



**DSO**  
**ENTITY**  
DSOs FOR EUROPE

**Annual Plan 2024**

# DSO Entity at a glance

## Who are we

DSO Entity is the legally mandated EU body for European Distribution System Operators (DSOs), uniting almost 900 DSOs of all sizes in Europe, and connecting more than 250 million electricity customers across all 27 EU member States. It was formally established in June 2021 and mandated by the EU's Electricity Market Regulation to promote the completion and functioning of the internal market and help drive Europe's energy transition.

DSOs are the backbone of the changing energy system:

- ▶ DSOs integrate the largest share of renewable and intermittent power sources.
- ▶ DSOs manage volatile energy supply and demand challenges in flexible and decentralised grids.
- ▶ DSOs manage the digitalised grid and cooperate with Transmission System Operators (TSOs).
- ▶ DSOs enable customers to participate in an increasingly decentralised energy world.

DSO Entity offers its members formal representation to the European Commission by providing technical expertise on electricity distribution grids, which operate primarily on the low- and medium-voltage part of the electricity network connecting households, industries, and other end-users.

## Our mission

By taking an integrated view of the energy system, which includes customers, DSO Entity aims to strongly contribute to the energy transition, together with the entire energy ecosystem.

DSO Entity therefore acts as a strong and credible platform that

- ▶ Develops future proof network codes that reflect the new role of DSOs in the energy transition
- ▶ Provides neutral technical guidance on the integration of renewable energy sources, fostering efficient market performance
- ▶ Strengthens cooperation between DSOs and creates an interactive forum of expertise for its members; and

- ▶ Facilitates DSO-TSO cooperation, as well as dialogue with other stakeholders.

## Our core tasks

DSO Entity's missions and pledges inspired its three pillars of activities:

- ▶ Participating in drafting the Network Codes and Guidelines which are relevant for DSOs;
- ▶ Promoting the optimal and coordinated planning and operation of DSO and TSO networks; and
- ▶ Organising expert groups and forums of expertise to exchange views on relevant topics relating to the energy transition.

By participating as a member, DSOs can actively contribute to create futureproof conditions for DSOs to actively facilitate energy transition.

## Our values

DSO Entity is committed to ensuring a diverse and balanced representation of all electricity DSOs within the European Union. It provides a platform where DSOs can contribute to developing network codes, providing neutral expertise and sharing knowledge and best practices. DSO Entity strives for transparency in all its workflows and embraces an open-minded, fact-based and consumer-centric approach. Specific attention is paid to the feasibility and proportionality of network codes and country-specific differences. Applicability for all small and large members is considered central.

## Our vision

In line with the European climate and energy objectives, DSO Entity is committed to supporting the path towards carbon neutrality in Europe by 2050 and has developed its vision as follows:

DSO Entity will support DSOs to actively facilitate the transition to a CO<sub>2</sub>-neutral energy system in the next decades, ensuring security of supply with future-proof network codes and with enhanced collaboration between TSOs and DSOs.



# List of abbreviations

ACER	The European Union Agency for the Cooperation of Energy Regulators	ExCo	Executive Committee
AFIR	Alternative Fuels Infrastructure Regulation	FF55	Fit for 55 package
AP24	Annual Plan 2024	F-gases	Fluorinated Greenhouse gases
BESC	The Expert Selection Board Committee	IA	Implementing Acts
BoD	Board of Directors	ICT	Information and Communications Technology
CAPEX	Capital Expenditures	JWG	Joint Working Group
CBC	Communication Board Committee	KORRR	Key Organisational Requirements, Roles and Responsibilities in relation to data exchange
CEER	The Council of European Energy Regulators	LFDD	Low Frequency Demand Disconnection
CEG	Country Expert Group	MoU	Memorandum of Understanding
CRA	Cyber Resilience Act	MS	Member States
DA	Delegated Acts	NCCS	Network Code Cybersecurity
DC	Demand Connection	NCDR	Network Code on Demand Response
DESAP	Digitalisation of the Energy System: Action Plan	NZIA	Net-Zero Industrial Act
DSO	Distribution System Operator	OPEX	Operating Expenses
DT	Digital Twins	PCI	Project of Common Interest
EC	European Commission	RED	Renewable Energy Directive
EED	Energy Efficiency Directive	RES	Renewable Energy Source
EG CS	Expert Group Cybersecurity	RfG	Requirements for Generators
EG DF	Expert Group Distributed Flexibility	RGI	Renewable Grid Initiative
EG DI	Expert Group Data Interoperability	SAG	Strategic Advisory Group
EG NC	Expert Group Existing Network Codes	SEEG	Smart Energy Expert Group
EG	Expert Group	SGI	Smart Grid Indicators
EMD	Electricity Market Design	SGTF	Smart Grid Task Force
ENCS	The European Network for Cyber Security	SOGL	System Operation Guideline
ENTSO-E	European Network of Transmission System Operators for Electricity	T&D BC	TSO-DSO Board Committee
ENTSO-G	European Network of Transmission System Operators for Gas	TCMs	Terms Conditions and/or Methodologies.
EPBD	Energy Performance of Buildings Directive	TF	Task Force
ESC	European Stakeholders Committee	TF DESAP	Task Force Digitalising the Energy System - Action Plan
ETAG	External Technical Advisory Group	TF TYNDP	Task Force Ten Year Network Development Plan
EV	Electric vehicle	TSO	Transmission System Operator
		TYNDP	Ten Year Network Development Plan

