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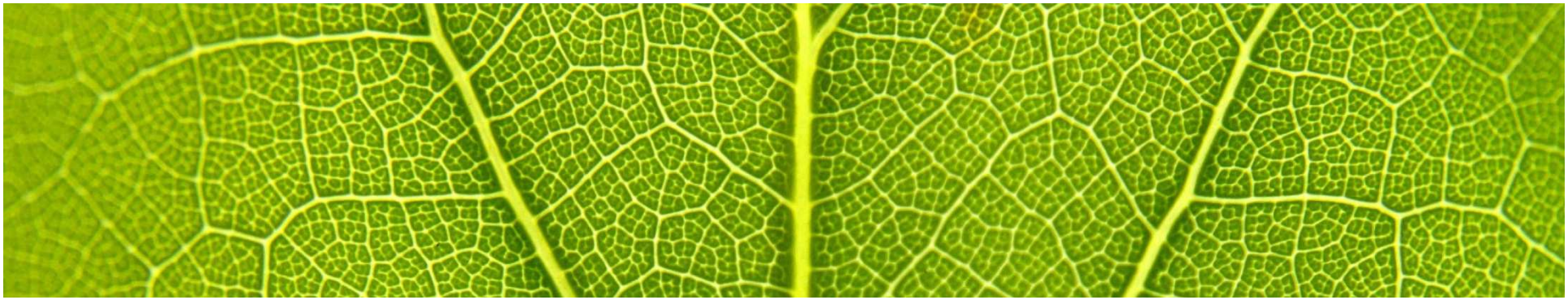

COOPERATION MECHANISMS UNDER THE RES-DIRECTIVE: Final workshop: Experience gained and perspectives until and beyond 2020

Case study: Joint Projects between the Netherlands and Portugal

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05/11/2014

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- Main design characteristics:
  - SDE+ opened for projects from PT
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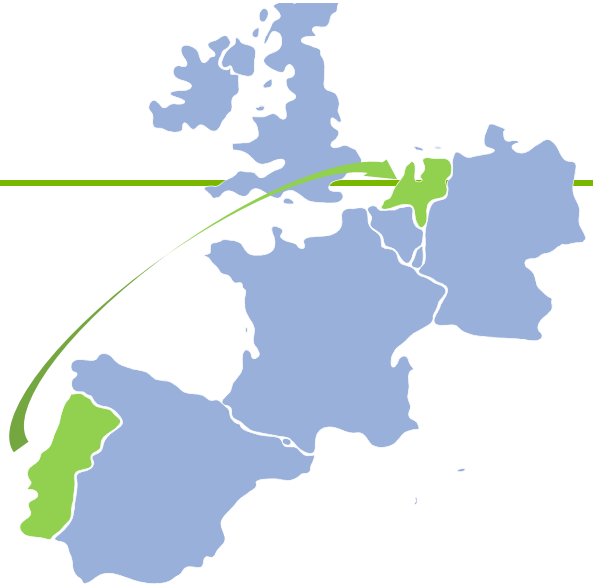
Main interest in cooperation: Cost reduction and local industry development

- NL RES target: 14% and lack of cheap RES options
- Despite ambitious Energy Agreement (16% RES in 2023):
  - NL might consider Cooperation Mechanisms to increase efficiency of its target achievement
  - NL is currently lagging behind planned RES deployment: Cooperation might serve to hedge risks of non-fulfillment

- PT RES target: 31%
- PT has excellent RES sites and might offer part of its RES potentials for target achievement in NL to foster local industry development

