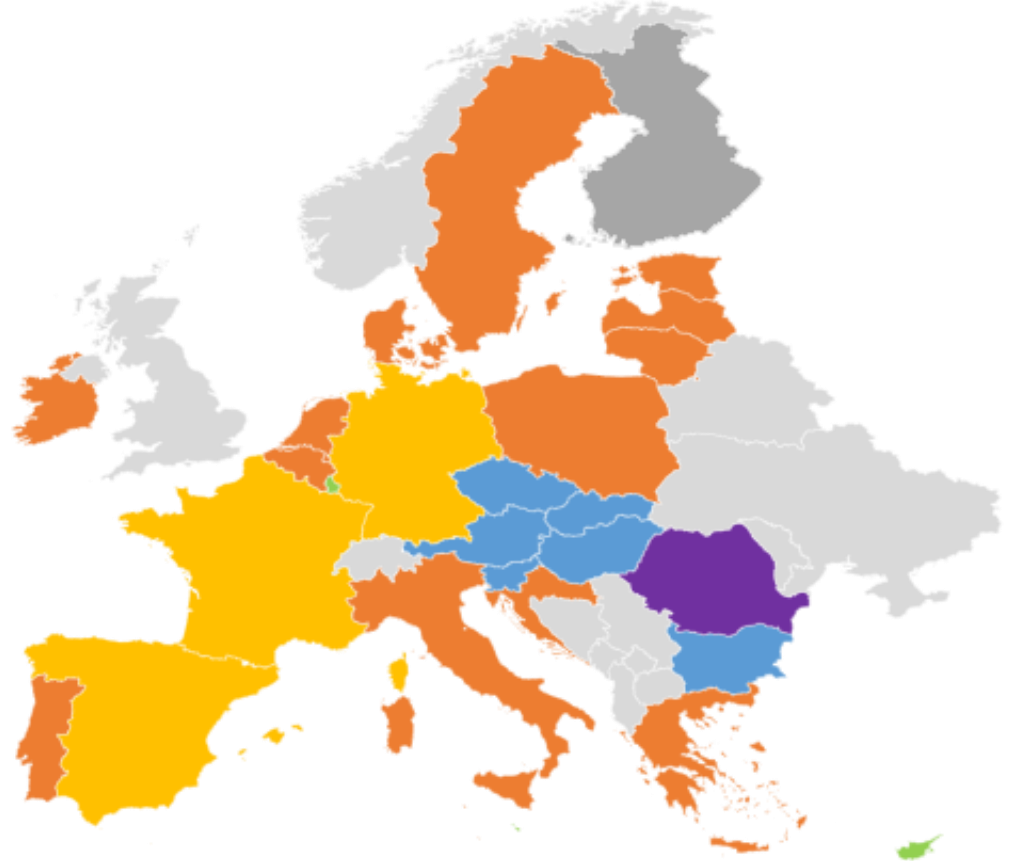


ACER Opinion on the review of gas and H2 NDPs to assess their consistency with the EU TYNDP

