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Implementation Monitoring Activities

An overview of the implementation monitoring reports on Grid Connection Network Codes published by ACER in 2020

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9th March 2021, GC ESC meeting – remote session

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Agenda

P1 - General information

P2 - Analysis of selected topics

P3 - Summary and main recommendations

P4 - Ongoing work and next steps

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P1 - General information

In 2020, ACER has **monitored** the status of the **implementation of the Grid Connection Network Codes** (GC NCs) among EU MSs and other non-EU Countries, which have adopted these NCs.

To do so, ACER has drafted and published **two Implementation Monitoring Reports (IMR)**:

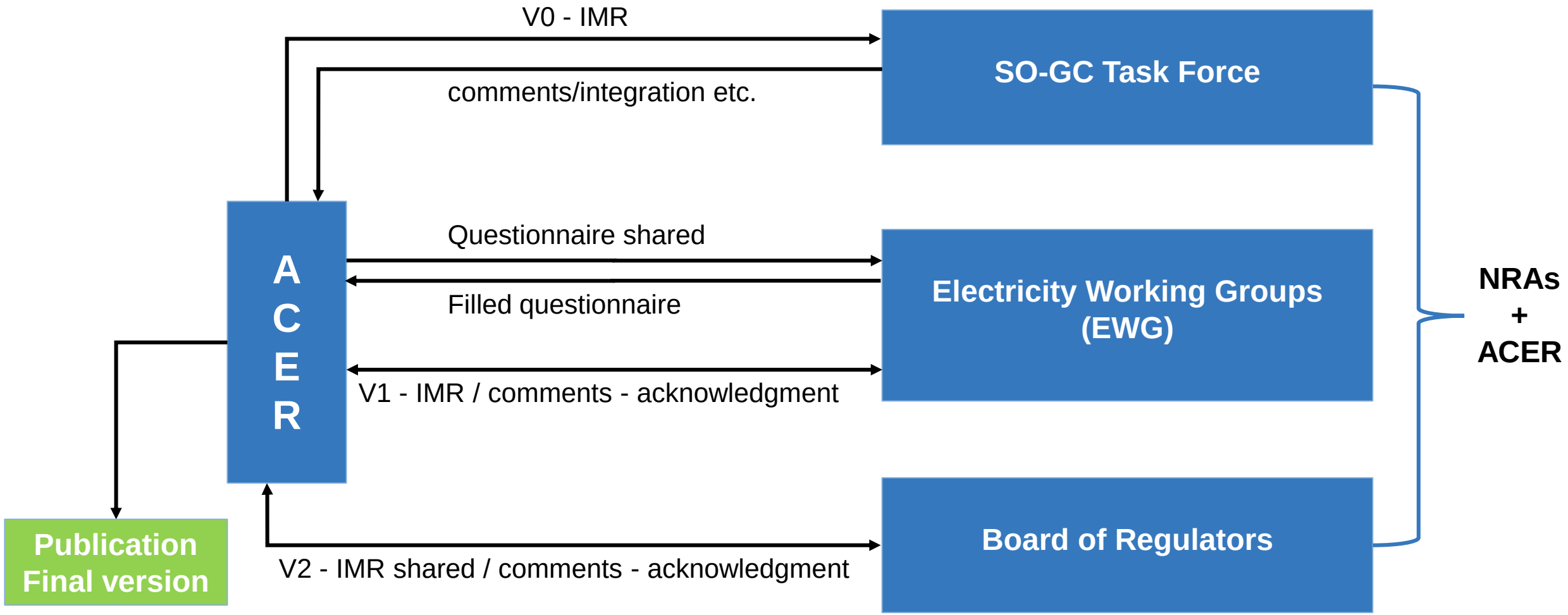
- **IMR on NC RfG** available here (third edition), and
- **IMR on NC DC** and **NC HVDC**, available here, (second edition).

WHY?

Article 32(1) of Regulation (EU) 943/2019 requires ACER to monitor and analyse the implementation of the NCs and the Guidelines adopted by the European Commission.

The cut off date for the IMR on NC RfG is 6 November 2020, whereas 4 December 2020 with respect to the IMR on NC DC and NC HVDC.