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# Foreword

2023 was the year of the European grid momentum with the power network now at the centre of the EU's agenda. In this context, Distribution System Operators (DSOs) play a key role as technical enabler of the energy and digital transitions, for the benefit of European customers who are the heart of our activities. With the High-Level Forum "Future of Our Grids" and the European Commission's Action Plan on electricity grids, there are no longer doubts about the utmost relevance of distribution grids for the energy sector's transformation and in making European citizens' empowerment happen.

However, this is just the beginning and 2024 must be the year of implementation. It will be a special year with the holding of the European elections and the start of a new EU term with a new European Commission's college. Ensuring that the grid momentum become the foundation of the energy system's transformation with DSOs at the heart is therefore essential. Without a power network fit for purpose, the EU will not achieve its climate targets by 2030. The challenges remain manifold and pressing. Hundreds billion of investments will be needed in European distribution grids by 2030. From renewable energies, electric vehicles to heating and cooling systems, DSOs face the need to connect at a much faster pace an increasing number of decentralised energy sources and prosumers in a short period of time. What is now needed are the right conditions on the ground to facilitate the energy and climate objectives set at the EU level.

With almost 900 DSO of all sizes and shapes, from all EU Members States, connecting over 250 million customers, DSO Entity acts as a platform of expertise and knowledge for all DSOs in Europe to develop the necessary conditions to deliver the Fit for 55 package and REPowerEU Strategy on the ground. After three years of operation, DSO Entity gathers more than 150 committed experts assisted by a growing Secretariat team which can rely on the strong and active involvement of its membership. To contribute to making the EU's vision for a decentralised and decarbonised energy system a reality, DSO Entity will develop its Technical Vision of the future energy system in 2024, sharing DSOs' common and joint perspective on how to achieve the EU's objectives at national and local levels. The intensification of its mandated tasks will require amplified efforts from all experts and a growing involvement of all members to speak with a common voice. This mission will be made even more crucial by the upcoming addition of new members. As assigned by the Gas Package, DSO Entity will be charged to amend its governance and Statutes to integrate gas DSOs under its umbrella.

On behalf of DSO Entity, we, as Chairman and Secretary General, look forward to continuing to build on the grid momentum and move towards a new paradigm. By keeping representing the collective interests of all our members, providing technical expertise on strategic priorities for DSOs, and engaging with partners, DSO Entity can make a difference in delivering the European Green Deal and empowering customers to generate, save and share energy.



Vincenzo Ranieri  
President



Peter Vermaat  
Secretary General





# 1. Introduction

## “The EU is bringing grids to the centre of its agenda.” European Commission, Grid Action Plan<sup>1</sup>

2023 marked not only the finalisation of highly relevant European energy and climate legislation but also induced a new momentum: a momentum for grids with a strong focus on the decentralised level. It started with the High-level Conference on grids in September and was continued by the publication of the European Commission’s communication COM(2023)757 “Grids, the missing link – An EU Action Plan for Grids” in late November. On these occasions, grids took centre stage at the European level and especially DSOs, which had often been overlooked in the past. DSOs are now acknowledged for what they are: key enablers of the energy transition and at the forefront of the implementation of the European objectives towards a renewable and carbon-neutral future.

In its third year of existence and due to the Grid Action Plan (COM/2023/757), DSO Entity’s relevance and activities became even more apparent. Tasked with the promotion of the functioning of the European electricity market and the facilitation of the energy transition, DSO Entity together with its members is working daily to accomplish its mandate – on most tasks in close cooperation with ENTSO-E and TSOs. As a new body only founded in 2021, most of the groundwork for the organisation and governance was laid in 2022. By 2023 all Expert Groups (EGs) and Task Forces (TFs), needed to be established, be able to fulfil DSO Entity’s mandate at the time, were established and could accomplish all deliverables. 2024 will mark an intensification and professionalisation of the work with more staff and more active member engagement.

