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Multiple benefits in the Dutch Energy Outlook

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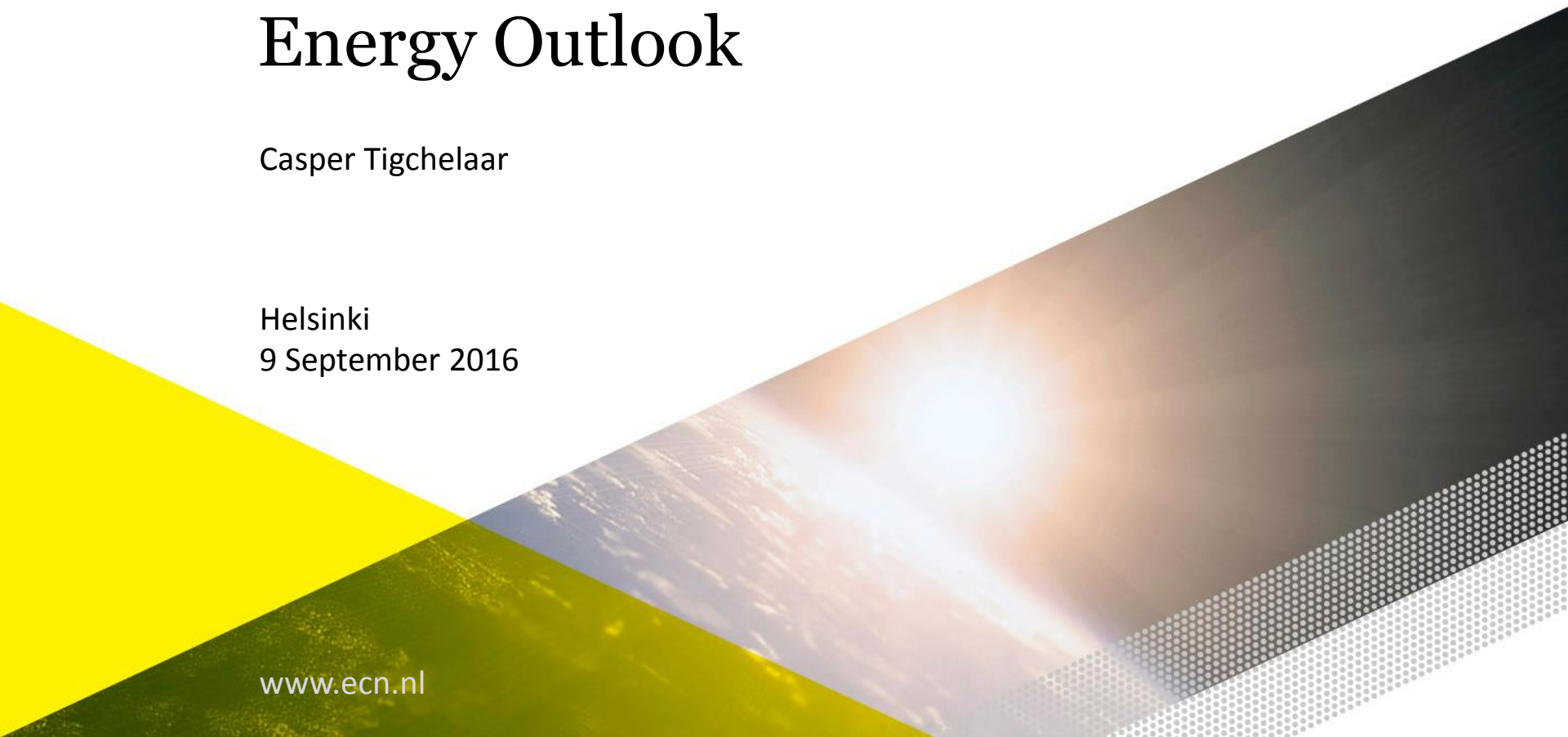
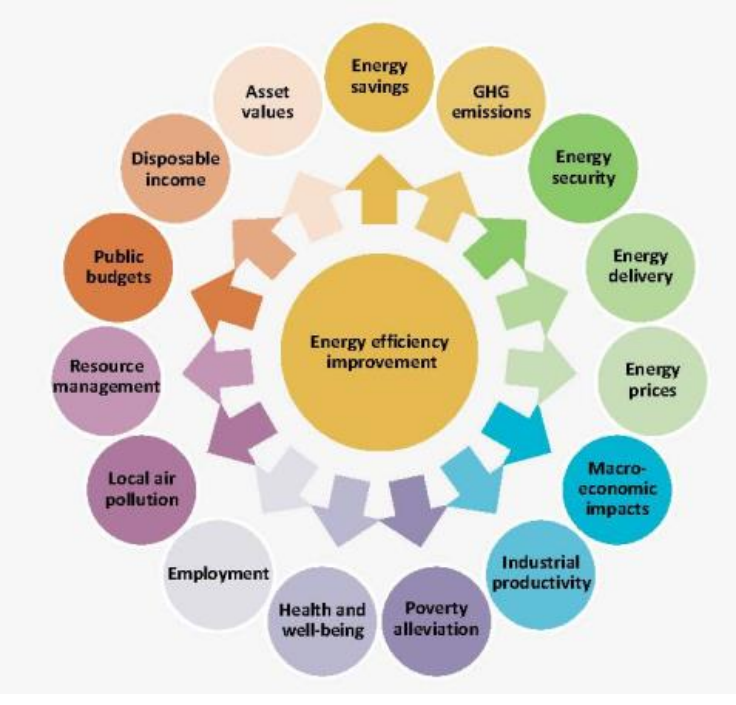
Helsinki
9 September 2016