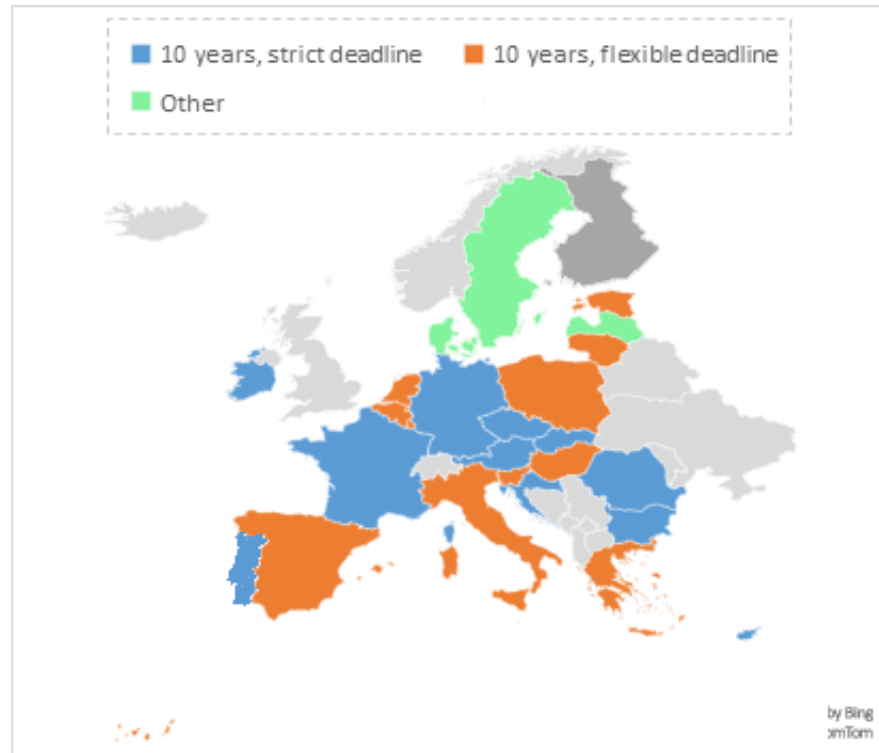
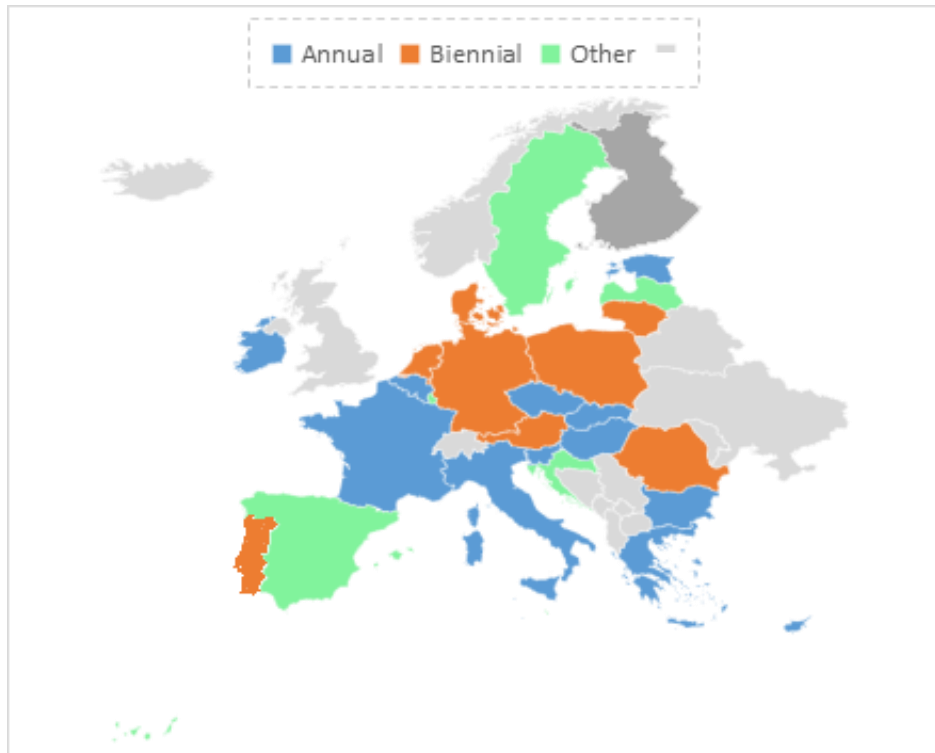
-Charts and maps on selected main findings

Based on information provided by National Regulatory Authorities (NRAs)

- Independent Transmission Operator (ITO)
- Full Ownership Unbundling (OU)
- Other circumstances
- Several models
- Independent System Operator (ISO)



