



Energy research Centre of the Netherlands

## Drawing up NEEAPs for the EU: the Dutch experience

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EIPA seminar The European Energy Policy  
Maastricht, 16 May 2008

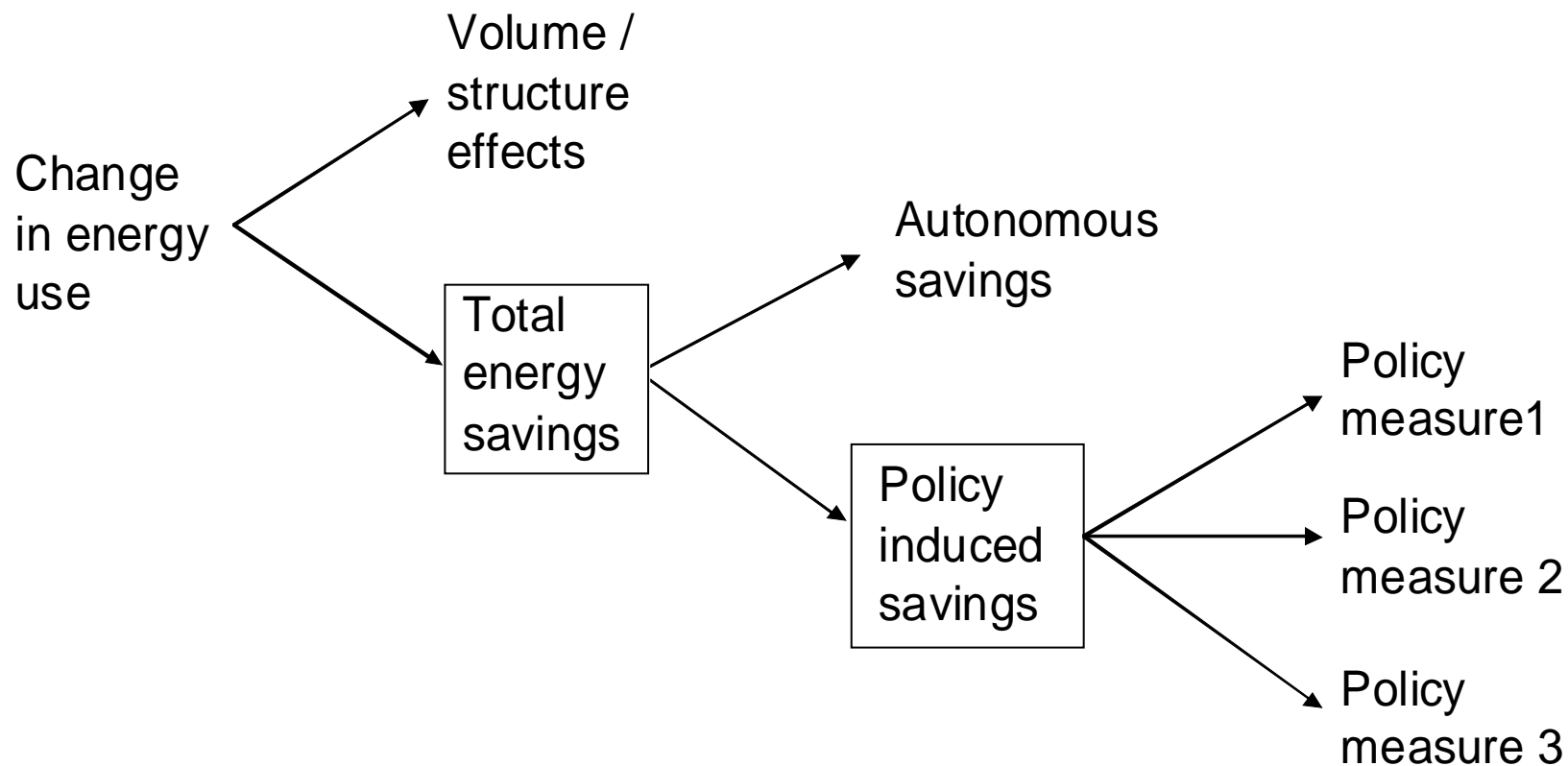


# Content

- Energy savings
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- Energy Service directive
- NEEAP (ECN / SN)
- Dutch policy analysis
- Calculation of target
- Policy measures and savings
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# Definition of energy savings