Multiple Benefits (IEA)



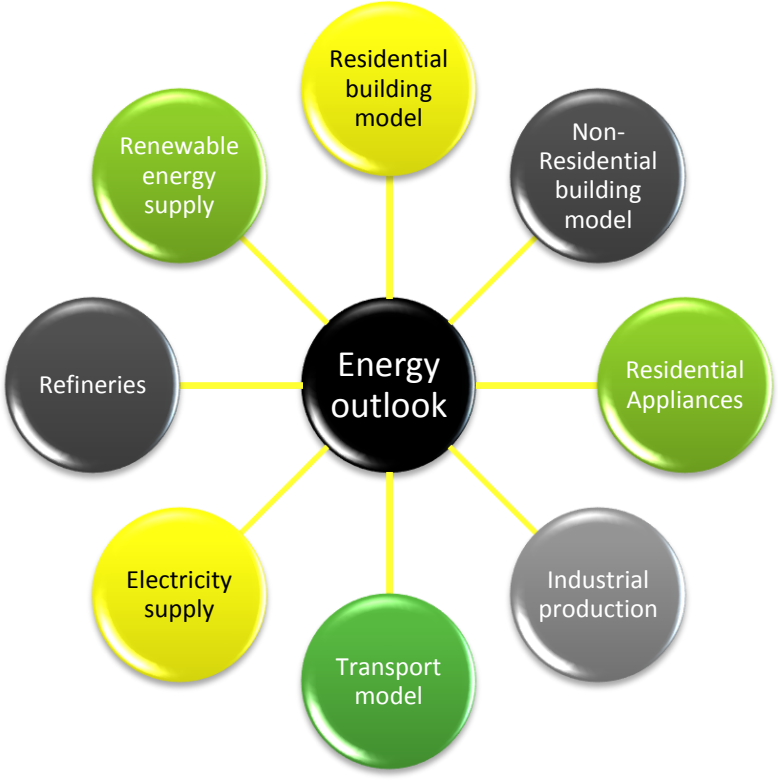
1. Energy Savings
2. GHG emissions
3. Energy delivery
4. Energy security
5. Energy prices
6. Poverty alleviation
7. Disposable income
8. Macro economic impacts
9. Industrial productivity
10. Employment
11. Local air pollution
12. Health and well-being
13. Resource management
14. Public budgets
15. Asset values

