Quantifying the "merit-order" effect in European electricity markets

Lead author: Paul Deane *(UCC)*
Authoring team: Seán Collins, Brian Ó Gallachóir *(UCC), Cherrelle Eid (IFRI), Rupert Hartel, Dogan Keles, Wolf Fichtner (KIT).*
Reviewer: Alberto Ceña (Kic)

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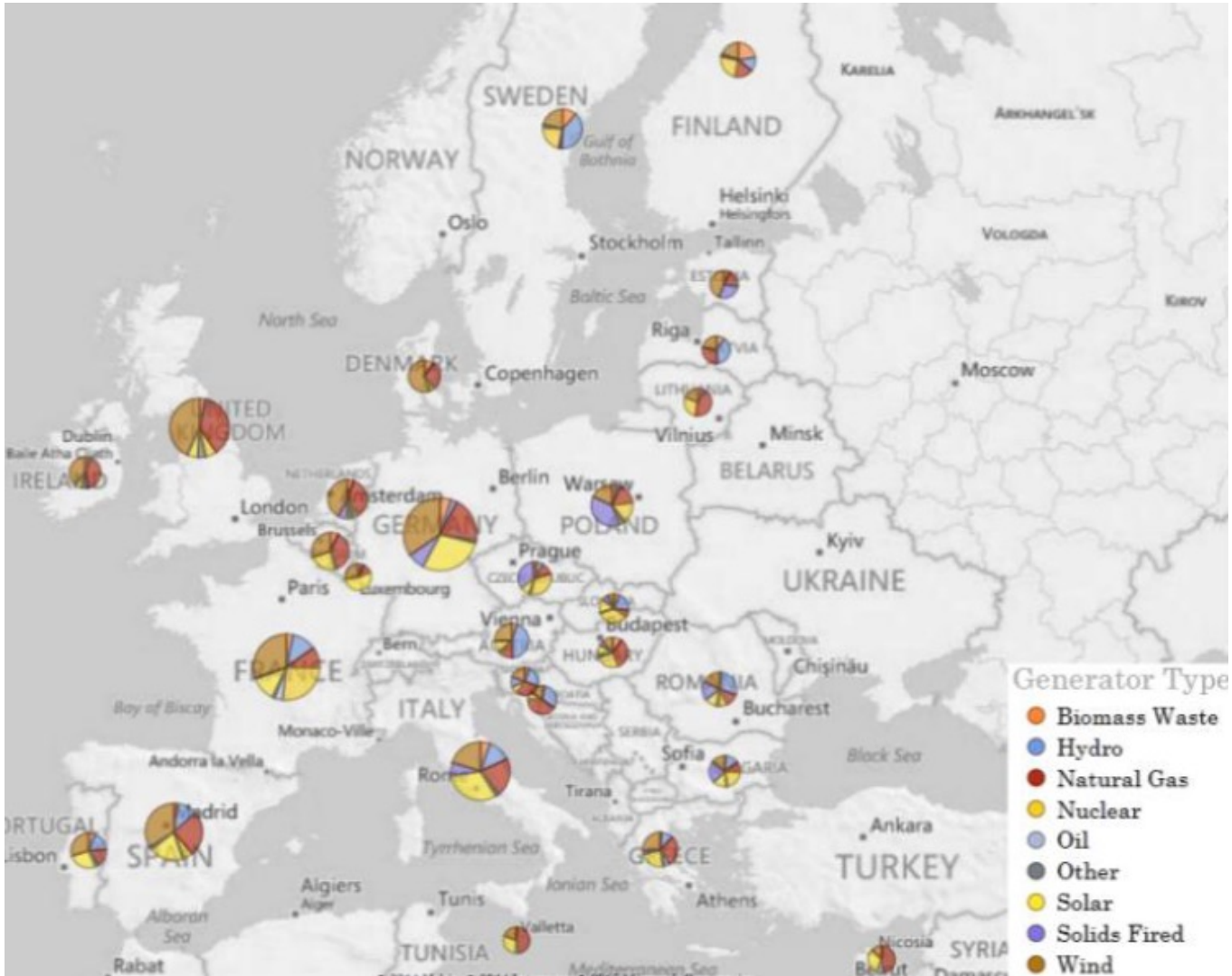
Structure

We quantify the merit order effect in 2030 and 2050 in European electricity wholesale markets by comparing electricity systems in a Reference and Mitigation Scenario for both years.