Main design characteristics and specific issues

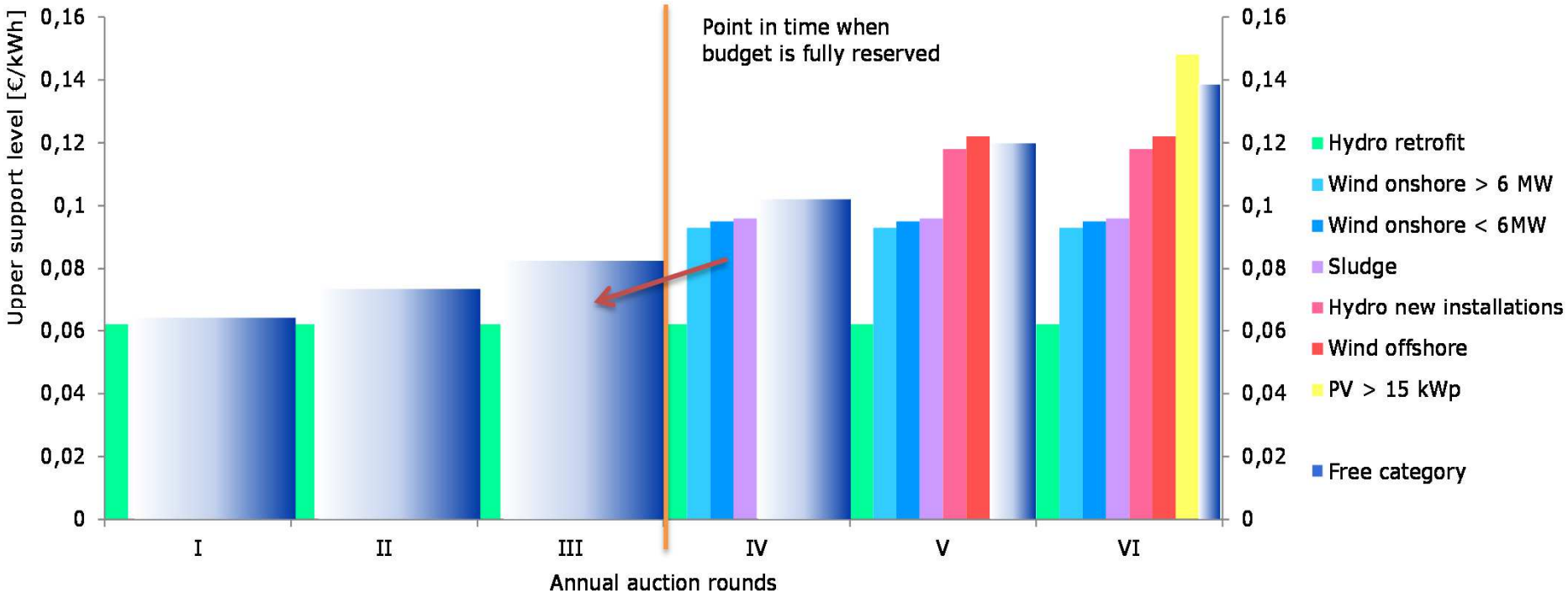
SDE+ supports projects in PT



- Multiple project framework
- Access to Dutch support scheme: NL directly finances RES projects in PT
- Projects from PT bid into existing Dutch scheme and compete with projects from NL
- SDE+ scheme aims to incentivise the deployment of RES at the lowest possible cost: technology-neutral budget / auction with technology-specific maximum support levels