Dutch Energy outlook

- Outlook annually presented in October
- Collaboration ECN, PBL, CBS and RVO
- Content
  - Energy Supply
    - Renewable
    - Conventional
  - Energy demand
    - Built environment, transport, industry, agriculture
  - Emissions
    - GHG
    - Other emissions
  - Macro-economics
    - Investments
    - Employment
    - Innovation

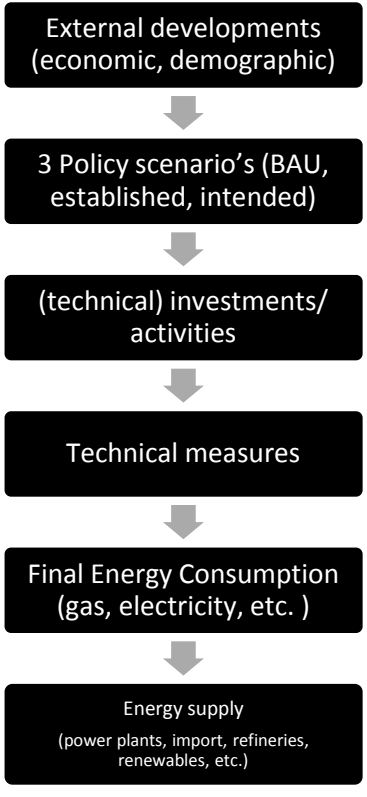
- Aim:
- Up-to-date insight in energy topics
- Policy evaluation
  - Energy efficiency targets
  - Emission targets
  - Renewable energy targets
- Years 2000-2030

NEV modelling system

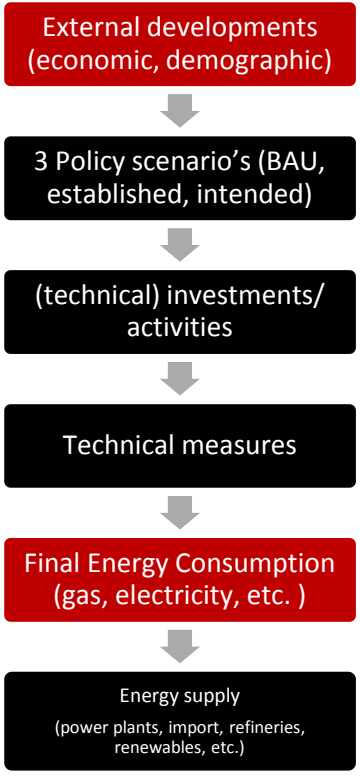


- Specified models based on technical measures
- Primary output:
  - Energy consumption
- Secondary output:
  - Primary energy consumption
  - Energy efficiency indicators
  - Emissions
  - Investment costs
  - Employment
  - ……
  - …..

General (simplified) modelling approach



1. Energy Savings



- Example: Policy driven energy savings

Annual savings (PJ)	2016		2020	
	Established policies	Intended policies	Established policies	Intended policies
Industry	1	1	6	9
Agriculture	2	2	10	10
Built environmen	2	4	7	22
Transport	2	3	12	14
Total	7 [4-8]	10 [5-13]	36 [23-52]	55 [33-76]
Target	35		100	

2. Green house gas Emissions

External developments (economic, demographic)

