The Creeping Energy Revolution

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Global Energy Transition

Global Energy Dynamics

abundance of fossil fuels

- shale gas and unconventional oil in the United States
- surplus of cheap coal to Europe

huge CO2-emissons and environmental pollution

emergence of clean tech

- China is the big motor behind 'clean tech'
- China plays double role, big investments in fossil fuels

still small, but fastly growing

Global Energy Power Struggle

Obama

“ The country that will dominate the clean tech economy will be the country that will dominate the world economy and America needs to be that country ”

Clean Tech is 'booming'

global economy arising around the 'clean tech industry'

fastest growing industry in the world

2011: 300 billion dollar (30% growth compared to 2010)

China	55 billion
Germany	42 billion
America	35 billion
Italy	17 billion
Netherlands	2.5 billion

Global Energy Transition

is at a Tipping Point period

huge dynamics, instability and turbulence

battle between vested and emerging power

battlefield

Global Energy Transition

not driven by

scarcity, climate, environment

but driven by

geo-political forces

power shift arguments

price developments

European Energy Transition

Europe does not have a clear strategy

no vision and no strategy

other global world power blocks are pro-active

Europe is not on a route to energy-autonomy

Clean Energy Economy in Europe

green economy is of crucial importance for Europe

in potency 22 millon Europeans involved

in 2012: 1-3% of total employment

in 2020: 5-10% of total employment

Germany is the absolute frontrunner

Denmark is performing well

England is performing well

Netherlands is underachieving

Europe is divided

Germany is the absolute frontrunner in clean energy

influences the energy price in other countries

more and more big power plants are closed

big European energy companies will die out

Dutch Energy Transition

Netherlands is in a fossil lock-in

coal fire plants, power plants, CO2-hub, gasrotonde, CCS

electricity surplus : 120% in 2020: 80%

dominance of fossil fuel energy-intensive industry

huge amounts of heat loss, little sustainable heat

emergence of decentralized sustainable energy, small capacity

Netherlands Fossil Guiding Country?

Dutch energy supply is one-sided and gas-oriented

Dependent on politically and economically instable regions

gasfields empty around 2025-2030, no clear alternatives yet

green gas has relatively small volume, shale gas not atractive

Netherlands as gas roundabout is financially not attractive

Dutch energy supply is far from sustainable

Sustainable Energy in the Netherlands

4.1% energy produced sustainably [nr. 25 in Europa]

wind, solar, (earth)heat, biomass (2^{nth} generation)

wind and solar break through at a large scale at price level

do not need subsidies anymore

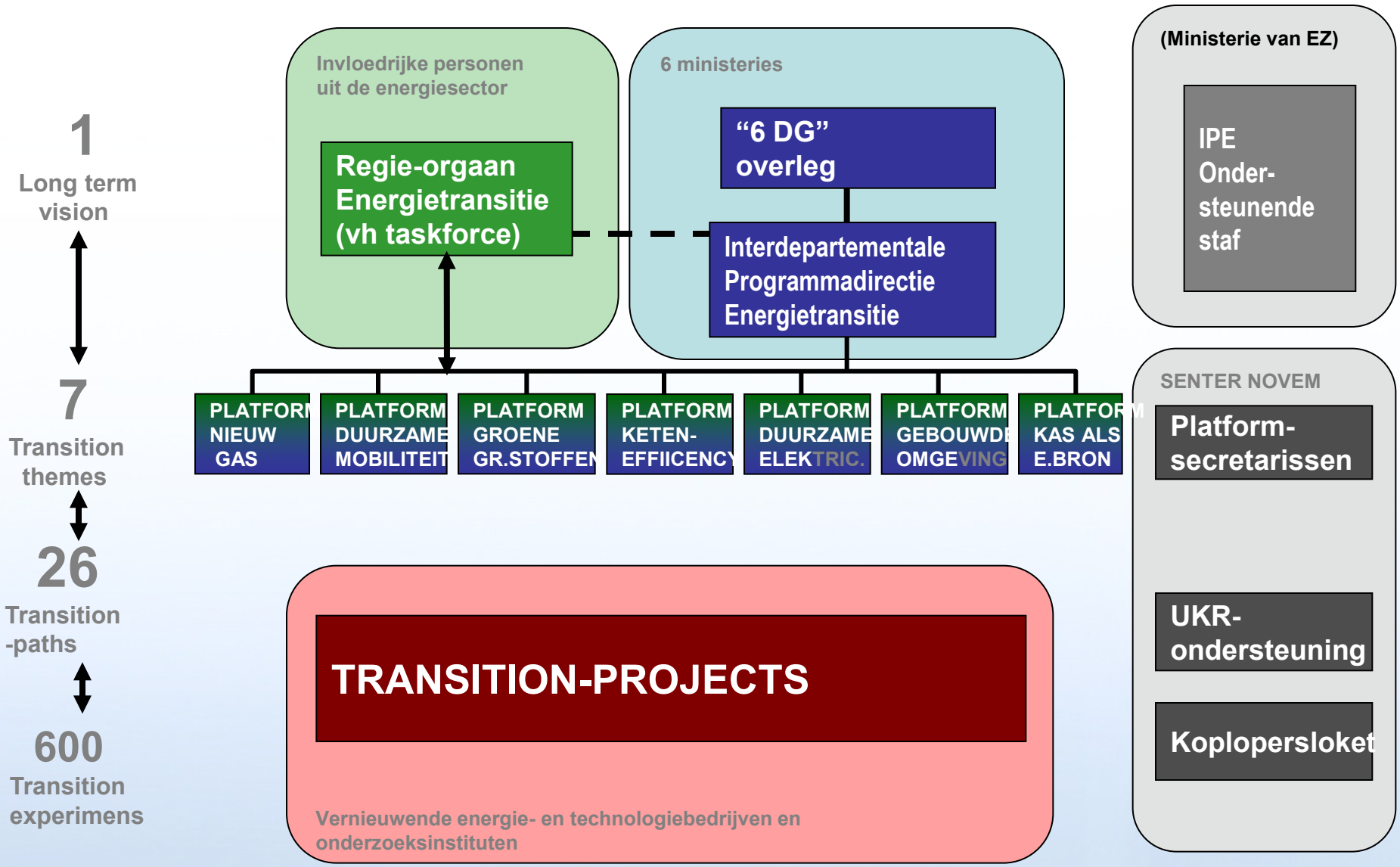
explosion of initiatives by citizens (ca. 500)