### OBJECTIVE AND STRUCTURE OF THE ANNUAL PLAN 2024:

DSO Entity has the legal obligation to adopt an annual report that summarises the delivery of mandated tasks, as well as an annual work program which lays out the planned activities for each year (Electricity Market Regulation, 2019/943/EU on the internal market for electricity<sup>2</sup>, Art. 55 (2d)).

This third Annual Plan aims to review the steps taken in 2023 and look ahead to what to expect in 2024. The Annual Plan 2024 (AP24) is structured into five parts, of which parts three and four provide the most comprehensive and relevant information by summarising DSO Entity’s activities and achievements of last year and laying out its plans for 2024, especially regarding the EGs and TFs.

- ▶ **Chapter 1** summarises the AP24’s contents, objectives and the consultation process followed.
- ▶ **Chapter 2** gives an overview of DSO Entity’s mandated tasks, governance, structure, and core principles.
- ▶ **Chapter 3** looks back at 2023 and describes the external and internal developments with a strong focus on the EGs and TFs’ yearly reports. One section is dedicated to horizontal topics such as the strategy for communication and Knowledge Sharing.
- ▶ **Chapter 4** describes the work envisaged during 2024 with a focus on the EGs and TFs, i.e. their Work Programmes and deliverables. In addition to these internal developments, Chapter 4 also describes DSO Entity’s external expectations and how they relate to its internal work. Finally, a short outlook regarding the Communication and Knowledge Sharing Strategies is given.
- ▶ **Chapter 5** consists of a summary and conclusions, highlighting once more DSOs’ central role and vision in the energy transition.

The AP24’s overall objective is not only to report on the delivery of DSO Entity’s mandated tasks under the Electricity Market Regulation (2019/943/EU)<sup>3</sup> and other legislative acts, but also to keep all its members and stakeholders fully informed about its past and future activities, as well as about related European developments that impact DSOs’ regulatory environment.

1. Commission Communication COM(2023)757 of 28 November 2023 to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Grids, the missing link – An EU Action Plan for Grids. Available online: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2023%3A757%3AFIN&qid=1701167355682>

2. European Parliament and Council Regulation (EU)2019/943 of 5 June 2019 on the internal market for electricity [2019] OJ L158/54