↓

3 Policy scenario's (BAU, established, intended)

↓

(technical) investments/ activities

↓

Technical measures

↓

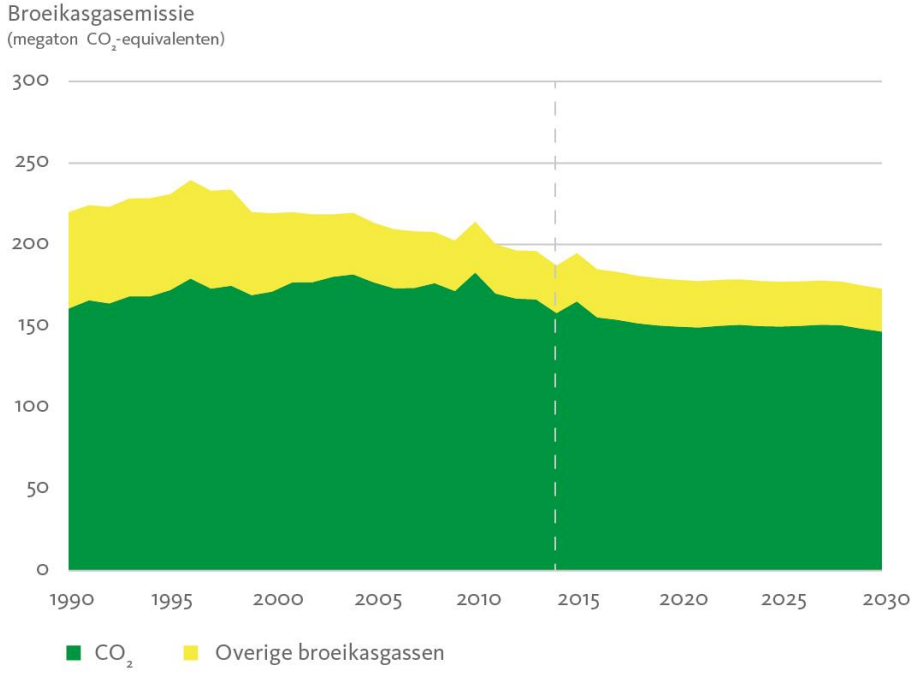
Final Energy Consumption (gas, electricity, etc.)

↓

Energy supply

(power plants, import, refineries, renewables, etc.)

- Example: projection GHG-emissions



3. Energy delivery, 4. energy security

External developments (economic, demographic)

3 Policy scenario's (BAU, established, intended)

(technical) investments/ activities

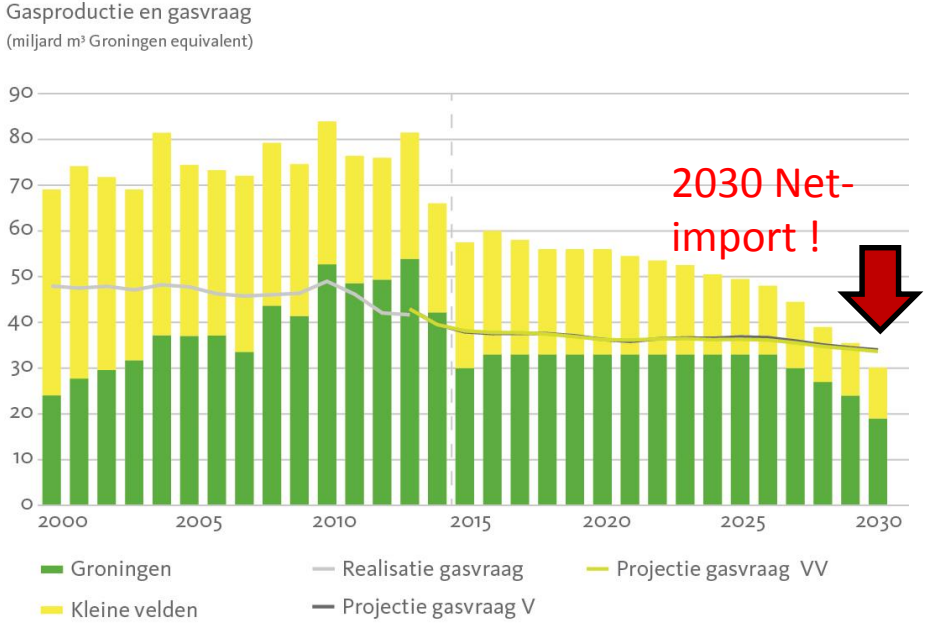
Technical measures

Final Energy Consumption (gas, electricity, etc.)