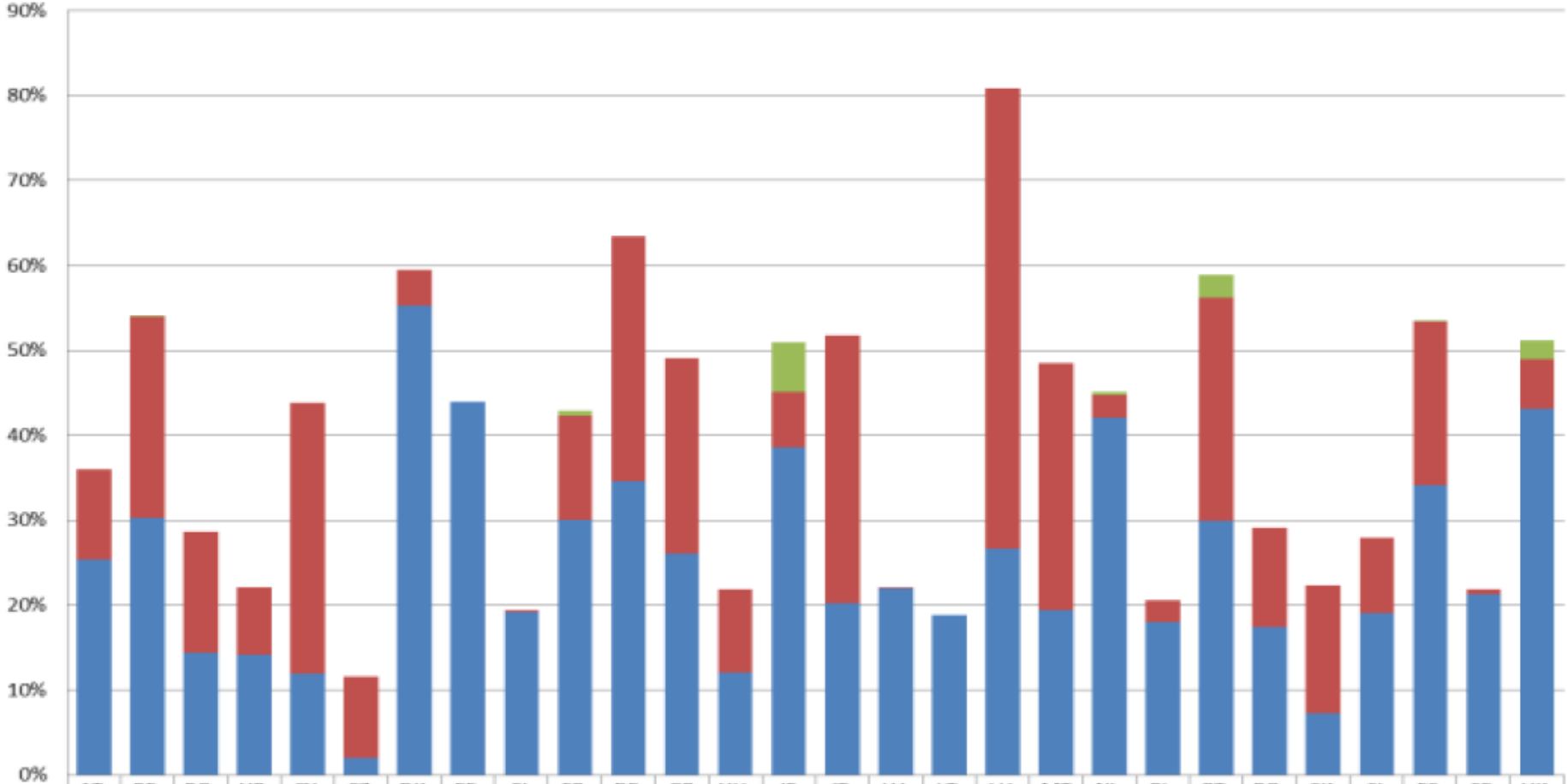
Scenario results show for the Scenario modelled that the reduction in wholesale electricity price between scenarios is on average €1.6/MWh and €4.2/MWh for 2030 and 2050 respectively.

