



Dutch approach on climate change (and there still is no planet B)

90 Answering tomorrows challenges An enthusiastic start in 2018...



The Paris Agreement in the Netherlands

- driven by the "greenest" government ever
- committed to our 2013 Energy Deal

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 anchored in the 2017 government agreement (Regeerakkoord)

National strategy based on 3 pillars

- 49% CO2 emissions reduction by 2030
- make a Climate Agreement: governments, industry, NGOs & society
- embed in a Climate Law => create a legal obligation to achieve the reduction challenge



90 tomorrows today ...albeit somewhat opportunistically



Climate change getting more palpable: floods & draughts in the lowlands...

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Earthquakes in Groningen further accelerated the need to reduce national dependency on Dutch gas



Mogelijke klimaatveranderingen 1990 - 2100



ECORYS 190 Years The challenge: reinvent the country's entire energy system



N.B. De som van de zwarte blokjes is het totale energieverbruik (finaal verbruik en seld omoetting). In deze figuur zijn verschillende details veneaarloosd. From fossile to sustainable:

- Changing sources
- Changing demand for molecules?
- More conversion

Energy transition is COMPLEX

Starting points:

- Sustainable
- Affordable
- Reliable
- Safe





The other challenge: get public buy-in



Dutch government wanted a broadly supported Climate Agreement like the 2013 Energy Deal

The SER was asked to lead the process

Making the case for change to the public

- accelerate the transition at acceptable economic and social costs
- make NL an attractive pilot country
- get broad societal buy-in with citizen participation
- remain a master of (y)our own (energy)destiny









ECORYS De la compression Structure of the Climate Agreement polder to reversion to average and the reversion of the climate Agreement polder to reversion to average and the reversion of the rev







Broad societal support with > 100 stakeholders & 1,5 year of talks

Independently organized process by Social Economic Council and led by independent chairs

Step-by-step process with milestones and political debate

Five sectoral tables, one overarching table

Bringing together stakeholders who

- can reduce emissions and/ or enhance societal support
- can provide knowledge and expertise
- have a mandate to make deals



Single CO2-target, no sub-targets on renewables or energy efficiency: 49% CO2-reduction in 2030 relative to 1990 and acknowledging there are higher European targets

Lowest-cost solutions: national costs limited to 0,5% of GDP through cost-effective sectoral targets

Fair transition: keeping energy bills for households in check

Minimize "leakage" for businesses: safeguarding a level playing field

Maximize economic opportunities: new export products and innovation







90 Answering Trears today **Five negotiation tables – five plans**

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Zoom: hefty targets for Dutch Industry



The mission

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Reach CO₂ reduction emissions targets 2030 and 2050 while

90 Answering tomorrow's challenges today

- safeguarding competitiveness
- preventing leakage effects
- cost-effectively
- While maintaining jobs
- with the use of a proper mix of instruments

Deliverables

- vision of Dutch industry 2050
- pipeline of projects and plans
- clearly defined instrument
- clearly defined lock
- proposed approach for infrastructure

Target

100 90 80 31,6 70 60 5.1 50 14,3 40 86,7 55,1 35,7 30 20 10 0 Additioneel 1990 1990-2015 2015 Basispad 2030

Reduce CO2 emissions by 19,4 Mton (=59%) vs 1992



The big emitters concentrated in 5 industrial clusters



12 companies: 75% of total industrial CO2 emissions

Shell Refinery (14%)
Tata Steel (13%)
Dow Chemicals (8%)
Yara (8%)
Sabic (6%)
ExxonMobil Refinery (5%)
BP Refinery (4%)
Air Liquide (4%)
OCI (4%)
Total Refinery (3%)
Nouryon (2%)
Air Products (2%)

North NL - *Emissions: 1.2 Mton* AkzoNobel, Dow Chemicals en OCI

Noordzeekanaal Area - *Emissions: 12 Mt* Tata Steel

Rotterdam-Moerdijk - *Emissions: 16.9 Mt* AkzoNobel, Shell, BP, ExxonMobil, Air Liquide, Air Products

Southwest NL - *Emissions: 7.9 Mton* Dow Chemicals, Yara, Total en Sabic.