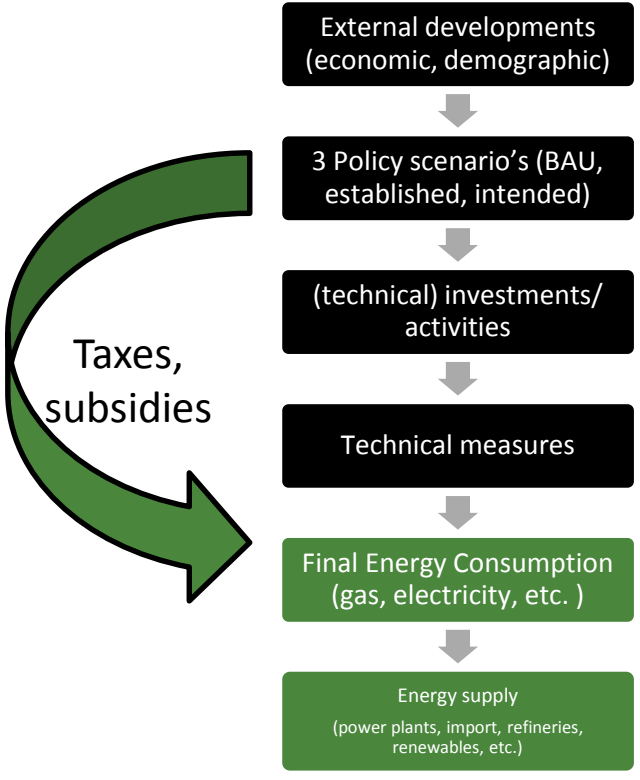
Energy supply

(power plants, import, refineries, renewables, etc.)

- Example: Dutch natural gas supply versus national demand:



5. Energy prices and 6. Poverty alleviation 7. disposable income



- Example: Energy bill

[euro 2015]	2010	2015	2020
Electricity			
- Variable	262	178	179
- Distribution	211	234	234
- Taxes, etc.	150	137	160
Gas			
- Variable	519	446	495
- Distribution	164	170	170
- Taxes, etc.	473	474	553
Total	1780	1638	1790

8. Macro economic impacts, 9. Industrial productivity and 10. Employment

External developments (economic, demographic)

3 Policy scenario's (BAU, established, intended)

(technical) investments/ activities

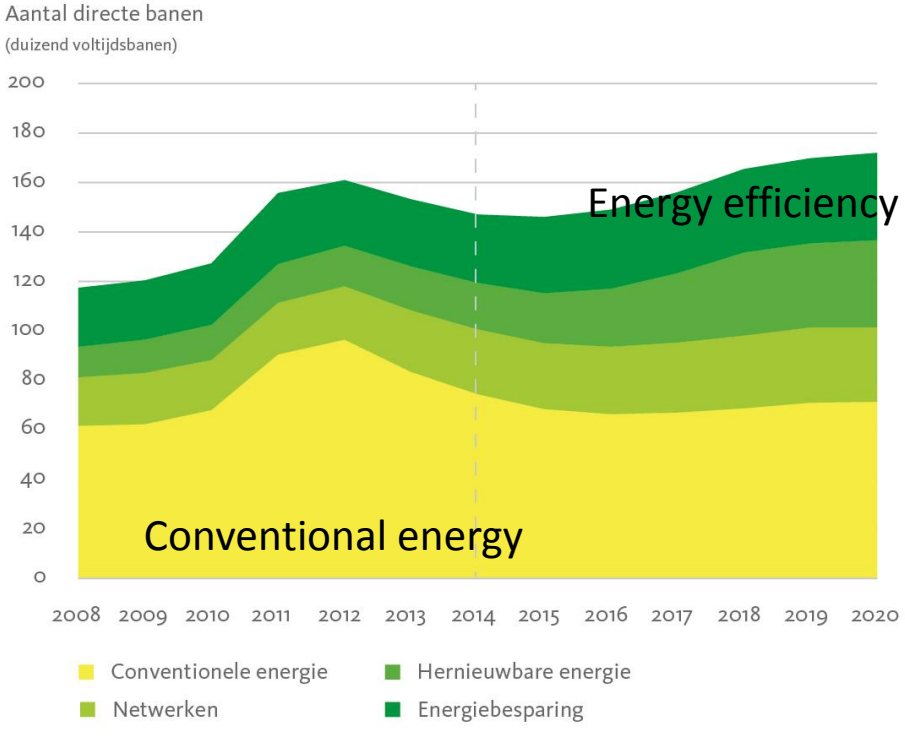
Technical measures

Final Energy Consumption (gas, electricity, etc.)

