

# Paris Session 2022



Which weight factors can be used to evaluate wide area interconnections versus local generation?

Study Committee C1  
Preferential subject 2

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Group Discussion Meeting

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# Impacts on electricity prices

Name	Connected Market	Assumed Losses	Capacity (MW)	Commission Year (real, expected or estimated)
IFA	France	2.34%	2000	1986
Moyle	N. Ireland	2.36%	500	2002
BritNed	Netherlands	3.00%	1000	2011
EWIC	Rep. of Ireland	4.68%	500	2012
NEMO	Belgium	2.60%	1000	2019
Eleclink	France	2.50%	1000	2020
IFA2	France	3.03%	1000	2020
NSL	Norway	4.92%	1400	2021
Greenlink	Rep. of Ireland	2.64%	500	2023 or later
FAB Link	France	2.88%	1400	2023 or later
Viking Link	Denmark	5.04%	1400	2023 or later
GridLink	France	2.62%	1400	2023 or later
NorthConnect	Norway	4.62%	1400	2026 or later
NeuConnect	Germany	4.80%	1400	2026 or later
Aquind	France	3.04%	2000	2026 or later



Scenario	Year	GB interconnectors	GW
1	2020	Existing, Eleclink, IFA2	7
2	2025	2020 all, Viking Link, FAB Link	11.2
3	2030	2025 all, NorthConnect, NeuConnect	15.9

Background scenario & average price AP (€/MWh)	Market price deviation from group average (€/MWh)									
	AP	NI	IE	GB	ND	DE	BE	DK	NO	FR
2020 (S1) BE	52.7	8.1	5.1	4.6	-0.8	-1.8	-1.9	-2.7	-4.1	-6.5
2025 (S2) C-b-G	60.4	4.9	4.8	-0.8	-0.2	-0.9	0.4	-1.5	-3.9	-2.9
2025 (S2) G-b-C	75.0	3.9	4.0	-3.2	1.3	1.3	0.9	0.1	-2.9	-5.3
2030 (S3) ST	94.9	1.1	1.1	-2.9	1.5	1.8	1.4	1.4	-1.5	-3.9

BE = Best Estimate of costs  
 C-b-G = Coal before Gas in the merit order  
 G-b-G = Gas before Coal in the merit order  
 ST = ENTSO-E Sustainable Transition scenario

Analyses done in 2019, reported in Callum MacIver, Waqqas Bukhsh, and Keith Bell, "The impact of interconnectors on the GB electricity sector and European carbon emissions", *Energy Policy*, vol. 151, 2021

# Impacts on emissions and 'spilled' wind energy

Name	Connected Market	Assumed Losses	Capacity (MW)	Commission Year (real, expected or estimated)
IFA	France	2.34%	2000	1986
Moyle	N. Ireland	2.36%	500	2002
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Analyses done in 2019, reported in Callum MacIver, Waqqas Bukhsh, and Keith Bell, "The impact of interconnectors on the GB electricity sector and European carbon emissions", *Energy Policy*, vol. 151, 2021

Scenario	Study Year	GB Interconnection Scenario	Total GB Interconnection (GW)
1	2020	Existing	5
2	2020	Existing, Eleclink, IFA2, NSL	8.4
3	2025	2020 all	8.4
4	2025	2020 all, Greenlink, Viking Link, FAB Link, GridLink	13.1
5	2030	2025 all	13.1
6	2030	2025 all, NorthConnect, NeuConnect, Aquind	17.9