P1 - High level flow-chart of the process



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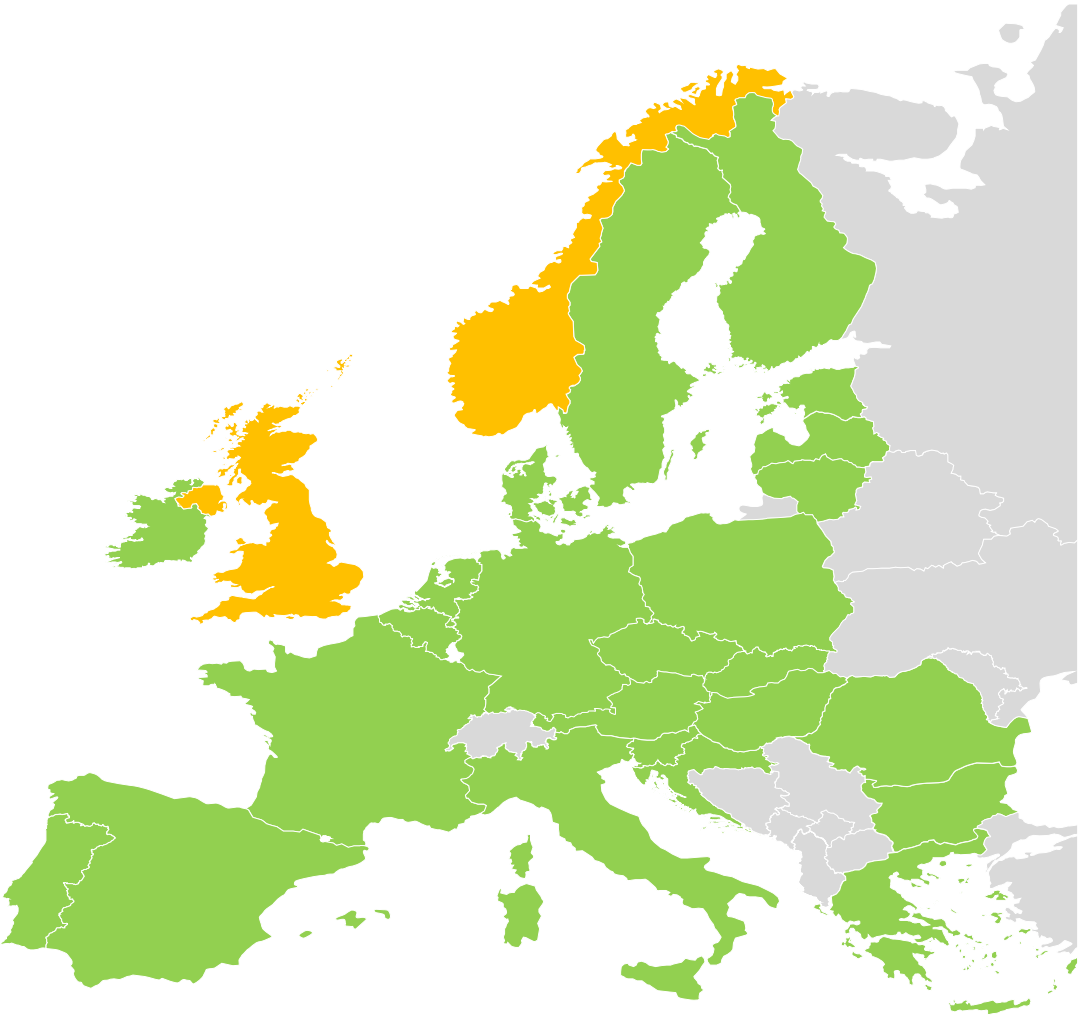
P1 – List of contacted NRAs



- **25 NRAs** are from **EU Member States:**

AT, **BE**, **BG**, **CZ**, **DE**, **DK**, **EE**, **ES**, **FI**, **FR**, **GR**, **HR**, **HU**, **IE**, **IT**, **LT**, **LU**, **LV**, **NL**, **PL**, **PT**, **RO**, **SE**, **SI** and **SK**.

- **3 NRAs** are from **NON-EU Countries:**

GB, **UK-NIR** and **NO**.

- No answers from **BG** → implementation is outstanding,
- **GR** partial information concerning the IMR on NC RfG,
- The process of incorporating the GC NCs into the EEA Agreement is not completed in **NO**.

* No further references to EWRC (BG) and NVE-RME (NO) in this presentation.

