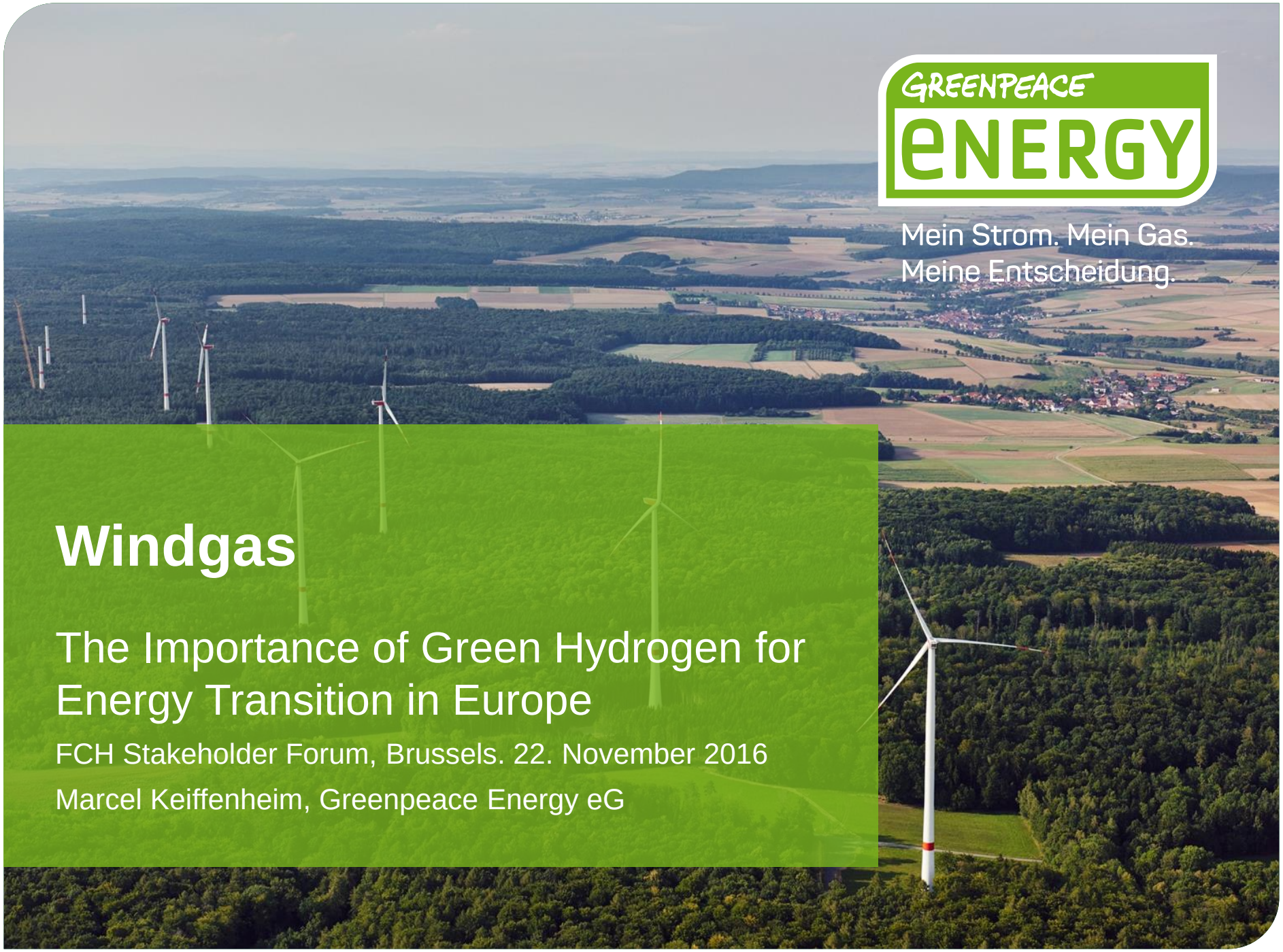


Windgas

The Importance of Green Hydrogen for Energy Transition in Europe

FCH Stakeholder Forum, Brussels. 22. November 2016

Marcel Keiffenheim, Greenpeace Energy eG

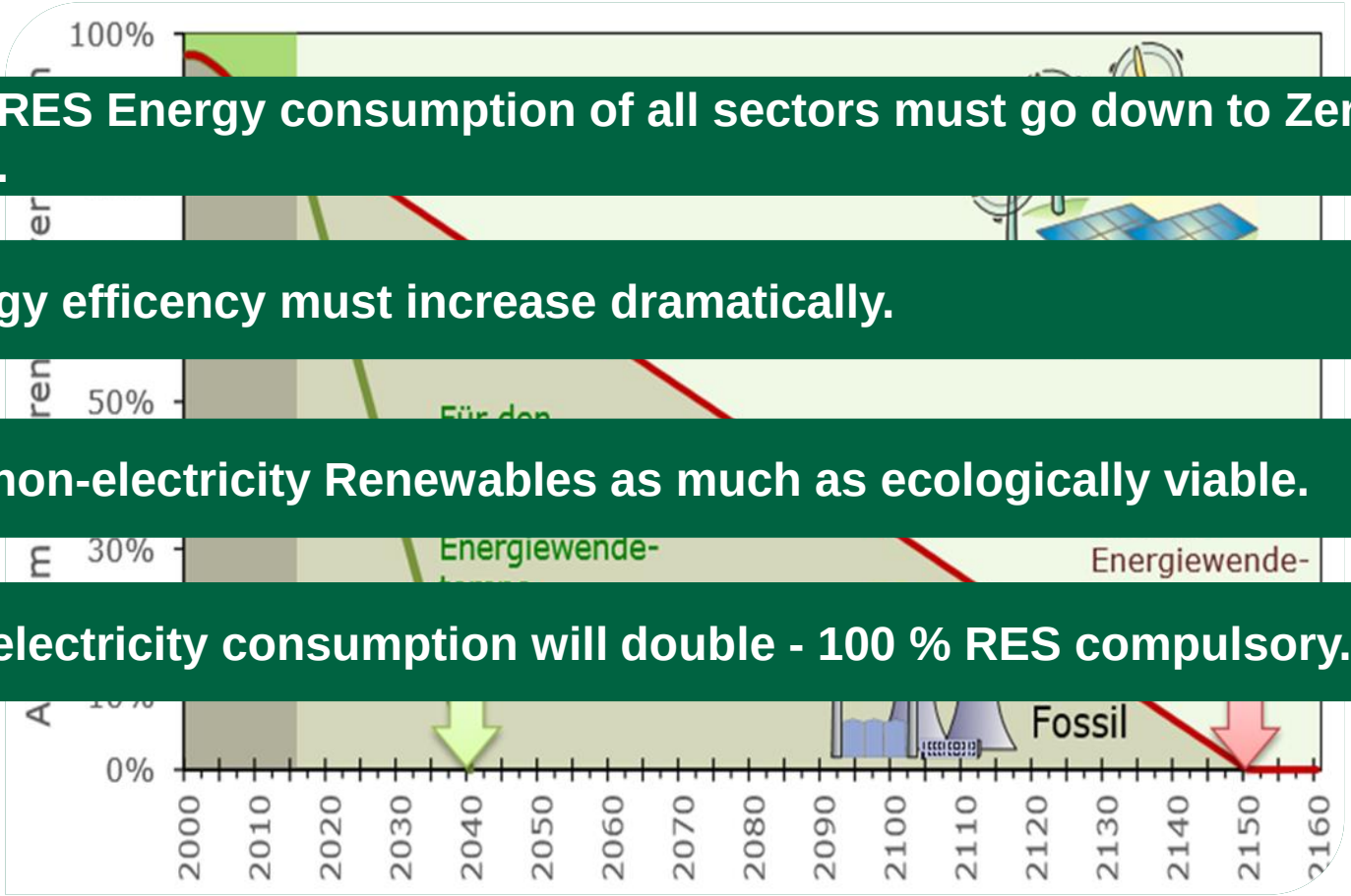
Windgas Haßfurt

Why Windgas?

- Because energy transition needs it.
- What Greenpeace Energy does:
  - Scientific research.
  - Lobbying.
  - Raise public awareness.
  - *pro*Windgas as „market maker“:
    - Product that mixes natural gas witha (small) share of Windgas;
    - Customers pay 0,4 ct/kWh premium.
  - Installation/Operation of electrolysers.
  - Purchase of Windgas from electrolysers in possession of others.

Windgas-Perspektiven

Consequence of Paris Climate Treaty



Non-RES Energy consumption of all sectors must go down to Zero asap.