Frequency and time horizon of gas NDPs

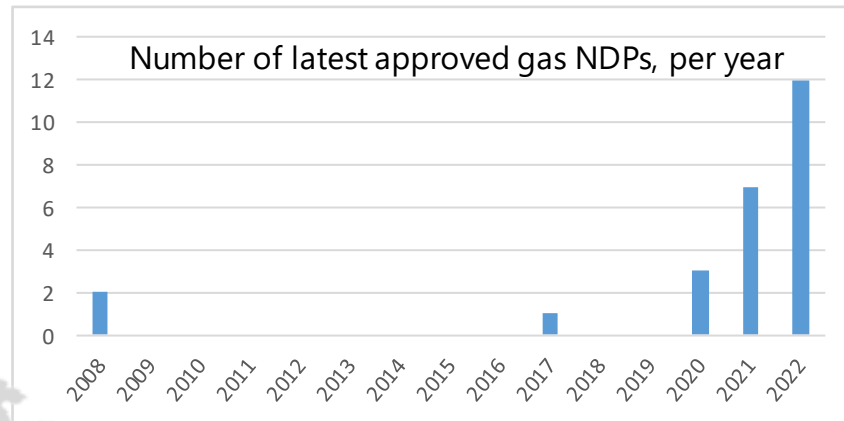
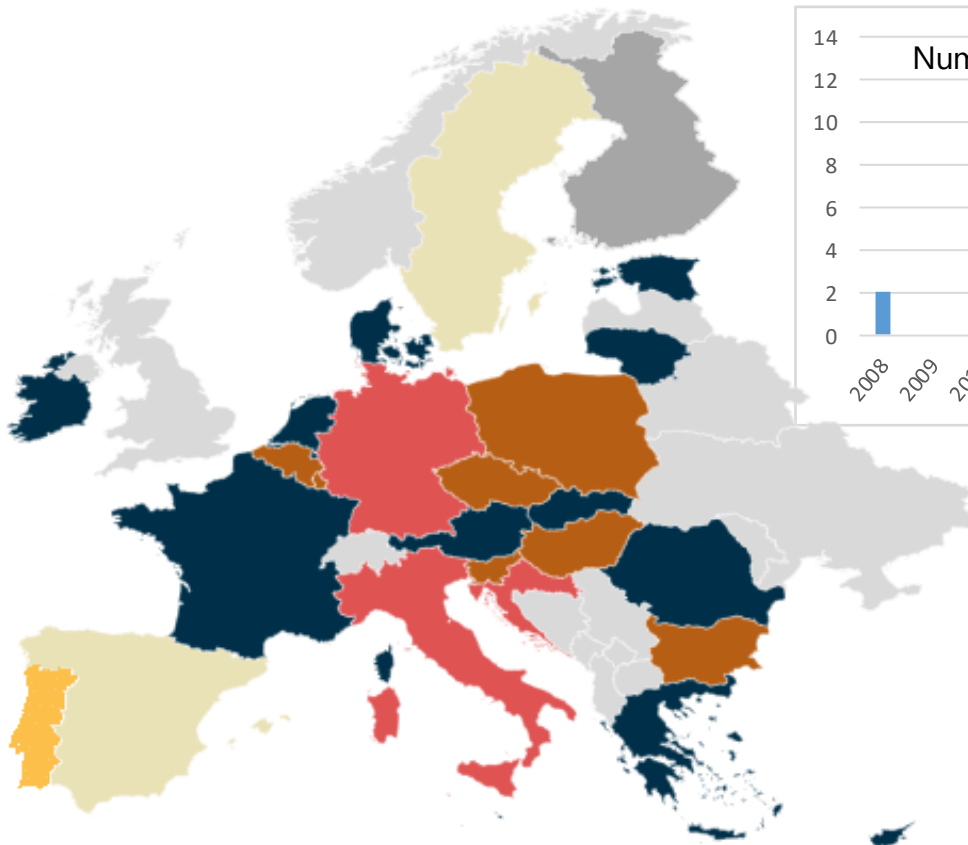