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P2 - Main topics covered in the IMRs

IMR on NC RfG

1. Classification as ***existing-new*** PGMs pursuant to Article 4 of the NC RfG;
2. The establishment of **requirements of general application**, pursuant to Title II of the NC RfG;
3. The implementation of the **operational notification procedure**, pursuant to Title III of the NC RfG;
4. The **amendments of contracts** and general terms and conditions, pursuant to Article 71(1) of the NC RfG.

IMR on NC DC and NC HVDC:

1. Classification as ***existing-new*** demand systems* and HVDC systems* pursuant to Articles 4 of the NC DC and NC HVDC;
2. The establishment of **requirements of general applicatio**n, pursuant to Article 6, Article 9 and Title II of the NC DC, as well as pursuant to Article 5 and Title II of the NC HVDC;
3. The implementation of the **interim notification procedure**, pursuant to Article 24 of the NC DC and Articles 57 and 62 of the NC HVDC.
4. The **amendments of contracts** and general terms and conditions, pursuant to Article 58(1) of the NC DC and Article 84(1) of the NC HVDC

* For brevity, demand systems include all the relevant users included in Article 3(1) of the NC DC. Similarly, HVDC systems refer to the relevant users included in Article 3(2) of the NC HVDC

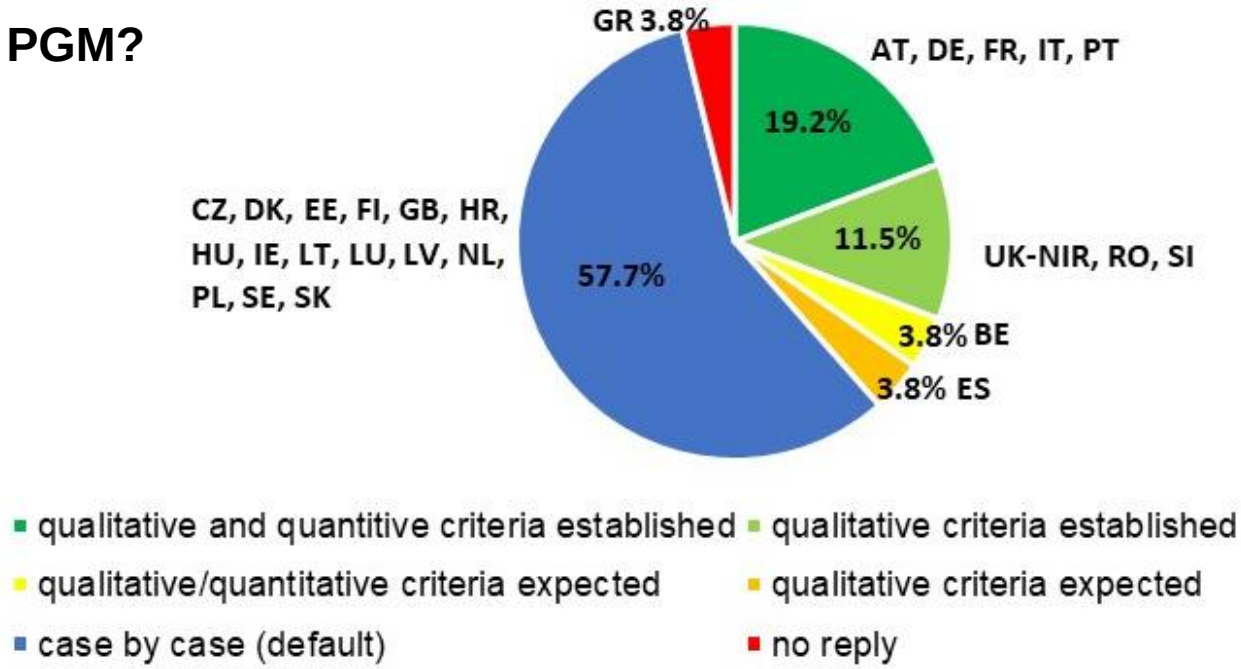
P2 - Focus on Article 4(1) of the NC RfG

Existing PGMs are not subject to the requirements of the NC RfG, unless certain circumstances apply, e.g. a type C/D PGM may have undergone modernisation procedures or replacement of the equipment.

For example, these existing units may be requested* to revise the connection agreement or stipulate a new one and to comply with certain/all the requirements of the NC RfG.