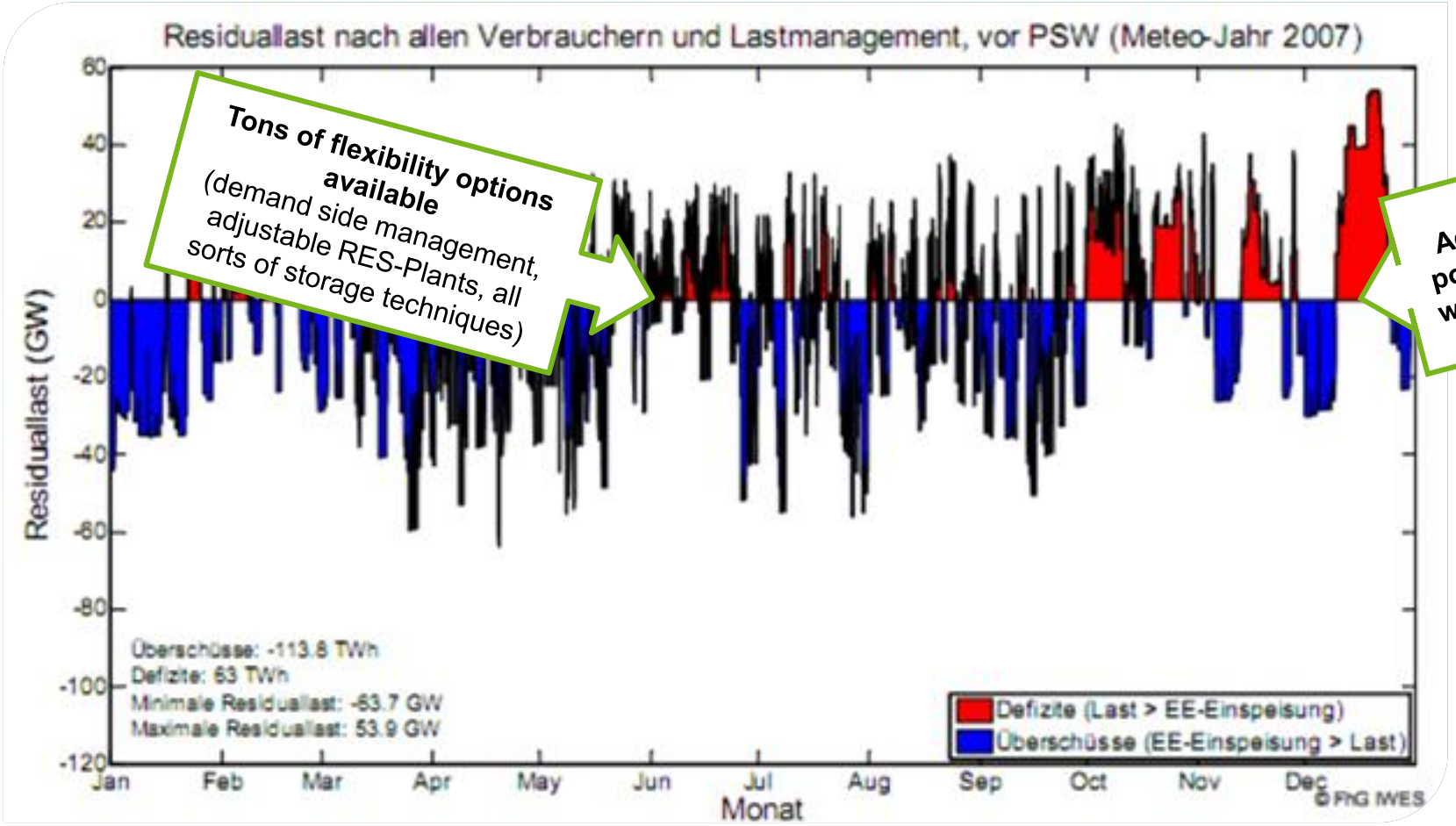
Energy efficency must increase dramatically.

Use non-electricity Renewables as much as ecologically viable.

Still electricity consumption will double - 100 % RES compulsory.

Windgas

Security of Supply with 100 % RES



Tons of flexibility options available
(demand side management, adjustable RES-Plants, all sorts of storage techniques)

Adjustment possible only with Windgas

Windgas-Perspektiven

Windgas concept as „Residual Power Plant“

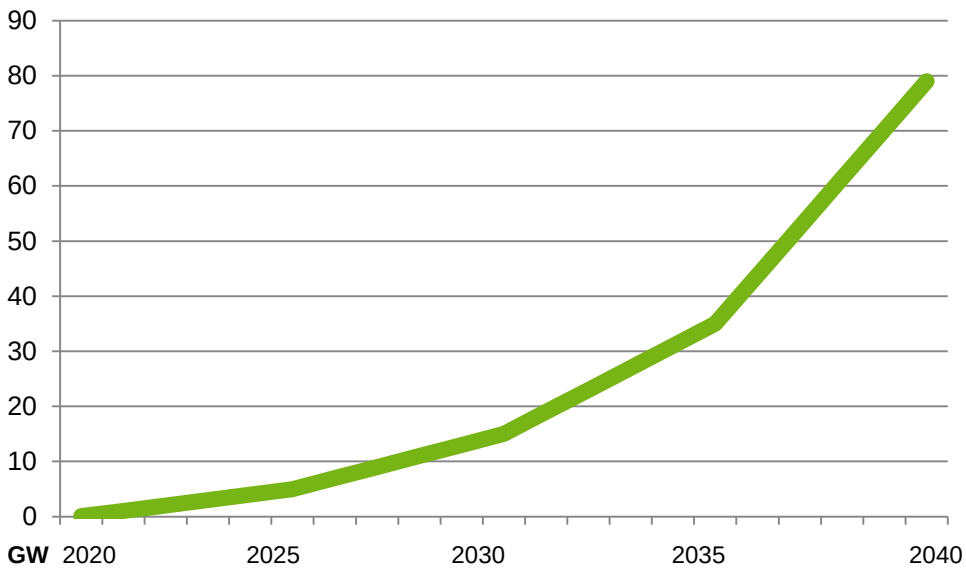
- 76 GW Gas power plants – using renewable Gas (Windgas etc)
  Assumption: 1.500 full load hours/y, 60 % efficiency
- 80 GW Electrolysers
  Assumption: 3.000 full load hours/y, 80 % H_2-efficiency (+ 75 % CH_4-efficiency)
- Speed of installation of Electroysers in Germany