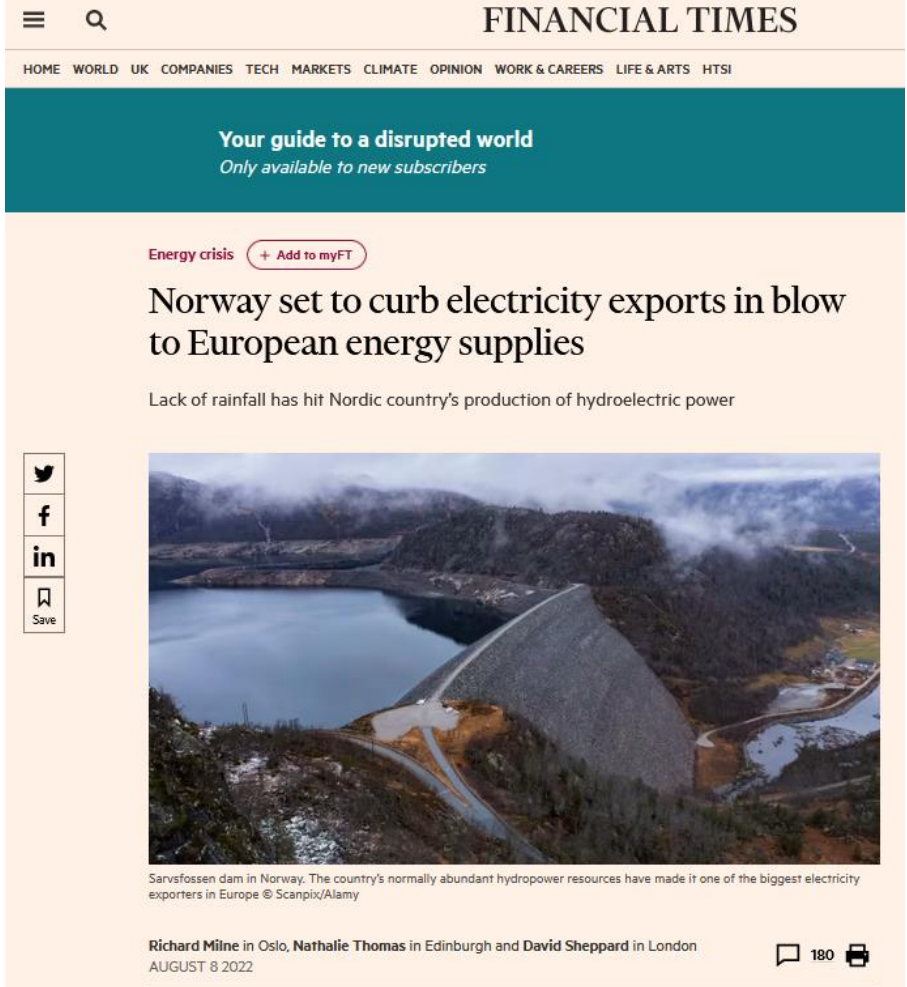
Background Scenario	Interconnector Scenario	Emissions		Interconnector scenario impact		Emissions change relative to baseline	
		GB	Total	GB	Total	GB	Total
2020 BE	S1 - 5.0 GW	44.5	776.6	-	-	-	-
	S2 - 8.4 GW	36.3	777.5	-8.1	0.9	-8.1	0.9
2025 C-b-G	S3 - 8.4 GW	45.6	785.9	-	-	1.1	9.3
	S4 - 13.1 GW	43.5	785.1	-2.1	-0.8	-1.0	8.5
2030 ST	S5 - 13.1 GW	45.4	535.9	-	-	0.9	-240.7
	S6 - 17.9 GW	46.1	533.9	0.7	-2	1.6	-242.7

BE = Best Estimate; C-b-G = Coal before Gas; G-b-G = Gas before Coal; ST = Sustainable Transition

GB interconnector Capacity	Annual Spilled Wind Energy (GWh)	
	2030 ST with 38.3 GW of wind in GB	2030 ST with 56.1 GW wind in GB
5 GW	360.1	1344.3
8.4 GW	163.9	975.8
13.1 GW	53.9	587.8
17.9 GW	10.7	343.8

# Impacts on security of supply

- “Norway is to curb electricity exports to Europe if water levels for its hydropower plants remain low in a blow to hopes that the Nordic country could help ease its neighbours’ energy concerns ahead of a difficult winter.
- “Norway’s centre-left government decided on Monday to prioritise refilling its reservoirs when their water levels are below seasonal averages.”
- Greater interconnection capacity between GB and somewhere that has good hydro capacity is good for both sides:
  - GB has a user of surplus wind and solar when it’s windy and sunny, and Norway can leave their water in the reservoirs;
  - when it’s less windy in GB, we get to use Norwegian water.
- “Water levels in the south of Norway — where most of its export cables are based — are at their lowest since 1996”
  - Climate change will change rain and snow fall
  - Sufficient network capacity within a country is essential to utilisation of interconnection



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## Norway set to curb electricity exports in blow to European energy supplies

Lack of rainfall has hit Nordic country's production of hydroelectric power

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Sarvafossen dam in Norway. The country's normally abundant hydropower resources have made it one of the biggest electricity exporters in Europe © Scanpix/Alamy

Richard Milne in Oslo, Nathalie Thomas in Edinburgh and David Sheppard in London  
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