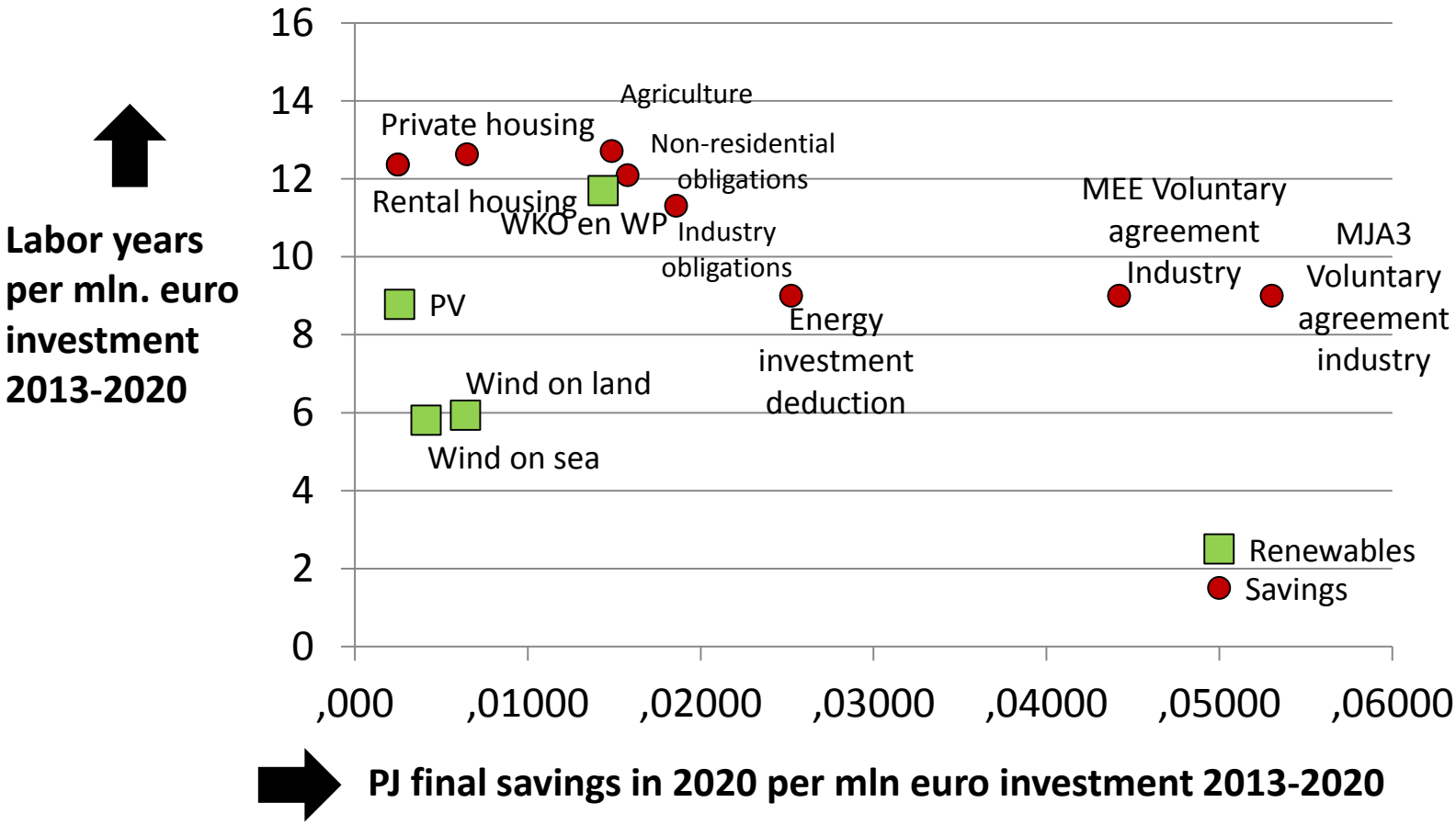
Energy supply

(power plants, import, refineries, renewables, etc.)