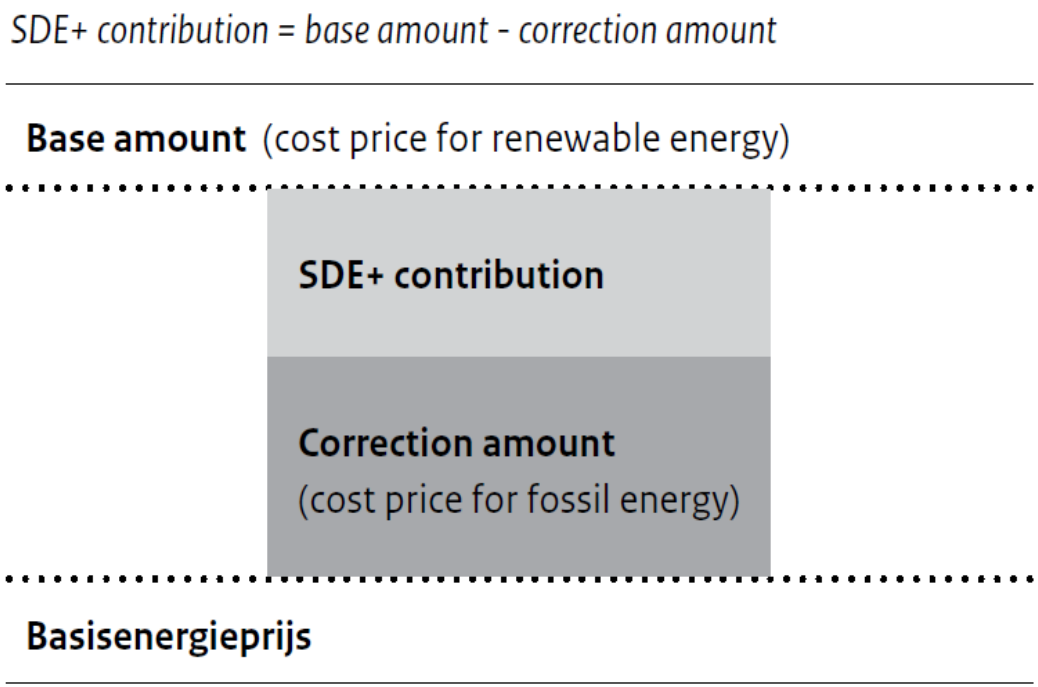
Backup: SDE+

- Technology-specific maximum support levels per round
- "Free category" in each round: open for all technologies that are able to produce at lower costs than the (maximum) support level
- Opportunity to access the SDE+ sooner (as thus increase chance to receive support)



Backup: SDE+

- Sliding premium: calculated as the difference of the nominal "base amount" (strike price that is announced in the respective round) and the average annual electricity value, the so called "correction amount"
- Use PT market price for premium calculation?
- Replicate SDE+ calculation method?



Backup: Are projects in PT competitive?

- Indicative tariff for wind onshore in PT: 7.5 €ct./kWh (15 years) (currently suspended)
- Wind onshore auction result from 2005: 5.7 €ct/kWh

	Phase 1 From 1 Apr 9.00	Phase 2 From 12 May 17.00	Phase 3 From 16 June 17.00	Phase 4 From 1 Sept 17.00	Phase 5 From 29 Sept 17.00	Phase 6 From 3 Nov 17.00	Base energy prise	Provisional correction amount for 2014	Max. subsidy period (years)
Wind	Base amount per phase (€ / GJ)						(€ / kWh)		
Onshore wind energy< 6 MW *(max. full load hours)*	0.0875 (2800)	0.1000 (2280)	0.1125 (1960)	0.1125 (1960)	0.1125 (1960)	0.1125 (1960)	0.045	0.058	15
Onshore wind energy≥ 6 MW *(max. full load hours)*	0.0875 (2960)	0.1000 (2960)	0.1125 (2520)	0.1213 (2320)	0.1213 (2320)	0.1213 (2320)	0.045	0.058	15
Wind energy in a lake *(max. full load hours)*	0.0875 (2560)	0.1000 (2560)	0.1125 (2560)	0.1375 (2560)	0.1538 (2560)	0.1538 (2560)	0.045	0.058	15
Offshore wind energy *(max. full load hours)*	0.0875 (3000)	0.1000 (3000)	0.1125 (3000)	0.1375 (3000)	0.1625 (3000)	0.1875 (3000)	0.045877	0.059443	15

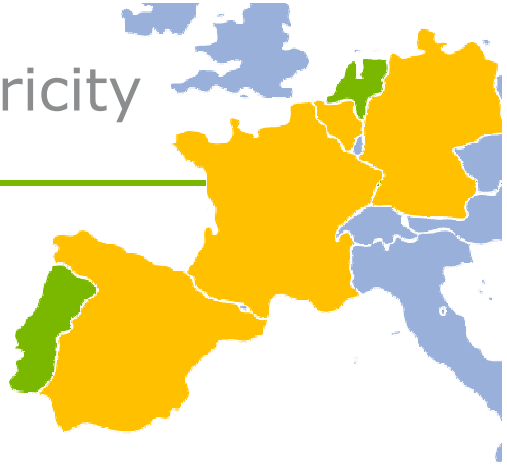
	Phase 1 From 1 Apr 9.00	Phase 2 From 12 May 17.00	Phase 3 From 16 June 17.00	Phase 4 From 1 Sept 17.00	Phase 5 From 29 Sept 17.00	Phase 6 From 3 Nov 17.00	Base energy price	Provisional correction amount for 2014	Max. full load hours per year	Max. subsidy period (years)
Solar	Base amount per phase (€ / kWh)						(€ / kWh)			
Solar PV ≥ 15 kWp	0.070	0.080	0.090	0.110	0.130	0.147	0.044	0.054	1.000	15
	Base amount per phase (€ / kWh)						(€ / GJ)			
Solar thermal with aperture surface area ≥ 100 m²	19.44	22.222	25.000	30.556	36.111	38.2	13.0	15.8	700	15

