



Corporate Sourcing of Renewable Energy

Cillian O'Donoghue, Climate & Energy, Eurometaux - European Non-Ferrous Metals Association

CEPS, Brussels, 8th October, 2019

13 Al Aluminium	29 Cu Copper	28 Ni Nickel	82 Pb Lead	30 Zn Zinc	79 Au Gold	47 Ag Silver	78 Pt Platinum	51 Sb Antimony	4 Be Beryllium	14 Si Silicon	27 Co Cobalt	42 Mo Molybdenum	23 V Vanadium	50 Sn Tin	46 Pd Palladium	44 Ru Ruthenium	48 As Arsenic	76 Os Osmium	77 Ir Iridium	74 W Tungsten	73 Ta Tantalum	32 Ge Germanium	34 Se Selenium	31 Ga Gallium	48 Cd Cadmium	12 Mg Magnesium
------------------------------	---------------------------	---------------------------	-------------------------	-------------------------	-------------------------	---------------------------	-----------------------------	-----------------------------	-----------------------------	----------------------------	---------------------------	-------------------------------	----------------------------	------------------------	------------------------------	------------------------------	----------------------------	---------------------------	----------------------------	----------------------------	-----------------------------	------------------------------	-----------------------------	----------------------------	----------------------------	------------------------------

CEPS Case Study: Alcoa & Norsk Hydro



- ✓ 1 year ago the project started.
- ✓ Since then, we have responded to CEPS online consultation, had many bilateral interviews and participated to the workshops.



Alcoa

Global leader producer of bauxite, alumina & aluminium products

4 aluminium smelters & 1 refinery in Europe in:

- ✓ *Spain, Norway & Iceland*

Figure 2 Alco Mosjoen (Norway): Smelter sourcing electricity via RE PPAs



Hydro

Integrated aluminium company leading all the streams of the aluminium value chain

- ✓ *2 aluminium smelters in the EU in (Germany & Slovakia)*
- ✓ *Most of the European production concentrated in Norway*

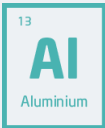
Figure 3 Hydro Karmøy (Norway): Smelter sourcing electricity via RE PPAs



Non-Ferrous Metals: An extremely electro-intensive industry

Electro-intensive

One of Europe's most
electro-intensive
industries



Electricity = **38-45%**
of production costs



Electricity = **40%** of
production costs



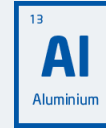
Electricity = **35-40%**
of production costs

**Electricity costs=key
localization factor**

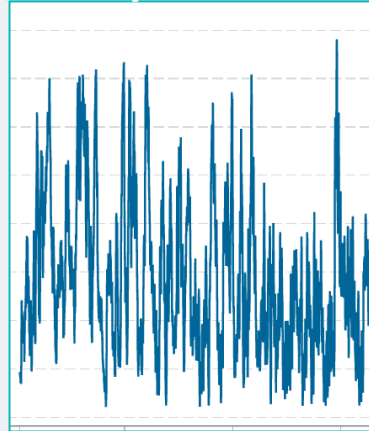
Intermittent renewable generation
& aluminum production may not
seem natural allies at first sight...



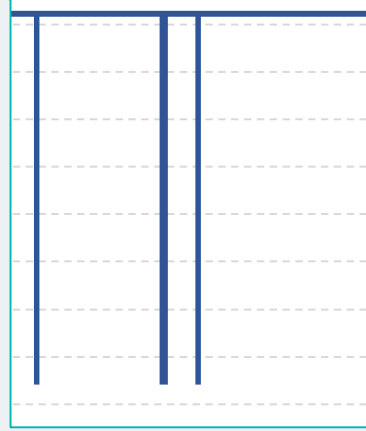
Vs.



Wind Generation
profile



Smelter
consumption profile



Traditionally, our RES PPAs have been
with hydro powered electricity.
**Recently, in the Nordic market, shown
it's possible with wind.**

'Intermittent' RES PPAs: NFM leadership



Renewable Energy + Add to myFT

Norsk Hydro in 'biggest' deal to secure wind
farm energy

New renewables PPAs in our industry:



~ 9 TWh/yr
Wind Power contracts in
Norway beyond 2021
~ 4.5 TWh/yr
Wind Power contracts