- Doing the same activities with less energy use
- Including:
  - diminish final use (e.g. insulation)
  - more efficient conversion (e.g. boiler)
  - good housekeeping
  - integrating systems (waste heat utilization, etc.)
- Excluding:
  - shift from fossil fuels to renewables
  - shift between energy carriers?
  - sectoral shifts to less e-intensive sectors
  - dematerialisation?



# EU policy on energy

## EU Policy goals:

- Security of supply / reliable
- Competitively priced/ affordable
- Emission reduction / sustainable

## EU Policy targets 2020:

- GHG emission reduction: 20% (30%)
- Renewable energy 20%
- Energy savings: 20% (?)

# EU policy on energy savings

## Green Paper on Energy Efficiency (2005):

- 20% energy savings in 2020
- Total energy consumption
- Base year is 2005
- Savings additional to baseline (GDP-growth, prices, existing policy)

## Energy Service directive (ESD, 2006):

- 9% energy savings for period 2008-2016
- End-use (excluding energy supply sectors)
- Excluding energy use under Emission Trading System
- Including effect of “early actions” from 1995 on
- Fixed amount of savings (9% of energy use 2001-2005)

# Energy Service directive (1)

## Tasks for EU:

- Drawing up monitoring methods
- Template for NEEAPs

## Tasks for EU countries:

- Drawing up a NEEAP
- Monitoring of savings achieved
- Various government actions

## Schedule:

- First NEEAP in 2007
- Monitoring/adapted NEEAPs in 2011, 2014 and 2017

## Energy Service directive (2)

### Monitoring of realised savings:

- Combination of top-down and bottom-up methods
- Bottom-up methods cover 20-30% of ESD energy use
- Harmonised methods:
  - 15 TD methods based on energy indicators
  - 20 BU methods based on measures
- EU countries choose own package of methods
- First evaluation on period 2008-2010



# National Energy Efficiency Action Plan

## Content:

- Calculation of indicative savings target (in GWh)
- Specific aspects of national calculation
- Description of measures:
  - Specific per sector (e.g. new dwellings, cars)
  - Horizontal (taxes) and cross sectoral (e.g. info centers)
  - Government actions (e.g. procurement)
- Calculation of saving effects of measures
- Specification of the national target (>9%)

# Calculation of savings target

## Determination of ESD energy use:

- Final energy consumption 2001-2005
- Excluding ETS energy use (industry)
- Primary factor for electricity
- Average for 2001-2005

## Determination of targets:

- 2010: 2% of ESD-energy use (42 PJ)
- 2016: 9% of ESD-energy use (184 PJ)

# ESD target for 2010 and 2016

SECTOR	Average energy consumption				Minimum targets	
	CBS	Fraction	ESD-FIEC	Primary	2010	2016
Agriculture	172,0	95%	163,5	183,9	5,5	16,6
Households	436,3	100%	436,3	561,6	16,8	50,5
Services	319,2	98%	312,6	464,8	13,9	41,8
Transport	476,9	100%	476,9	485,5	14,6	43,7
Industry (excl.ETS)	646,4	39%	251,4	408,5	12,3	36,8
<b>Total ESD</b>	<b>2050,8</b>	<b>80%</b>	<b>1640,7</b>	<b>2104,3</b>	<b>63,1</b>	<b>189,4</b>
<b>Minimum target</b>					<b>3,0%</b>	<b>9,0%</b>

# General approach savings calculation

Dutch NEEAP-2007 based on:

- Existing policy analysis practices
- Available studies on energy savings, including new program “Clean & Efficient”
- Taking account of uncertainty
- Current understanding of ESD approach
- Preliminary results (June) and final results (September)

# Dutch policy analysis

## Ex-ante evaluation (scenarios):

- Reference Outlook 2005-2020
- Policy variants with extra policy
- Estimated effects of Clean and Efficient programme  
(based on energy model calculations)

## Ex-post evaluation (methods):

- Protocol Monitoring Energy savings
- Ad-hoc evaluation of policy measures
- New M&E-system on calculating savings for both national and EU purposes

# Set up final NEEAP calculation

## Existing policy savings:

- Reference Outlook 2005
- Difference between scenario with and without policy

## New policy savings:

- Clean & Efficient measures (on top of base case scenario)
- High estimate for EU policy effect
- Margin for national policy effect

## Total ESD savings:

- Sum of effects of existing and new policy
- for all ESD sectors
- for 2010 and 2016

# Saving effect existing policy

## Reference Outlook 2005-2020:

- GE scenario vs no-policy variant
- effects in Mton CO<sub>2</sub>-emissions for 2010 and 2020
- CO<sub>2</sub> to primary savings with CO<sub>2</sub>-factors gas/electricity
- Savings including renewable-behind-meter
- interpolation for 2016
- agriculture: 75% of policy effect into ESD
- industry: 28% of effect LTA/EIA into ESD

## Results:

- About 0,3% savings per year
- 20 PJ in 2010 and 62 PJ in 2016

# Saving effect new policy

Schoon & Zuinig 2008-2020:

- policy effects in primary energy for 2011 and 2020
- including renewables-behind-meter (specified)
- margins: low NL and high NL with high EU
- effects for GO to be split into household and services
- interpolation for 2010 and 2016
- agriculture: 75% of policy effect in to ESD
- industry: only effect effect intensification LTA/WMB

Results:

- 25-31 PJ in 2010 and 215-239 PJ in 2016
- average 27 and 185 PJ



## ESD savings in 2010 and 2016 versus target

SECTOR	ESD-FIEC	Savings 2008-2010 (PJ)			Savings 2008-2016 (PJ)		
		Low	High	Target	Low	High	Target
Households	562	20	20	11	119	123	51
Services	465	5	5	9	52	56	42
Transport	485	15	19	10	90	97	44
Agriculture (ex.ETS)	163	4	4	3	12	19	15
Industry (excl.ETS)	373	1	3	7	2	6	34
ESD-sectors	2048	45	52	41	277	302	184
Minimum target (%)				2,0%			9,0%

# ESD savings versus targets per sector

<b>SECTOR</b>	<b>ESD-savings vs target</b>	
	<b>2010</b>	<b>2016</b>
<b>Households</b>	1,8	2,4
<b>Services</b>	0,6	1,3
<b>Transport</b>	1,8	2,1
<b>Agriculture (ex.ETS)</b>	1,2	1,1
<b>Industry (excl.ETS)</b>	0,3	0,1
<b>ESD-sectors</b>	1,2	1,6

# Problems encountered

## Analytical:

- ESD definitions not clear
- diverging reporting years (2010 and 2016)
- how to deal with uncertainty in results
- Dutch NEEAP differs from ex-post evaluation format ESD (with harmonised TD and BU methods)

## Process:

- Lack of EU capacity for communication on ESD
- NEEAP submission before national savings plan
- status of ESD unclear

# Observations

- NEEAP succesfully drawn up, thanks to already existing policy analysis
- ESD target of 9% met, thanks to recent new savings program
- Time frame NEEAP met, thanks to “translation trick”
- ESD results hardly comparable with national figures due to differences in format
- “Simple” ESD approach not fitted to elaborated Dutch policy analysis
- Difference between 2007 ex-ante (scenario) approach and 2011 ex-post approach (TD/BU methods).