Chemelot South NL - *Emissions: 4.5 Mtor* Strongly integrated chemical cluster





Slim

Final plans for Dutch Industry



NDUSTRIE

Schoon Nieuw





field

The five pillars of the Industry policy



Balancing carrots and sticks 1. Ensure a European level playing

2. Accelerate innovation via pilots and demo's to drive down costs with the right instruments (SDE++, innovation subsidies)



- 3. Create a CO2 levy not a tax
- 4. CCS acceptable where no costeffective alternative
- 5. National focus on system integration



"By starting now, we give ourselves the time to develop and scale up new technologies (solutions of the future). We make the transition an economic opportunity."

Eric Wiebes, Minister of Economic Affairs and Climate



1. Level Playing Field

- Industry competes globally
- ETS is a European level playing field
- Monitoring on disruption of the LPF as a consequence of government measures and taxation is needed
- Benchmark and baseline
- KPIs (world competitiveness report)
- Neighbouring countries, leaders and laggards, USA/China
- Avoid 'carbon leakage' and 'investment leakage'



Dutch lobby for stronger ETS and CBAM



Integral Knowledge & Innovation agenda

- 13 Mission-driven Multi-year Innovation Programmes (MMIPs)
- 3 MMIPs for Industry define most important direction for travel
- PPP approach across all TRLs
- Key themes: circular economy, CCUS and biomass, elektrification, green hydrogen, heat
- Current subsidies, Climate fund, European subsidies



Also key: valorisation, human capital, social and institutional innovations, system integration





3. Subsidies to make it possible

Many types of subsidies:

- SDE++ (subsidy for renewable energy production broadened for the industry)
 - Main instrument funded from an additional energy tax (ODE)
 - Tender mechanism on the amount of subsidy needed for CO2-reduction
 - Cap on CCS-subsidies (preventing lock-in on CCS)
 - Political agreement on maximum subsidy for industry in 2030 (about the amount the industry is paying on ODE)
- A new mission-oriented scheme
- Tax exemption
- NL invest (financing)





4. Carbon Capture and Storage

- About 7 Mtonnes of CCS needed to reach our goals for 2030 and to get ready for CCUS
- Subsidized only if no reasonable and costeffective alternative available
- No undesirable delays in investments in the long-term transition (prevent lock-in)
- Joint Fact Finding : agreement on safety and integrity fields and pits; also start of comparison blue and green hydrogen









Plus: regional approach and infrastructure

Regional plans for reducing emissions:

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- Integrated industry clusters => integrated regional plans
- Organised 6 regions (5 clusters + the rest)
- Regional plans monitored and discussed on regular basis
- Combination with regional infrastructure plans (CES)

Taskforce on necessary infrastructure:

- Inventory of infrastructure needed to safeguard industry targets (electricity, CCS, hydrogen, etc)
- National planning and prioritizing (including environmental impact assessments)
- Government support in permitting procedures



ECORYS A 90 tansvering tomorrows Government instrument: CO2 levy

Dutch carbon levy in addition to ETS: Purpose is to accelerate the transition and guarantee national CO₂ *reduction*, not *tax collection*

Not all emission levied - only the emissions needed to reach our goal based on ETS benchmarks

Levy base will increase over time – linked to *expected industrial marginal abatement cost (MAC) curve*: the level will be such that it incentivizes industry to take all measures required for the emission reduction goal

In 2020 and 2025 the Netherlands Environmental Assessment Agency will estimate on this number. Current estimate: 30 euro/ton in 2021 and gradually increasing to 125 euro/ton in 2030 (including ETS price).