2020-2025: 1 GW/a

2025-2030: 2 GW/a

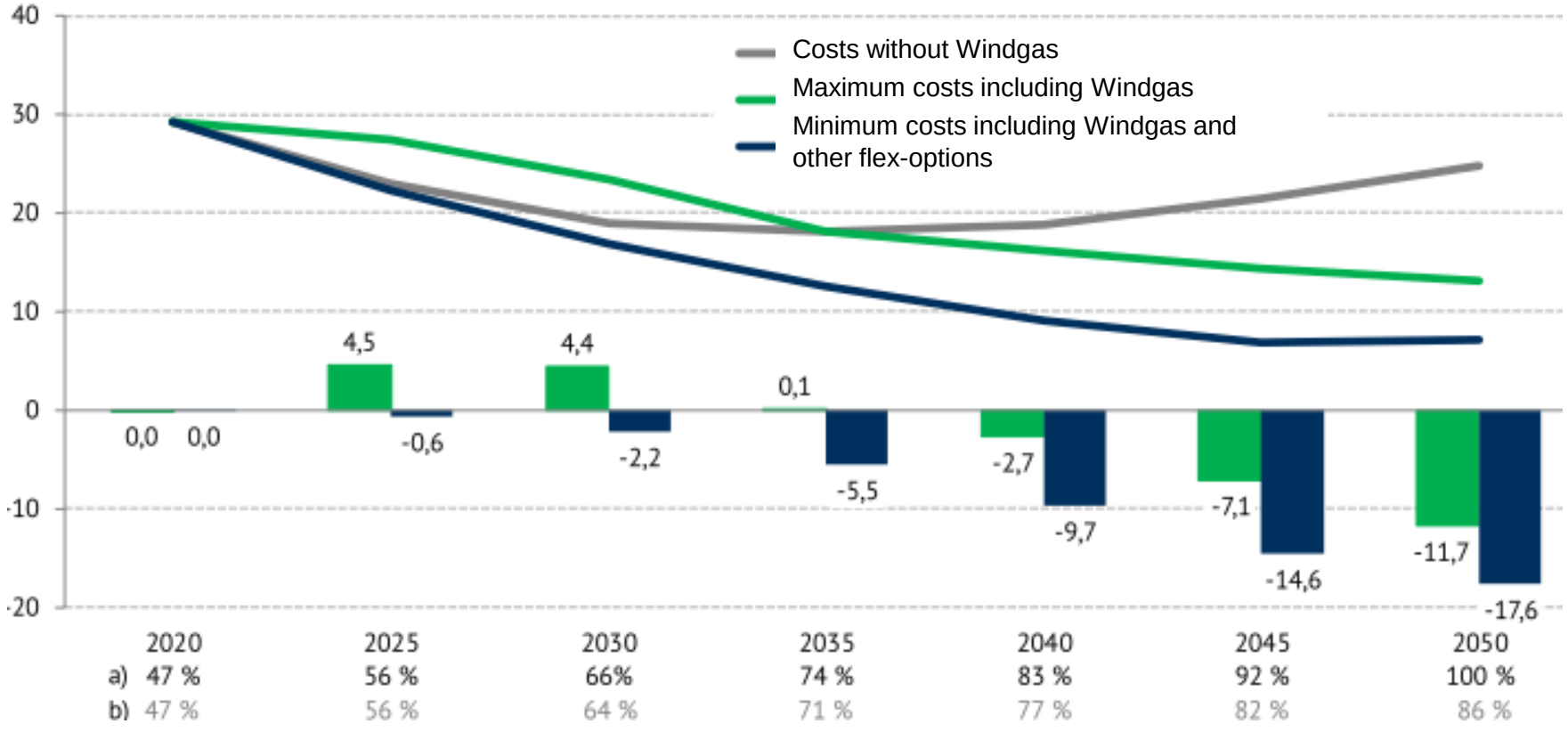
2030-2035: 4 GW/a

2035-2040: 8 GW/a



Windgas

Cost of Energy Transition with / without Windgas



Year and RES percentage achieved a) with Windgas b) without Windgas

Thanks.

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