How to determine the level of modernisation of a PGM?

- criteria typically deal with the percent changes in the maximum capacity of the PGMs.
- criteria in FR concern all the PGMs and thus not only Type C and Type D PGMs.

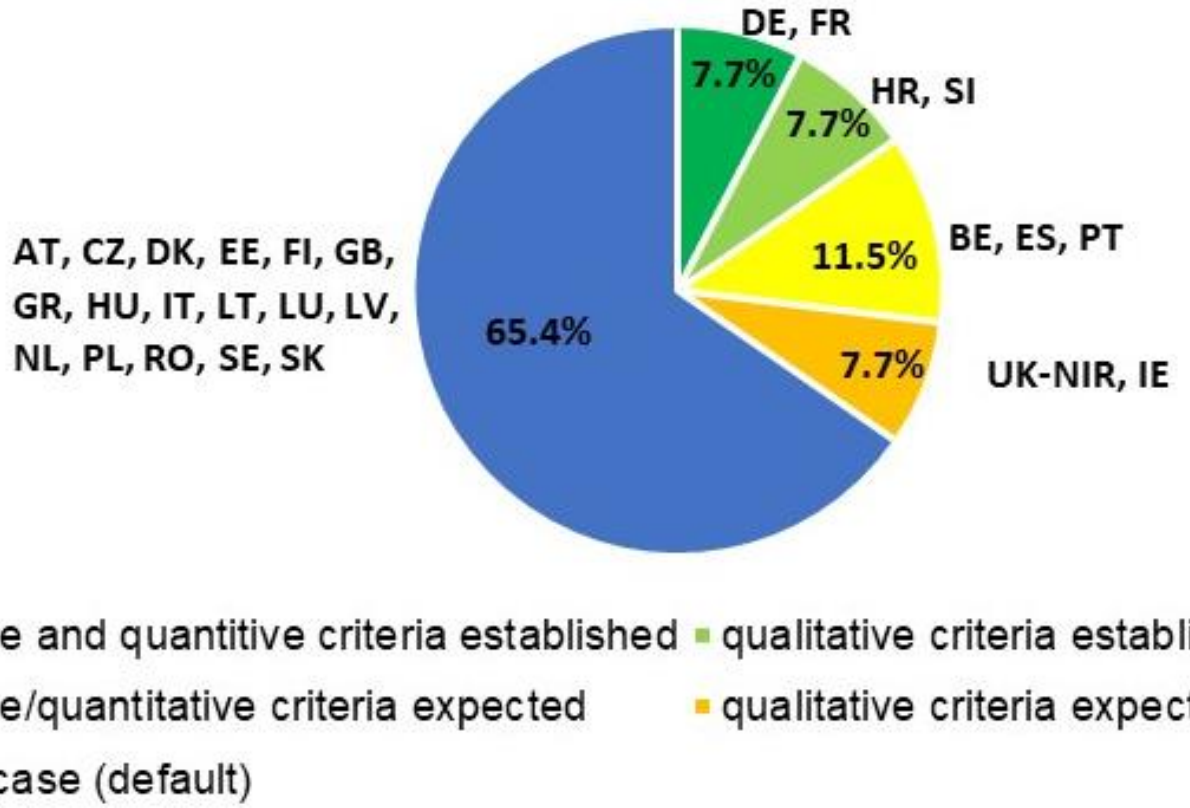


* following an initial assessment of the relevant system operator and, in turn, a decision of the NRA.

P2 - Focus on Articles 4(1) of the NC DC and NC HVDC

Similarly to PGMs for the NC RfG, certain existing demand systems and HVDC systems may be requested* to revise the existing connection agreement or stipulate a new one and to comply with certain/all the requirements of the corresponding NC.

- criteria typically deal with the active power, the nominal voltage at the connection point, the power ratings of the equipment replaced (including the transformer(s)).
- criteria in DE and HR pertain only the NC DC.



* following an initial assessment of the relevant system operator and, in turn, a decision of the NRA.

P2 - Requirements of general application – NC RfG

The requirements of general application have been formally established via decisions issued by NRAs or competent entities in all* the monitored countries with the exception of ES. In some cases, the process did not meet the envisaged deadline leading to late approval.