Frequency of NDP publication

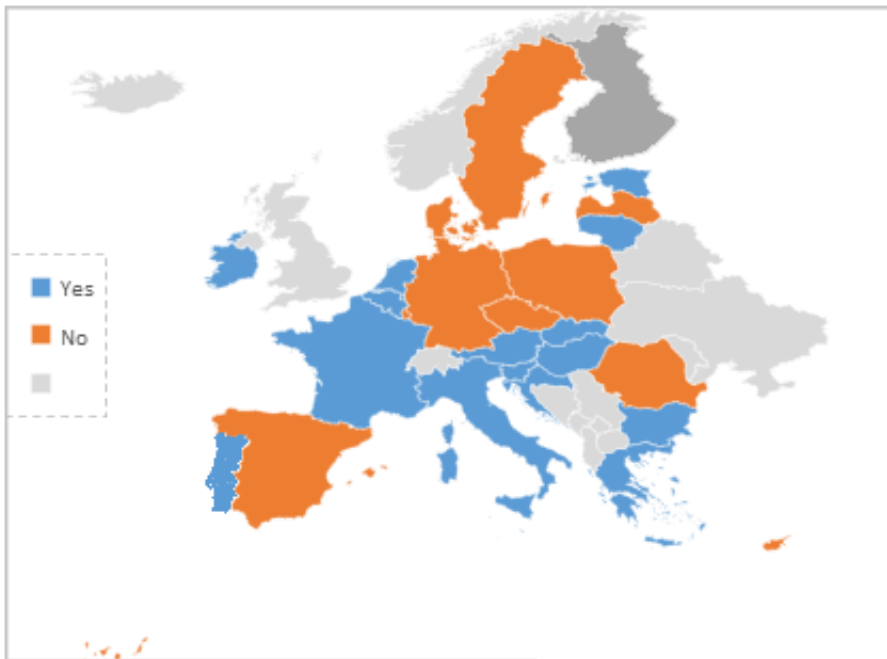
Time horizon of NDPs

* Time horizon refers to projects expected for commissioning

Year of publication of latest approved gas NDP

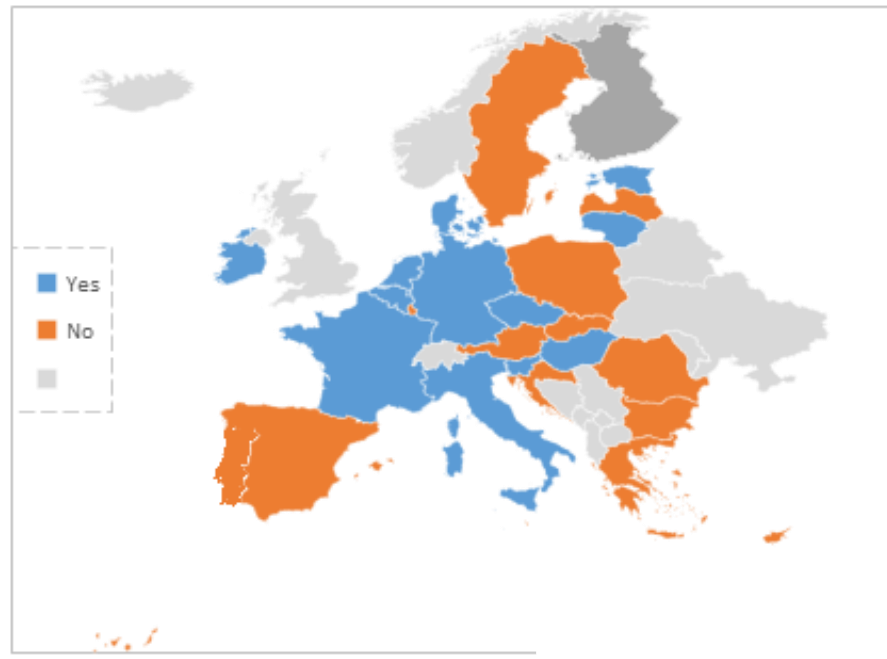


Gas NDPs covering hydrogen & biomethane



Hydrogen developments

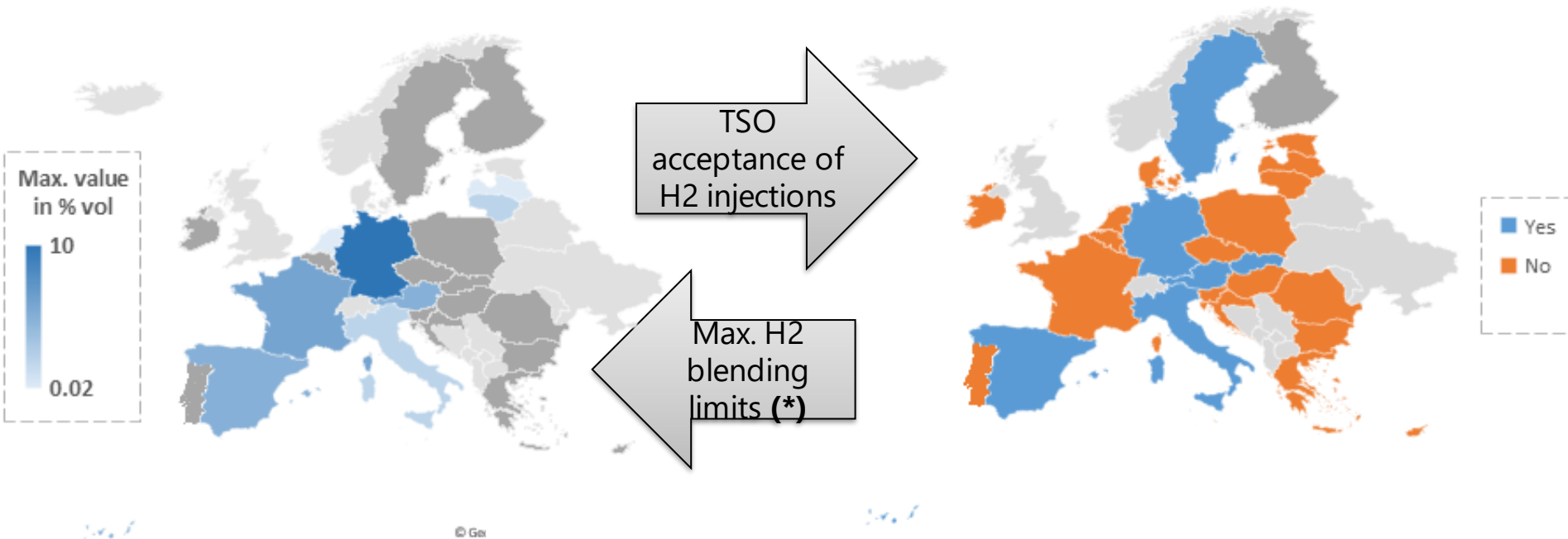
E.g. Retrofitting, repurposing, new dedicated H2 pipes, connection points for H2 injection, locations for power-to-“x” developments, hydrogen production, Imported hydrogen, Hydrogen storages, compressor stations, H2 market demand studies



Biomethane developments

E.g. network adaptations to allow biomethane injection, direct connections points for biomethane injection in transmission, reverse flow from distribution to transmission, biomethane production potential, biomethane storage projects, best locations for biomethane potential