3. Op cite

# 2024 Annual Plan Consultation Timeline

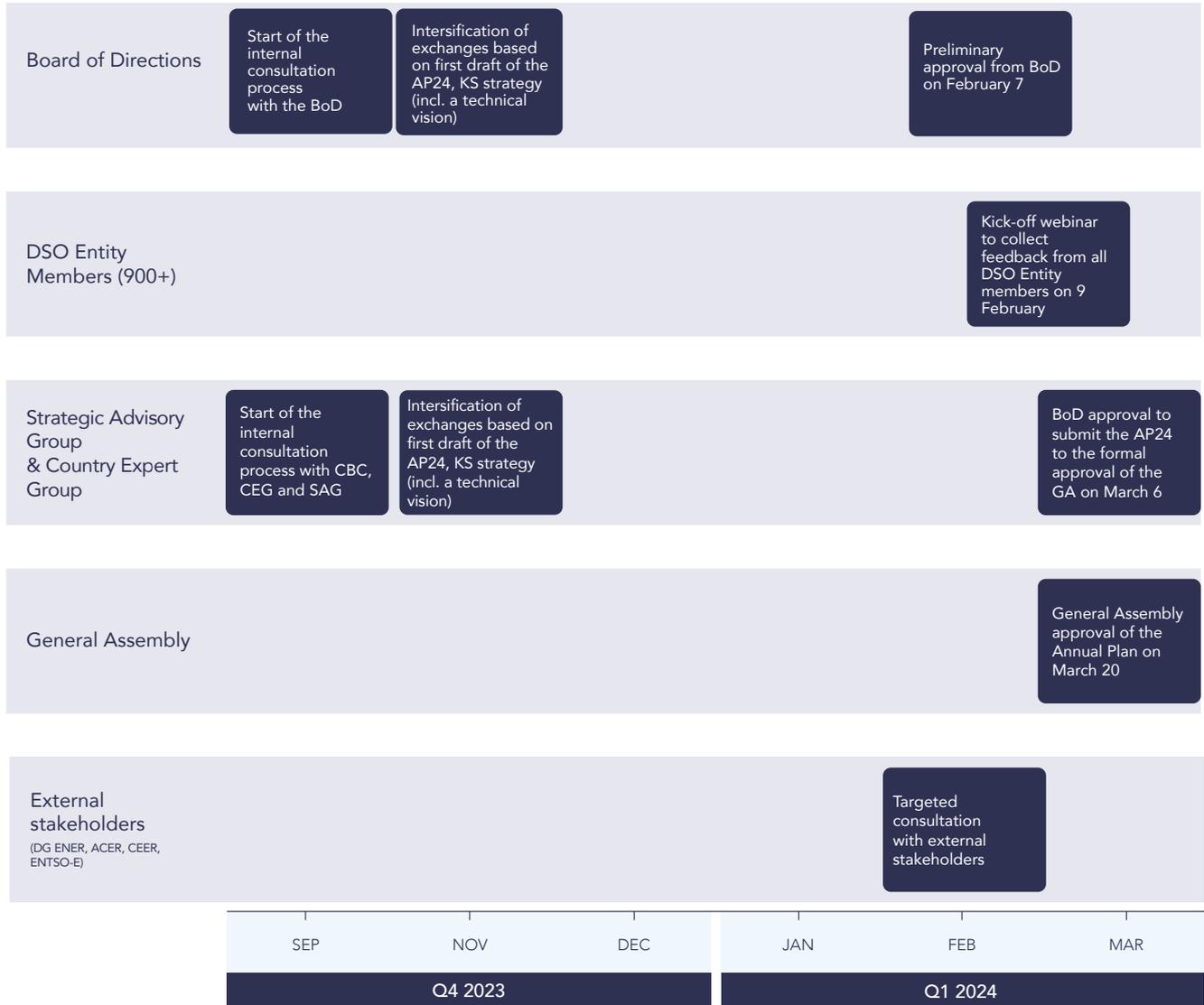
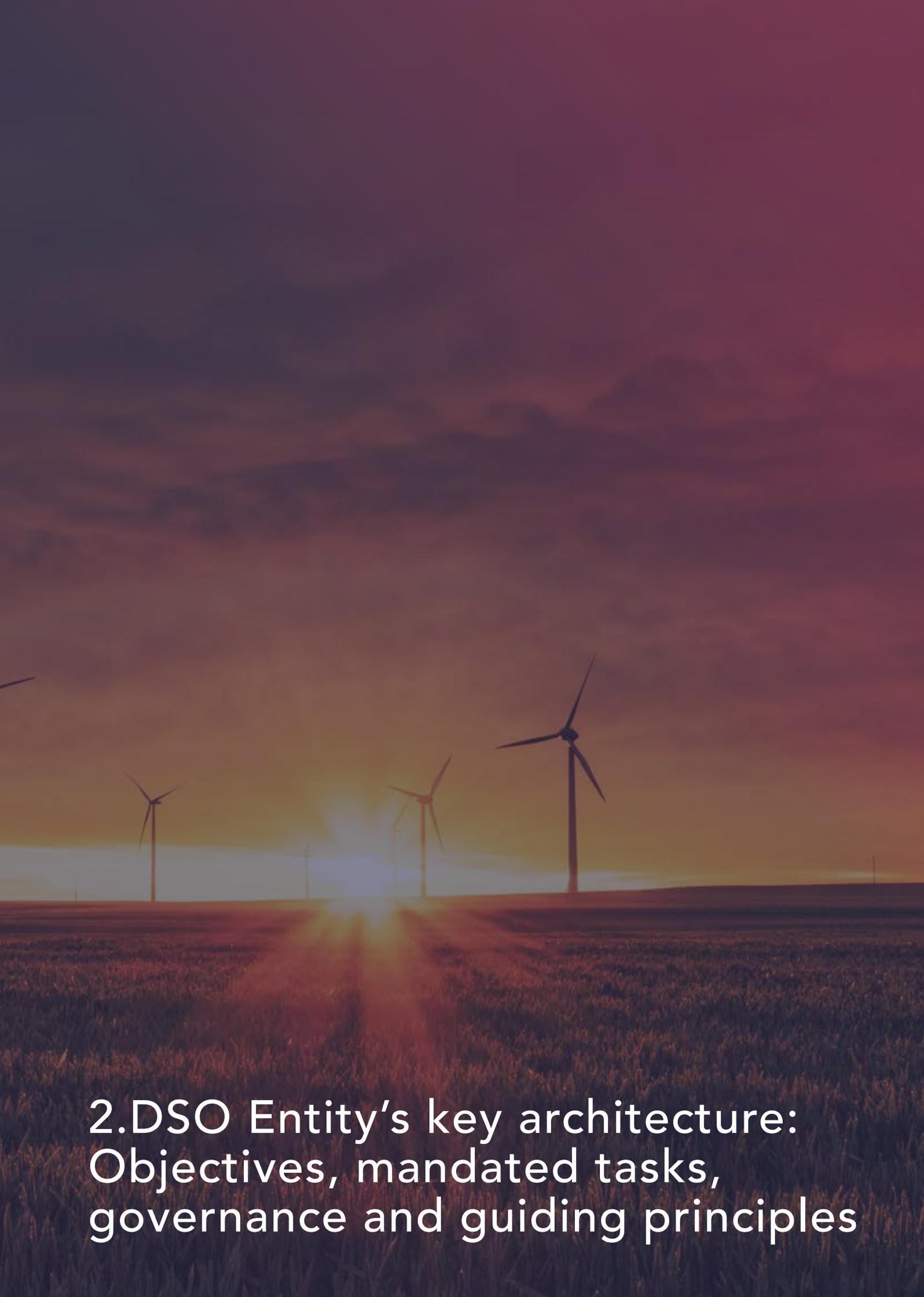