~ 3 TWh/yr
Alcoa

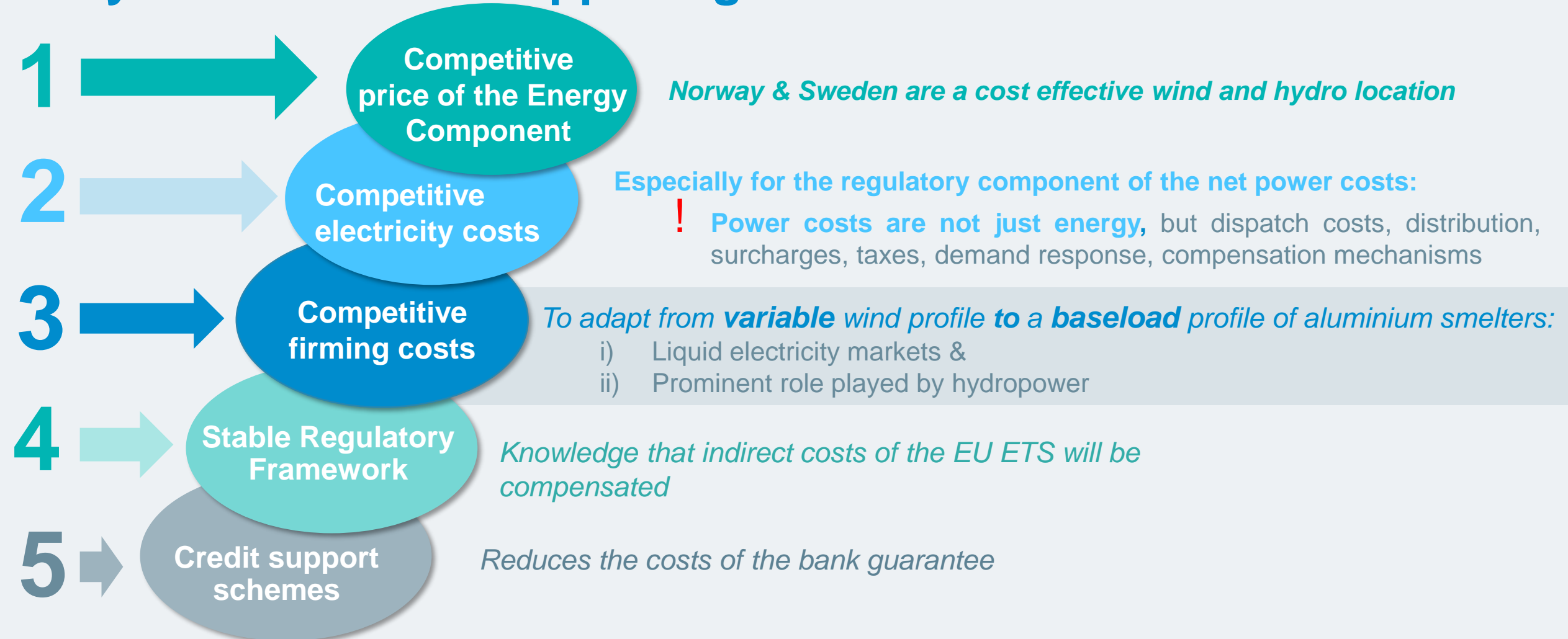
+50% of Hydro's power
demand in Norway **+50%** of Alcoa's power
demand in Norway

Long term renewable PPAs – a 'win-win'
for both parties

- **For developers:** Enabling new large scale wind farms through a stable revenue stream
- **For Industry:** Long term horizon for investment



Why are RES PPAs happening in the Nordics? And not elsewhere



Moving forward, we badly need to address to firming costs issue if we want
RES PPAs with electro-intensives beyond the Nordics

Indirect Carbon Costs with renewable PPAs?

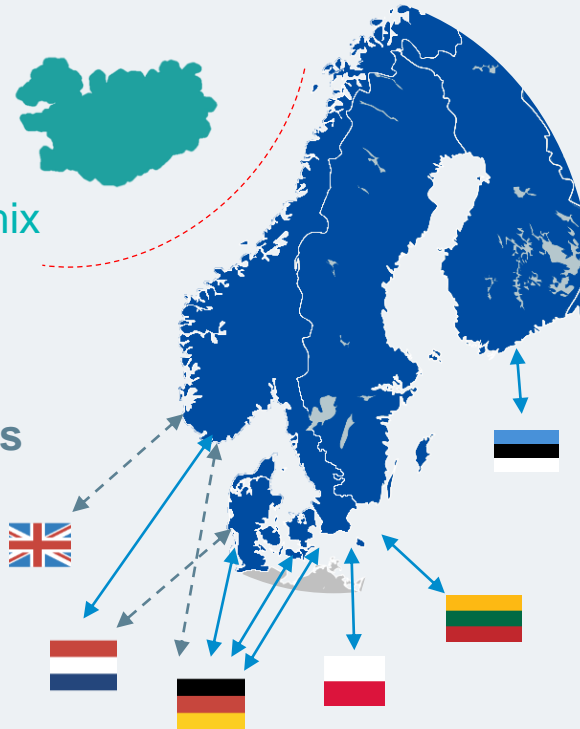
Yes.