A simplified approach is also used to assess the impact of Demand Response on system costs.

Installed Capacities by member States 2050

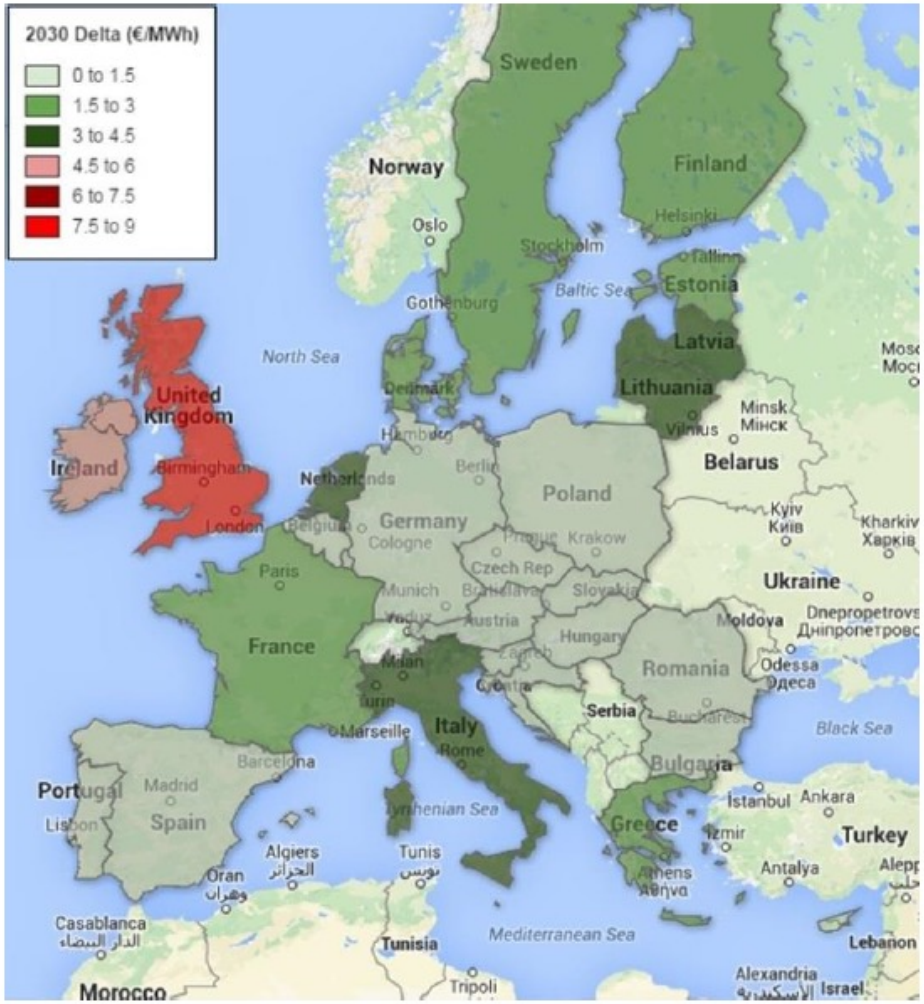


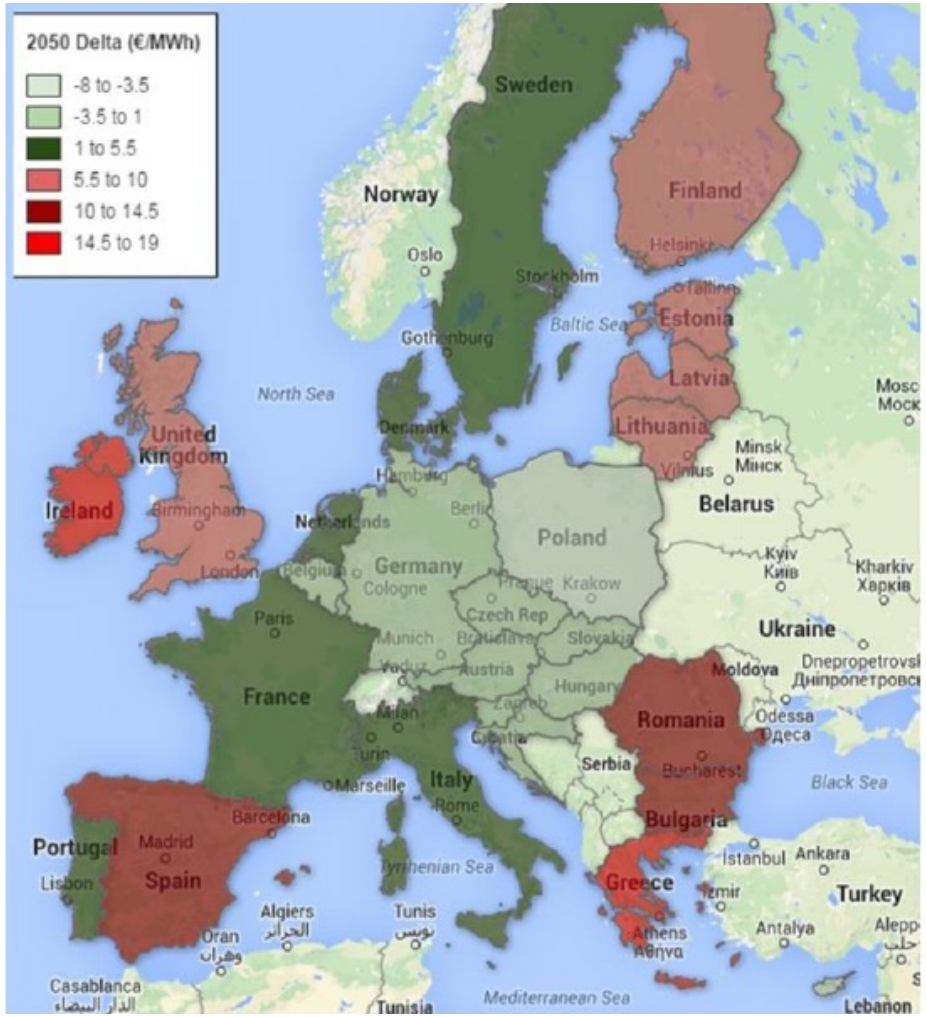
VRES Capacities By Member State 2050 (VRES 36%-in Mit, 32% in Ref)



	AT	BE	BG	HR	CY	CZ	DK	EE	FI	FR	DE	GR	HU	IE	IT	LV	LT	LU	MT	NL	PL	PT	RO	SK	SI	ES	SE	UK
%Other	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	6%	0%	0%	0%	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%	2%
%Solar	11%	24%	14%	8%	32%	10%	4%	0%	0%	12%	29%	23%	10%	6%	32%	0%	0%	54%	29%	3%	3%	26%	12%	15%	9%	19%	1%	6%
%Wind	25%	30%	14%	14%	12%	2%	55%	44%	19%	30%	35%	26%	12%	39%	20%	22%	19%	27%	19%	42%	18%	30%	17%	7%	19%	34%	21%	43%

Variation in wholesale price (€/MWh) between Reference and Mitigation Scenario for 2030 & 2050





Conclusion

The increase of renewable energy sources will contribute to the lowering of electricity wholesale prices in many markets by shifting the merit order curve and substituting part of the generation of conventional thermal plants, which have higher marginal cost of production, however not clear if consumers will benefit (retail markets)

Merit Order may be significant and the effect is more pronounced in Peripheral Member states

More challenging operational environment for conventional generators technically and economically