- BNetzA (**DE**), CREG (**BE**), CRU (**IE**), and UR (**UK-NIR**) confirmed that the implementation of some of the requirements of general application has differed from the provisions included in the NC RfG;
- ERO (**CZ**), BNetzA (**DE**), EV (**FI**), ARERA (**IT**), ERSE (**PT**), Ei (**SE**) and UR (**UK-NIR**) reported the presence in the corresponding national grid codes of requirements which go beyond those laid down in the NC RfG.

* In accordance with the 2nd IMR on RfG (2019), ACM (NL) has not approved all the requirements yet. The decision is still pending concerning the Rate of Change of Frequency (RoCoF) and reactive-power requirements for type B, C and D PGMs.

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P2 - Some examples of misalignments with the NC RfG

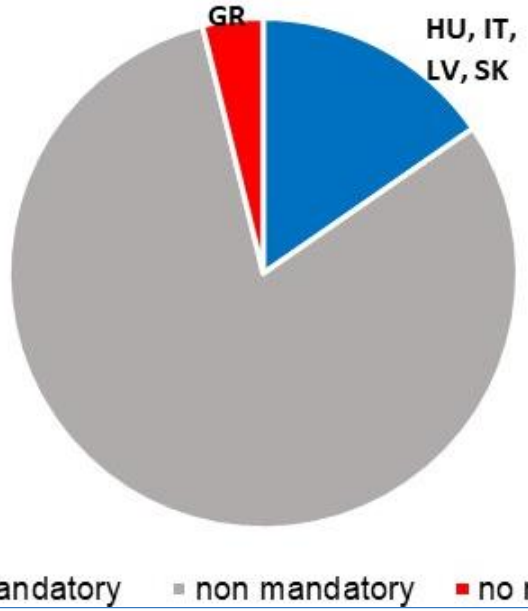
- In **IE** the first and last frequency interval in table 2 of Article 13 of the NC RfG → **[47-48.5] Hz** and **[51-52] Hz** instead of [47.5-48.5] Hz and [51-51.5] Hz.
- In **UK-NIR** the time period for operation corresponding to interval [48.5-49] Hz is 60 min and should be not less than 90 min. Additional frequency ranges are also implemented → [47-47.5] Hz with 20s time for operation and [51.5-52] Hz for 60 min.
- In **CZ** an additional frequency range is implemented → [47-47.5] Hz with 20s time period for operation.
- In **DE**, type A PGM must comply with FRT capability; type A and B PGMs provide LFSM-U capability. Other deviations apply with respect to voltage capabilities of Type B-D PGMs.
- In **SE** there are additional requirements on PPMs concerning Article 13(2)(g) and Article 14(3)(a)(v). Moreover, requirements for type D PPMs laid down in a list of Articles* of the NC RfG are also extended to type B and type C.

* Articles 16(2)(a)(i), 16(2)(b), 16(4)(d) and 19(2)(a)-(b).

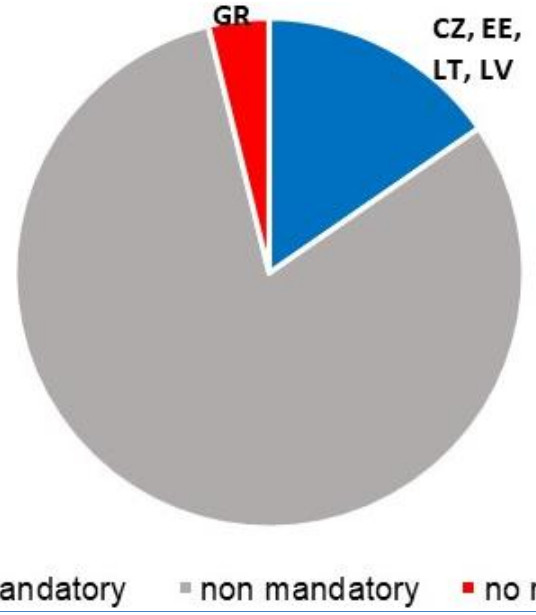
P2 - Requirements of general application - NC RfG

- **LFSM-O capabilities** for Type A PGMs in **Article 13(2)** of the NC RfG: In all the monitored countries the TSOs opted for the adoption of letter (a) of Article 13(2). The only exception is **LT** where the provisions in letter (b) of Article 13(2) have been applied.

