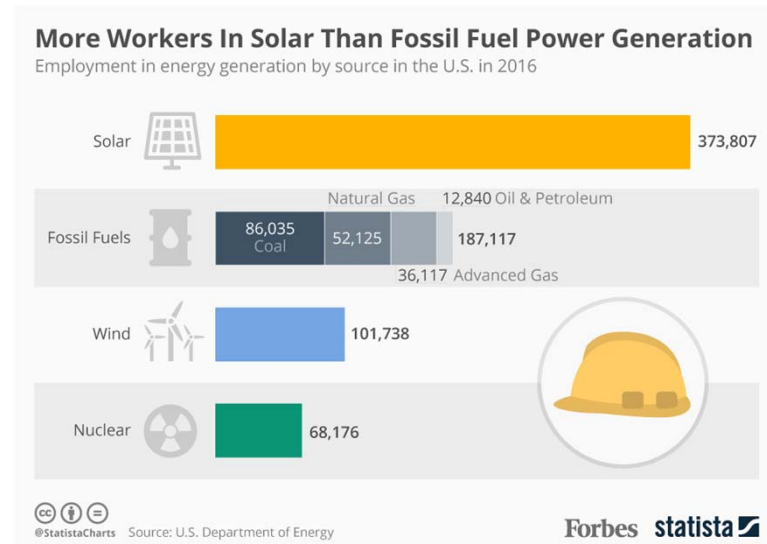
**Buying fossils:
Yearly 20 billion euro (NL)**

McKinsey

We estimate that investing EUR 10 billion per year between 2020 and 2040 in a low-carbon energy system would generate a positive GDP impact and potentially create tens of thousands of jobs in the long run, with 45,000 installation jobs at minimum in the near term.



Growth 10x faster than average Challenge: finding skilled people





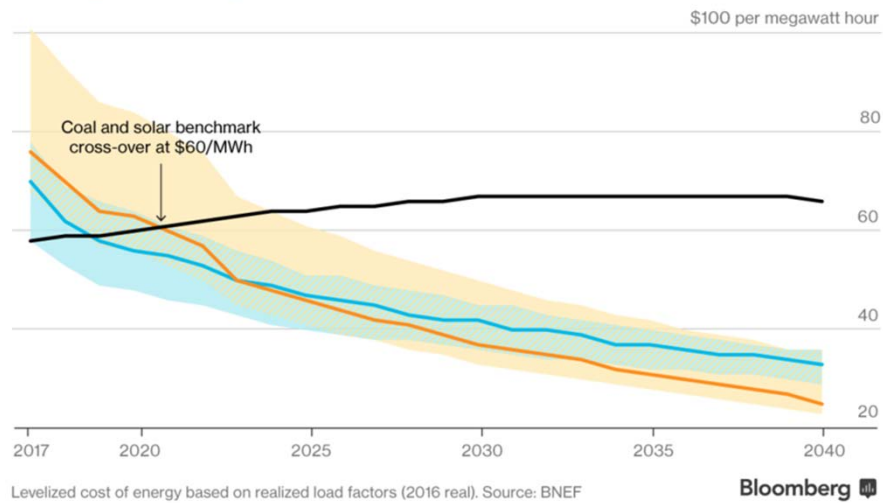
Declining costs



China's Big Tipping Point

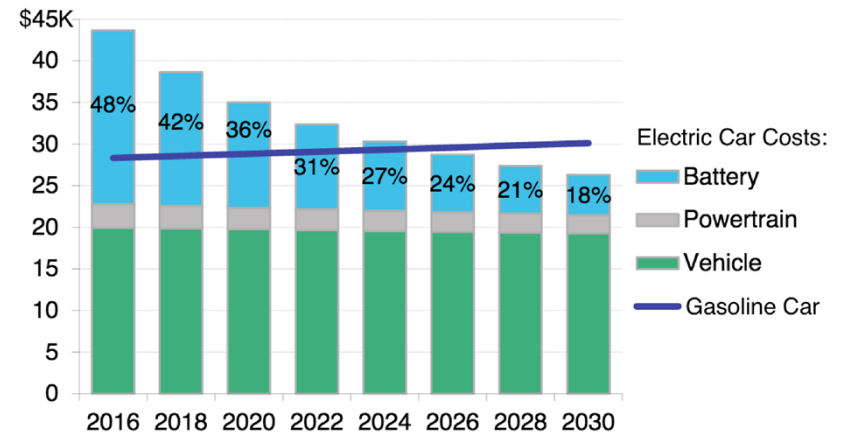
Within four years solar will be cheaper than coal

■ Coal ■ Onshore wind ■ Large solar farms



Electric Cars Will Win on Price

Falling battery prices undercut gasoline cars by mid-2020s





Challenge: make it desirable

Commodity to Remarkability



1¢ - 2¢
COMMODITY



5¢ - 25¢
GOOD



75¢ - \$1.50
SERVICE



\$2.00 - \$5.00
EXPERIENCE

source: Pine & Gilmore | "Experience Economy"

Thnx!