arising revolution

Energy Transition largely failed

- in 2001 start by the ministry of economic affairs
- started with a small group, develops into a large network
- long-term vision developed *['where do we want to go?']*
- 7 main themes selected *[platforms or arenas]*
- 26 transition pathways designed *['how from here to there?']*
- 500 transition experiments *['implement pathways?']*

Energy Transition

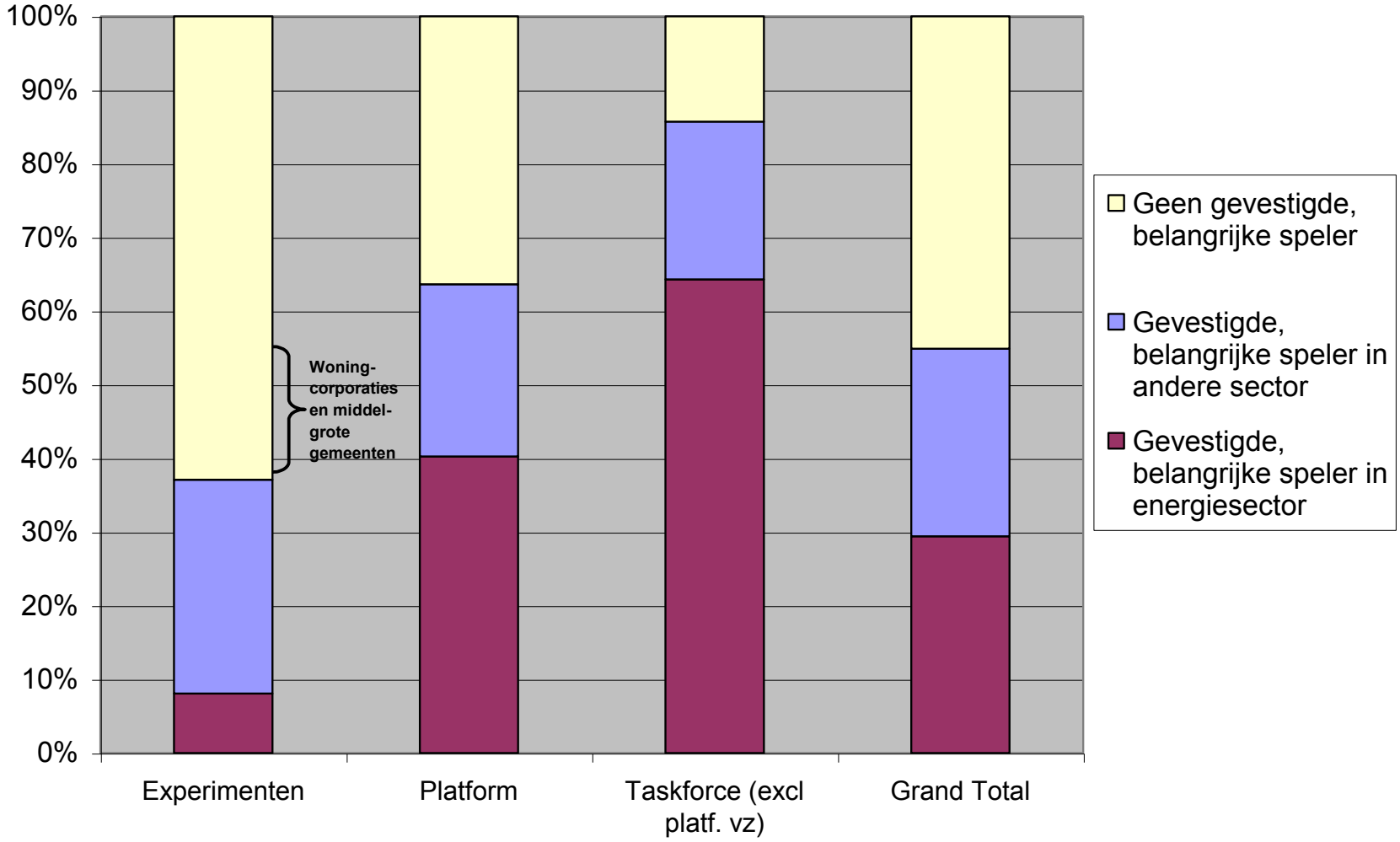


What has been achieved?

- new discourse from a broad energy innovation network
- high ambition level related to a long term goal
- shared future perspective from a longer term orientation
- financial impulse via innovation agenda rooted in regime
- portfolio of transition experiments

unique policy experiment

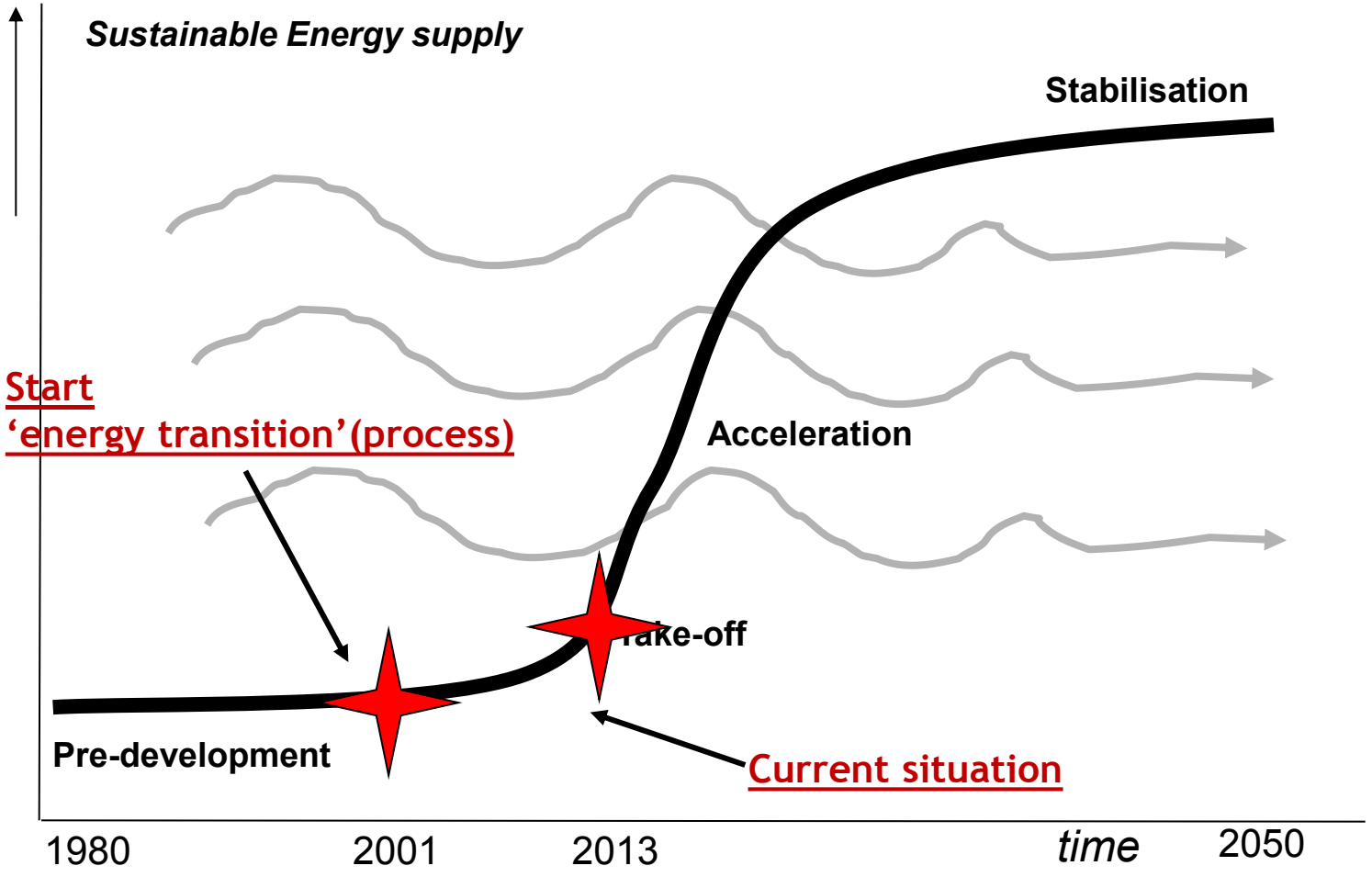
Organizations involved in Energy Transition