Black Start Capability for Type C PGMs in **Article 15(5)(a)(i)**



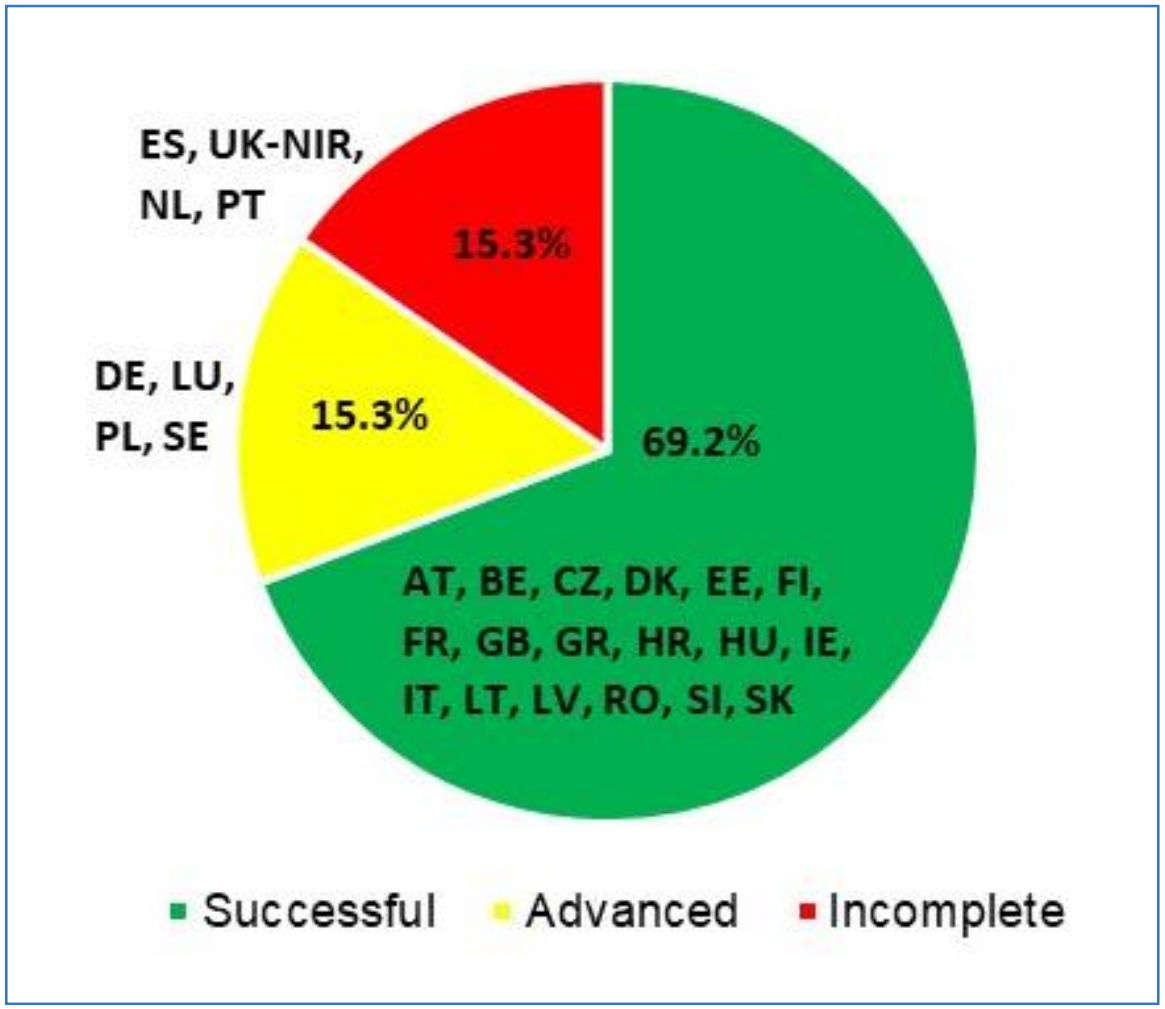
Synthetic Inertia for Type C/D PPMs in **Article 21****



* This includes also ES although the requirements of general application have not been formally approved yet.

** The three NRAs in CZ, EE and LT specified that the actual provision of synthetic inertia is currently not needed in their networks.