Possibility to exchange non-levied emissions (not over the years)

Target group are ETS-companies and installations for waste incineration

All income from the levy will flow back into industry transition





How the levy works

Levy:

• Emissions free of charge (dispensation rights) are calculated:

benchmark x reductionfactor x volume of production (VR = BM*RF*PV)

- Use of all ETS benchmarks
- Dutch Emission Authority (NEa) involved so ETS-companies are familiar with reporting

Production and emission year t	Reporting	Registry	Possible
	(activities &	dispensati	transfer of
	emissions)	on rights	dispensation
January year t	April year t	May year t	September year t

Policy (including non-ETS) launched in January 2021





- Climate Agreement signed in 2019
- Innovation agenda in place (IKIA)
- Carbon levy law accepted by Parliament
- Taskforce Infra report accepted by Parliament implementing procedures
- First round of SDE++ with some industry-options; more options to be added in coming years
- All kinds of reactions and non-papers on the EU Green Deal proposals
- Advisory Board on 55% target and Dutch consequences



Execution and monitoring

Deployment

- EU cooperation and lobby
- focus on innovation IKIA as targets, topsectors as means and organizational skills
- legislation (government) taxation, obligations, subsidies
- Regional and infrastructure planning

Annual evaluation

 monitor, evaluate, readjust agreements

Every 5 years (2025, 2030)

- · review targets
- redistribute remaining target over sectors
- additional measures if required





What have we learnt?





What went well:

-

- Clear targets and deadline
- Transparent process
- Focus on facts and figures
- Strong government leadership

What did not:

- Failure to understand the dogma of the green alliance
- Media's desire for drama
- The public's dislike for Industry lack of communication
- Politics (elections)



What could work/not work in Belgium



Parallels with the Netherlands (what could work in Belgium)

- Focus on and lead from industrial clusters
- Strong leadership from strong individual leaders
- Relevant instruments : PPP, SDE subsidy, DEI subsidy but also the CO2 levy
- Focus on innovation
- Cooperation between energy suppliers and industry

Differences with the Netherlands (what needs another approach)

- More divided government in B they won't take the lead
- More int'l corporations => more shareholder management needed

Advice

- Field labs with VITO
- Cooperation (Arrra cluster and others)







- Create a burning platform for change
- Set a compelling vision (a little less bad ain't good enough)
- Organise a process that works for you
- Acknowledge that this is a huge, complex, and not entirely predictable transition issue but then get on with it
- Demand and provide moral leadership ask iconic leaders to personally commit
- Look at what's possible first, what is needed second, and only what stands in your way last – and then ruthlessly move on
- Tell the story and engage with all stakeholders







Annexes







Technologies needed to reach our goals

Inventory of technological options				
Technology	Estimated reduction in 2030 (Mton)			
Process efficiency, energy saving	6			
Electrification and green hydrogen	4			
Recycling, CCU and biobased	1			
N ₂ O	1			
CCS	7			
F Gases	1			
Total -including current policies	20			



Key instrument: Multi-annual Mission-driven Innovation Programs (MMIPs)



Watch this video

Innovation themes

Circular economy: CCU, recycling, re-use, biobased

Electrification: P2H, electric boilers, electric furnaces, heat pumps

Green hydrogen

CCS/CCU

Process efficiency and non-carbon heating: separation techniques, membranes, bioheat, UDG

System integration and new economic models

Missies	А	В	С	D	E	
	Een voleldig CO2- vrij elektriciteits- systeem in 2050	Een CO2-vrije gebouwde omgeving in 2050	In 2050 zijn grondstoffen, producten en processen in de industrie netto klimaatneutraal en voor tenminste 80% circulair	Emissieloze mobiliteit voor mensen en goederen in 2050	In 2050 is het systeem van landbouw en natuur netto klimaatneutraal	
MMIP	1	3	6	9	11	
	Hernieuwbare elektriciteit op zee	Versnelling energie- renovaties in de gebouwde omgeving	Sluiting van de industriele kringlopen	Innovatieve aandrijving en gebruik van duurzame energiedragers voor mobiliteit	Klimaatneutrale productie food en non-food	
	2	4	7	10	12	
	Hernieuwbare elektriciteits- opwekking op land en in de gebouwde omgeving	Duurzame warmte (en koude) in de gebouwde omgeving (inlcusief glastuinbouw)	CO2-vrij industrieel wamrtesysteem	Doelmatige vervoersbeweginge n voor mensen en goederen	Land en water optimaal ingericht op CO2 vastlegging en gebruik	
		5	8			
		Het nieuwe energiesysteem in de gebouwde omgeving in evenwicht	Elektrificatie en radicaal vernieuwde processen			
			13			
		Een robuust en maatschappelijk gedragen energiesysteem				