Even with renewable PPAs, companies still face full indirect carbon costs

Example – CO2 free Aluminium Production in Iceland vs. Nordics

Icelandic Aluminium production

- Icelandic aluminium production is **100%** renewables in electricity mix
- BUT – Given that there are no interconnectors, there is **no marginal cost** (i.e. no carbon pass through)
- Thus, Icelandic production has no **indirect carbon costs**



Norwegian Aluminium production

Norwegian NFM production is **carbon free** now based on hydropower... and on wind in the future

BUT

Fossil fuel production in Nordics and interconnectors set **the marginal cost** for Nordic electricity generation

The industry reality is that **100% of electricity costs** are impacted by indirect CO2 costs

↔ Existing interconnector
↔ Interconnector under construction

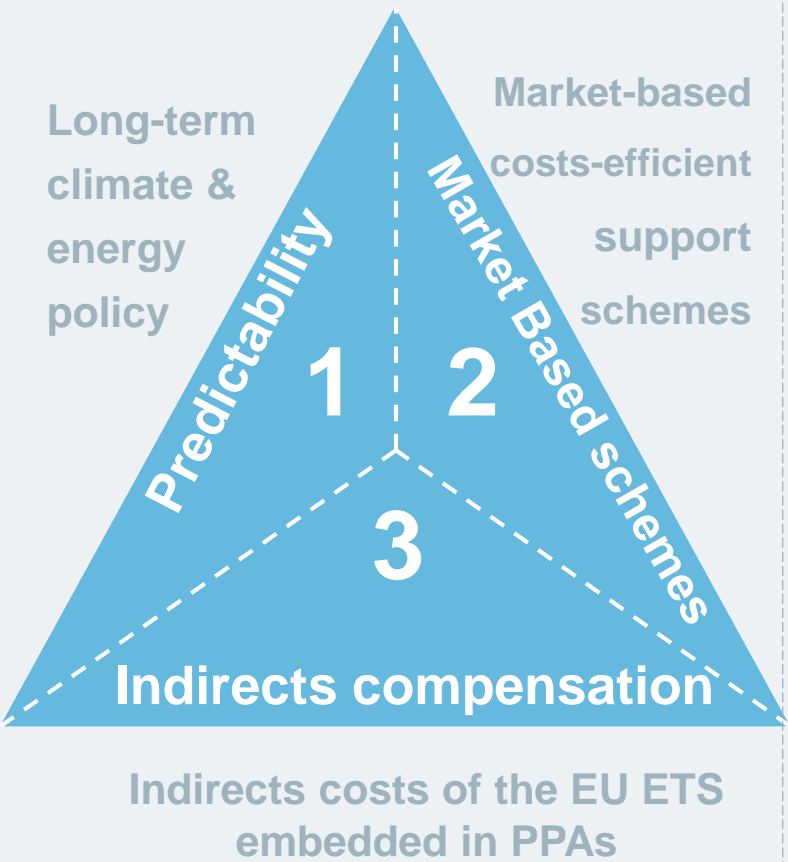
----- No interconnectors

Recent long term PPAs do not reduce indirect carbon cost exposure



Recommendations: How to incentivize more RES PPAs in the future?

3
things are needed

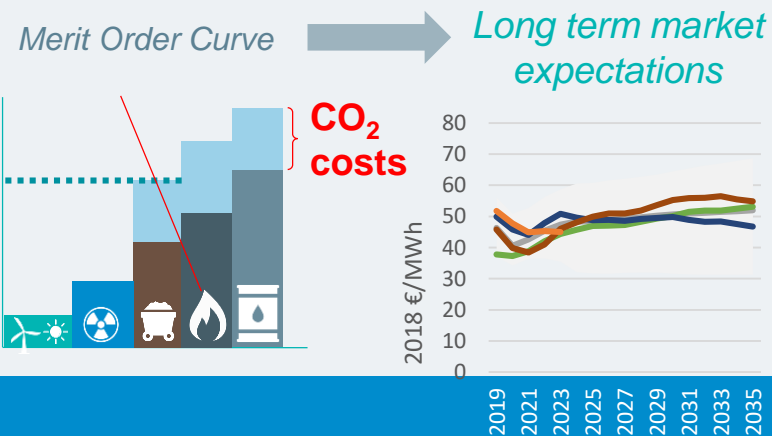



Many things already work well...

- ✓ Financial **markets** in Europe & power market (in the Nordics) **function well**.
- ✓ With market-based cost-efficient support schemes, **RES will keep on being more effective** and thus, less important to set up new structures

BUT


We need a better indirects compensation scheme in Europe as we face indirect CO2 costs even with RES PPAs




How to promote demand of low-CO₂ products?

Our companies have green-product offerings:



Tonnes of CO ₂			
	China	20	
	Europe	7	+ 185% more CO ₂
	Nordics	4	+ 400% more CO ₂

Potential for well-designed public procurement, standards & corporate procurement to play a role