Adapting the SDE+ for projects from PT

- Maximum support levels for each technology in the SDE+ specifically for projects in Portugal (preference of NL, other options possible)
- Keep the existing LCoE formula, replace only specific resource-related factors to limit the consultation process for the categories under the SDE+

- Lowering cost of capital for projects in PT by referring to SDE+ when seeking financing?
- WACC in RES can make up to 20-50% of LCoE (for wind and PV)
- Exact share of country risk, policy risk, etc. in WACC not clear
  - ✓ decrease LCoE, increase competitiveness of PT-projects

Requirement of physical transfer of electricity

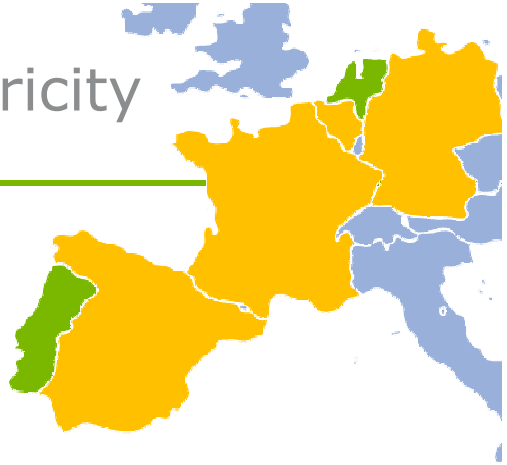


- For PT RES export is mandatory: high RES shares in ES and PT, limited interconnections to FR and MO to balance RES-E

- Requirement for being granted support: RES producers and market participants sell electricity from PT to Dutch electricity exchange or via over-the-counter contract (OTC) to a market participant in the Netherlands

- Use of "explicit" cross border capacity allocation and PTR-nominations as proof of export: RES-producer acquires and nominates physical transmission rights (PTRs) for electricity to be support by SDE+, i.e. it reserves capacity at interconnector

Requirement of physical transfer of electricity



- Long term PTRs (year-ahead) = hedging possibility, but additional price risk for RES-producers:
  - Requirement of buying all hours of the year = potential loss on three borders
  - No long-term PTRs (e.g. 15 years)

- Pro:
  - Export of RES-E
  - Internalisation of infrastructure (scarcity-)costs into support costs
- Con:
  - Additional costs
  - Risk premiums
  - Ambiguous effects (real export?)
- In case of physical export: market premium calculation with Dutch market price

Permits and supervision

How to meet permitting and reporting requirements of the SDE+?

- SDE+ / application: project developer confirms that all permits are in place
- PT: official confirmation of public authority: all permits required to built installation are in place

- SDE+ / project progress: After 1 year, project developers have to prove that they have at least commissioned a firm to effectively build the installation
- PT: official confirmation of public authority of proof of commissioning

- SDE+ / proof of production: CertiQ (Tennet) issues GO certificates and provides RVO with information = payments
- PT: TSO provides information for RVO

Costs and benefits

Netherlands (main costs and benefits)

- Cost: direct support costs
- Cost: lower Portuguese average electricity price = increased difference between support level and electricity price= increased SDE+ contribution
- Benefit: cheaper target achievement (ensured through SDE+)

Portugal (main costs and benefits)

- Cost: use of good sites
- Cost: physical transfer of electricity PT->NL (optional)
- Benefit: local industry development / job creation

➢ Potentially sufficient to create win-win situation?

Excluded: costs for system integration, avoided local air pollution, GHG savings, environmental impacts, transaction costs for public authorities, potential costs of not RES-targets

Conclusion

Conclusion

- SDE+ (as any competitive tendering) ensures that cooperation results in increased cost-effectiveness (with regards to direct support costs)
- Physical export of electricity reflects scarcity of infrastructure between ES/FR – but does it solve the problem?
- Administrative and legal issues can seemingly be solved with reasonable transaction costs
- Reducing the complexity of cost-benefit allocation as much as possible to make cooperation feasible.

Please contact us for more information

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