P2 - Requirements of general application – NC DC

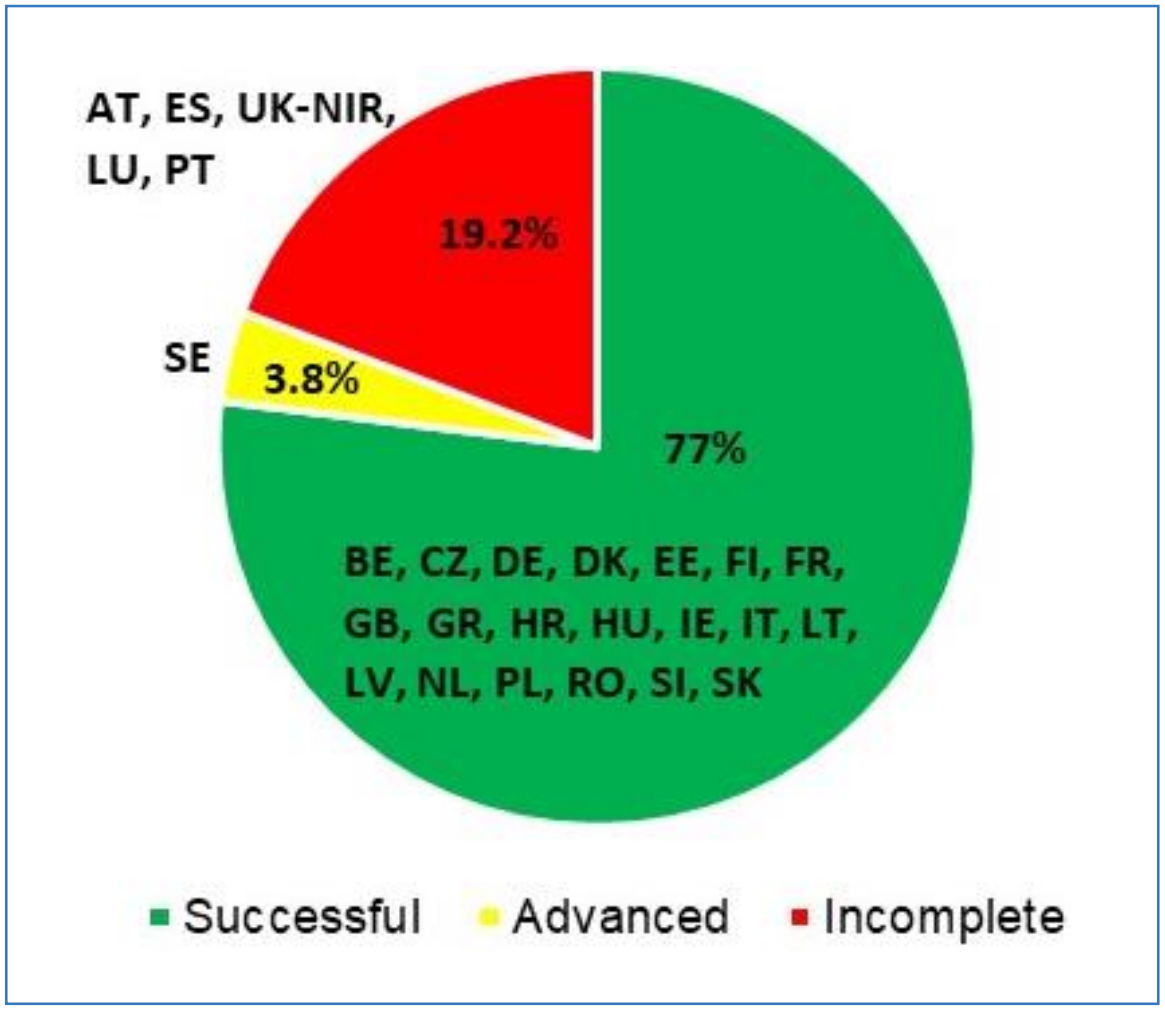


Remarks:

- In **AT**, **BE**, **CZ**, **DK**, **FR**, **GR**, **HR**, **IE**, **LT**, **LV**, **RO**, **SK** approved more than 6 months after the deadline.
- **DE**, **LU** and **PL** did not approve the requirements concerning non-mandatory demand response services referring to TITLE III of the NC DC.
- In **SE**, some requirements***** have not been approved.
- In **UK-NIR** only a partial approval, whereas in **ES, NL** and **PT** the proposals have been submitted by TSOs.