H2 blending



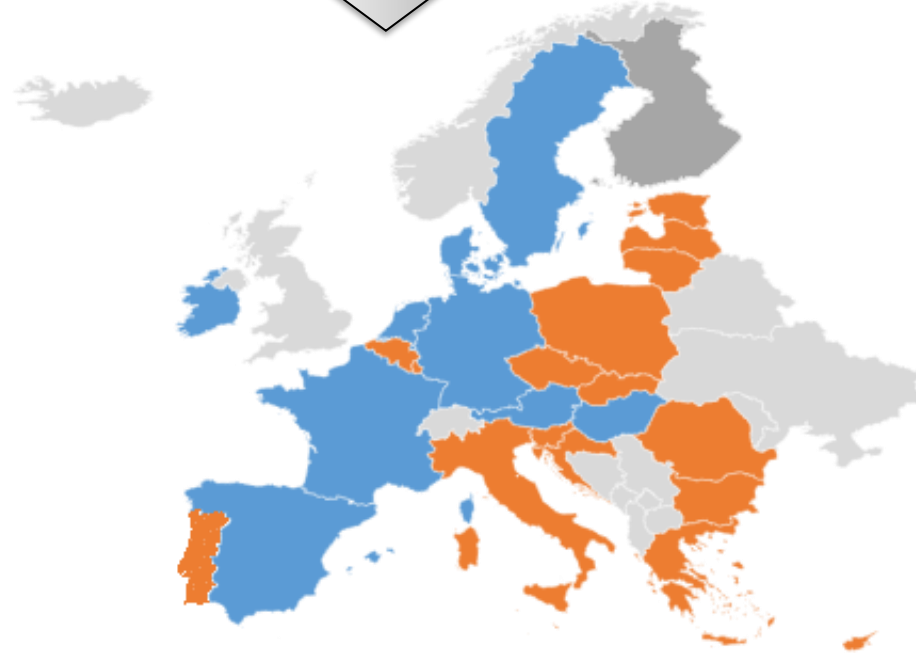
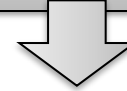
- **Varying reasons for setting H2 blending limits (safety concerns, technical limits, legal and regulatory frameworks)**
- **TSOs are studying the technical constraints and necessary measures** for allowing H2 injections

** H2% limits are max. level for some sections. E.g. in DE, 10% is only allowed if no "sensitive" customer is connected (NG filling station); in IT, the H2 % is in biomethane injections; in ES, 5% is allowed for "non-conventional" gases. See report for details*

Biomethane injection

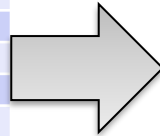
- **Injection of biomethane** (which is similar to natural gas) appears **not** to be very **problematic**
- 9 MS allow injection of biomethane
- 10 NRAs report investments in NDPs to allow/increase biomethane injections
- 17 NRAs report **network operators obligations to provide a connection point for biomethane** injections

Is there **reverse flow** (from distribution to transmission grid) **and/or direct injection to transmission** from biogas /biomethane plant?



Consistency of NDP and draft EU TYNDP 22 projects

Country	Included in NDP	Not included NDPs	Total	% of TYNDP projects included in NDPs
Austria	3	3	6	50%
Belgium	4	5	9	44%
Bulgaria	5	2	7	71%
Croatia	11	9	20	55%
Cyprus	0	1	1	0%
Czechia	1	1	2	50%
Denmark	1	5	6	17%
France	2	9	11	18%
Germany	22	23	45	49%
Greece	9	7	16	56%
Hungary	5	17	22	23%
Ireland	0	1	1	0%
Italy	14	2	16	88%
Latvia	0	7	7	0%
Lithuania	2	0	2	100%
Malta	1	0	1	100%
Netherlands	4	15	19	21%
Poland	7	3	10	70%
Portugal	2	0	2	100%
Romania	11	9	20	55%
Slovakia	14	2	16	88%
Slovenia	8	1	9	89%
Spain	1	8	9	11%
Grand Total	130	133	263	49%



Project Type	Included in NDP	Not included NDPs	Total	% of TYNDP projects included in NDPs
Biomethane	4	7	11	36%
Hydrogen	14	70	84	17%
LNG	8	5	13	62%
Retrofitting	5	8	13	38%
Transmission	86	10	96	90%
Underground Storage	8	4	12	67%
Other	5	29	34	15%
Grand Total	130	133	263	49%