- Example: Employment



Generating labour versus energy goals



11. Local air pollution and 12. Health and well-being

External developments (economic, demographic)

3 Policy scenario's (BAU, established, intended)

(technical) investments/ activities

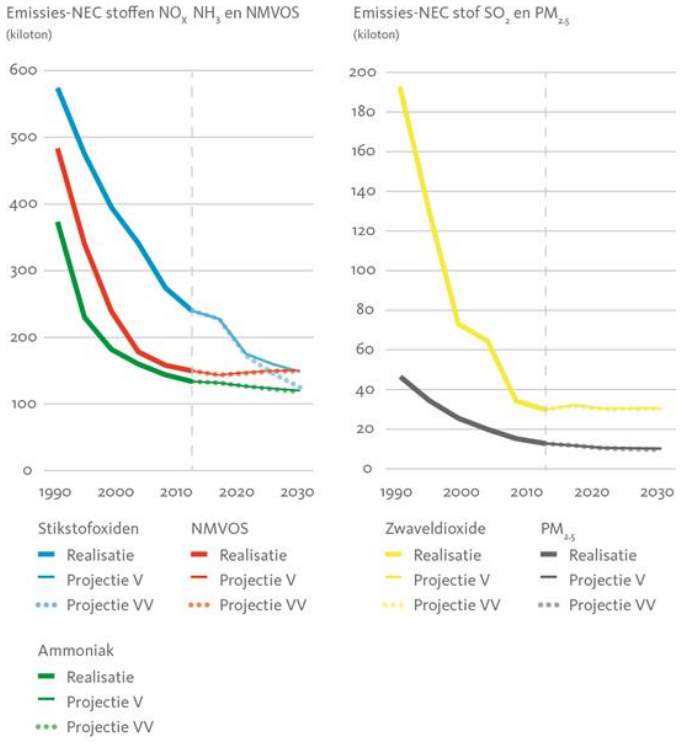
Technical measures

Final Energy Consumption (gas, electricity, etc.)

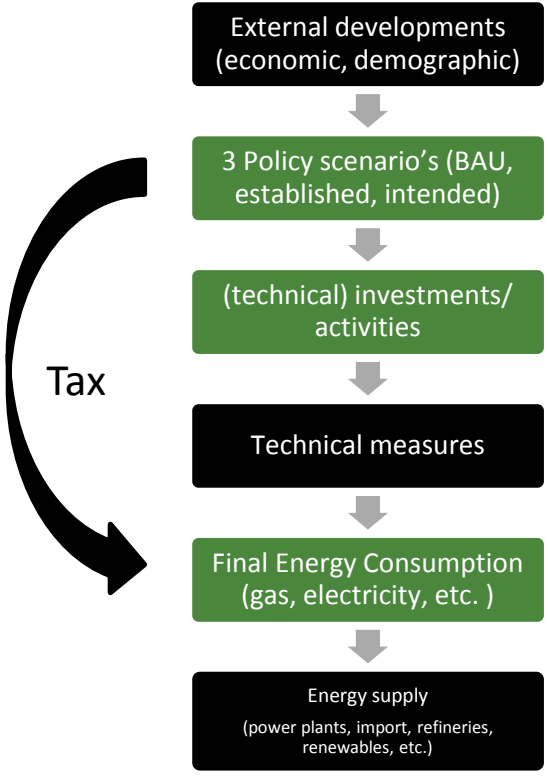
Energy supply

(power plants, import, refineries, renewables, etc.)

- Example: Local air pollution



13. Public budgets



Lessons to be learned

- It is not that easy to do it perfectly right.
- Information needed on policies, techniques, costs etcetera.
- Dedicated modelling tools and experts to calculate multiple benefits
  - Employment and macro-economics*
  - Local emissions
  - Energy efficiency
- But once you have done the work, default values can be derived, which are easier to use in indicators.
- Example:
  - Employment based on investment
  - Employment based on energy savings
  - Local air pollution based on finale energy consumption

)* More info to be found here:
https://www.ecn.nl/publications/BS/0/ECN-E--16-028

Nationale Energieverkenning 2015

www.ecn.nl/energieverkenning

ECN

Planbureau voor de Leefomgeving