* Articles 15(2)(a)-(b), 14(1), 14(5), 19 (partially), 16(1), 17(1), 18(1)-(3).

P2 - Requirements of general application – NC HVDC



Remarks:

- In **BE, CZ, DE, DK, FR, GR, HR, IE, LT, LV, NL and RO** approved more than 6 months after the deadline.
- In **SE**, a non-negligible number of requirements have not been defined and thus have not yet bee approved.
- In **UK-NIR** only a partial approval; in **ES** the proposals have been submitted by TSO.
- In **PT**, requirements submitted by the TSO. However, ERSE (PT) intends to implement them only as a guiding reference and not as a binding regulation.
- TSOs in **AT** and **LU** did not submit the proposals and they do not envisage to do it in near future.

P2 - Misalignments with the NC DC and NC HVDC

Examples concerning the NC HVDC:

- In **EE** the minimum time for operation for DC-connected PPMs (Article 39(2)(a)) in the interval [47-47.5] Hz is 60s instead of 20s .
- In **IE** unlimited operation to all the interconnectors in the frequency range [47.5 -52] Hz. However, unlimited operation only applies in [49-51] Hz. Other discrepancies are reported in the Interval [47-47.5] Hz.

Examples concerning the NC DC:

- In **UK-NIR**, **IE** minimum times for operation are set for frequency intervals wider than in the NC DC i.e. 20s [47-47.5] Hz and 60 min for [51.5-52] Hz. In **UK-NIR** the time period for operation corresponding to interval [48.5-49] Hz is 60 min and should be not less than 90 min.
- Additional requirements are present in the national grid codes in **AT** and **CZ** with regard to frequency, voltage, reactive power and short- circuit capabilities.

P3 - Summary and main recommendations

Considering all the three GC NCs:

- ACER deems **a publicly available definition of qualitative/quantitative criteria to be beneficial** for the implementation of the GC NCs, although Articles 4(1) of the GC NCs do not mandate the issue of formal decisions from the competent authorities.
- ACER highlights that **the connection to the network shall not be withheld** to prospective system users which comply with the requirements and capabilities in the relevant GC NC, although the compliance with requirements included only in national regulations is not demonstrated.

Short – term solution

TSOs may apply specific Articles* which allow **case-by-case agreements** between the TSO and the relevant system users on specific additional requirements (site-specific application).

Long – term solution

NRAs/TSOs could rise **requests for amendments of the GC NCs**. These should be coordinated with ENTSO-E and European Commission (system wide application).

* Article 13(1)(a)(ii)-(iii) of the NC RfG, Article 12(2) of the NC DC and Articles 11(2) or 39(2)(b) of the NC HVDC.

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P3 - Summary and main recommendations

Considering the NC DC:

- More than **30%** of the monitored Countries reported a **incomplete or partial establishment** of the **requirements of general application** of the NC DC (mainly demand response services).
- Although the provision of **demand response services** from demand systems is not mandatory, prospective or new demand systems, willing to provide demand response services, **should not be obstructed** by the lack of approved and publicly available relevant requirements.
- This picture may **delay** their projects, whereas new demand systems may require potentially **costly retrofitting** actions in order to comply with the requirements in TITLE III, once approved.

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P3 - Summary and main recommendations

Considering the NC HVDC:

- More than **20%** of the monitored Countries reported a **incomplete or partial establishment** of the **requirements of general application** of the NC HVDC.
- The **lack of** applicable **rules** in one or more MSs **prevents** the formation of a **harmonised EU-wise regulatory framewor**k, which in turn causes **negative effects on** the integration, **competition** and **functioning of the market**..
- ACER has **recommended** E-Control (**AT**), ILR (**LU**) and ERSE (**PT**) **to ensure the compliance** of the relevant system operators in their MSs concerning the connection rules prescribed in the **NC HVDC**.

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P4 - Ongoing work and next steps

- ACER is **working** closely **with the NRAs** via SOCG Task Force and Electricity Working Group in order to follow up on late or non-harmonized implementation of the GC NCs.
  - These topics will be discussed at the upcoming SOCG TF meeting (11 March 2021). In fact, it is NRAs' duty to ensure that relevant system operators and TSOs comply with the GC NCs.

- ACER has already **highlighted to the European Commission** all the monitored **outstanding positions** concerning the implementation of the GC NCs.

Thank you for your attention

Any questions?

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