But…

- many regime-players involved and few niche-players
- process has been institutionalised and became too bureaucratic
- emphasis on technology rather than on behaviour & institutions
- too much command-and-control and not rooted in regions
- energy transition surpassed by societal dynamics

Multi-phase analysis energy transition



Local Energy Initiatives

Explosion of Local Initiatives

- energy
- food
- climate initiatives
- health care
- social security
- poor districts
- building/construction

International Trend

all over Europe an explosion of local initiatives

frontrunners in Europe: Germany, England

the Netherlands: frontrunner of the peloton
[7500 co-operative organisations, 50% increase]

emergence during the last 5 years

Roots of Local Initiatives

1. glocalisation

   local rooting

2. samenredzaamheid

   pragmatic solidarity

3. IT-Technology

4. failing energy policy

   frustration

5. opposition against efficiency-society

   civil disobedience

Estimates of Scale

ca. 400 local energy initiatives

explosion during the last 5 years

citizens, municipalities, netbeheerders, energiebedrijven

combination of solar, wind, heat and smart grids

Diversity of local initiatives

- wind co-operations
- solar-collectives
- nuts-or local energy companies

Wind Energy Initiatives

15 middle-size wind co-operations

in coastal provinces Zeeland, Zuid-Holland, Noord-Holland

date from the nineties of the last century

dozens of smaller wind projects

Vogelwijk Energiek Den Haag

Solar-Energy Initiatives

100 solar-energy initiatives

neighbourhoods, collective purchase actions, solar co-operations

ca. 10 national collective purchase actions, Wij Willen Zon

dozens of solar co-operations

solar panels placed on land, buildings, farmhouses

Local Energy Companies

40 local energy companies

20 have official status as co-operative

Texel, Lochem, Groningen, Culemborg, Houten, Apeldoorn, Amsterdam

20 are still being established

Rotterdam, Haarlem, Deventer, Utrecht, Wageningen, Weert, Bergen

overarching initiatives: Nederland krijgt nieuwe energie
Energietransitie Nederland
E-Decentraal

voor een overzicht, zie *www.hieropgewekt.nl/initiatieven*

Strategy of the Netherlands

Strategy of the Netherlands

sustainable energy supply system is possible in 30 years

natural gas can be used as transition fuel for the next 10-15 years

break down natural gas fast while stimulating green gas

offshore wind, solar energy, sustainable heat, built environment

transition to biobased economy for industry /agriculture/transport

Centralized Energy Supply

accelerate transition to a green economy

- CO2-poor/free

- circular economy

- biobased

Energy sector will disappear

chemistry / agrifood points fully at energy

for *transport sector* energy becomes more important

building sector competes with energy in built environment

Decentralized Energy Supply

1. built environment energy neutral

2. smart grid development

3. bio heat production

Instruments

- sustainable energy target for 2020: 16%
- long term vision still lacks (climate neutral in 2050)
- 150 green deals (diverse, not aimed at CO2-reduction)
- top sectors policy (dominant regime-players)
- ETS (practically failed)

SER-broad energy agreement?

Broad Support at odds with transition

a transition has never been realized from broad support. What is needed is small and deep support

What can we learn from Germany?

- there is no blueprint for the energy transition
- it is a venture into the deep
- searching, learning and experimenting
- political leadership & courage are a conditio sine qua non
- societal pressure on politics is quite helpful
- influential role of effective NGOs cannot be underestimated

Whatever we can learn from the German ‘Energiewende’, Holland will do it differently

Conclusion

- global energy power shift is going on
- local energy initiatives are rooted in societal structure
- Europe does not have a clear energy strategy
- Netherlands is in a fossil-based lock-in
- indirect impact decentralized energy production is huge
- battle between decentralized and centralized energy