Figure 1: Overview of the consultation process for the AP24



2.DSO Entity's key architecture:  
Objectives, mandated tasks,  
governance and guiding principles

2.1. BACKGROUND ON DSO ENTITY’S ESTABLISHMENT: ROLE, OBJECTIVES, AND MANDATED TASKS

**DSOs’ growing relevance in European energy policies:**

Within the last two decades, the scope and relevance of the European energy policy has immensely grown. Today, all DSOs are deeply affected by European legislation which serves as the basis for most of the adopted and implemented energy-related laws in the 27 Member States. Thus, European provisions are highly relevant for DSOs when performing their daily activities – no matter if they are small and local or large and transnational.

Developments in the last ten years entailed a closer relationship between DSOs and the European institutions. The EU’s decarbonisation objective leads to more decentralisation, thus, engendering an enhanced importance of the distribution grid and greater responsibilities in strong interaction with the TSO part of the system, but also between DSOs in countries where they operate alone at medium-voltage level. The distribution grid, and thus DSOs’ role, became more relevant regarding the delivery of the EU’s objectives such as the integration of renewables, the roll-out of e-mobility and the usage of smart flexibility management.

**DSOs as (technical) enablers to accelerate the achievement of the EU’s climate objectives:**

Figure 2 shows how the successful implementation of the European objectives is closely interlinked with the daily (technical) work of DSOs and why the latter are vital for their achievement. High-level political objectives will only be achieved if the technical preconditions in the system and market are right. As a result, technical bodies are pivotal for enabling and facilitating the transition. In recent years, decision-making at the European level has become more technical, which can be seen in the establishment of network codes and in general in the increase of implementing and delegated acts. This more technical-driven political environment highlights the growing relevance of technical expert bodies such as DSO Entity to help solve political problems. In the end, all political questions require technical answers.



Figure 2: Impact of EU objectives on the distribution grids

## Network codes and DSO Entity's establishment in 2021:

Given the need for common technical rules at the European level to foster the competition of the internal energy market, specific binding rules for the harmonisation of previously nationally oriented electricity markets and regulations for the operation of Europe's cross-border electricity networks were set. These so-called network codes were introduced in 2009 with the Third Energy Package together with ENTSO-E, the European Network of Transmission System Operators for Gas (ENTSO-G) and ACER's establishment. By 2017, eight electricity network codes and guidelines entered into force: three codes for grid connection (RfG, DCC, HVDC)<sup>1</sup>, three codes for markets (FCA, CACM, EB GL)<sup>2</sup> and two codes for system operation (SO GL, ER)<sup>3</sup>.

As a result of the network codes' strong cross-border aspect, DSOs were originally missing and not given an official role in the network code drafting process. With guidance of ACER and the EC, the task of drafting and implementing was carried out solely by ENTSO-E in cooperation with different stakeholders. DSOs were considered as one group among these stakeholders and their involvement was largely facilitated through the existing DSO associations at the EU level. Decarbonisation and decentralisation as well

as an increase in decentralised energy resources and active customers increased the relevance of network codes for DSOs and raised the question of their lack of formal representation.

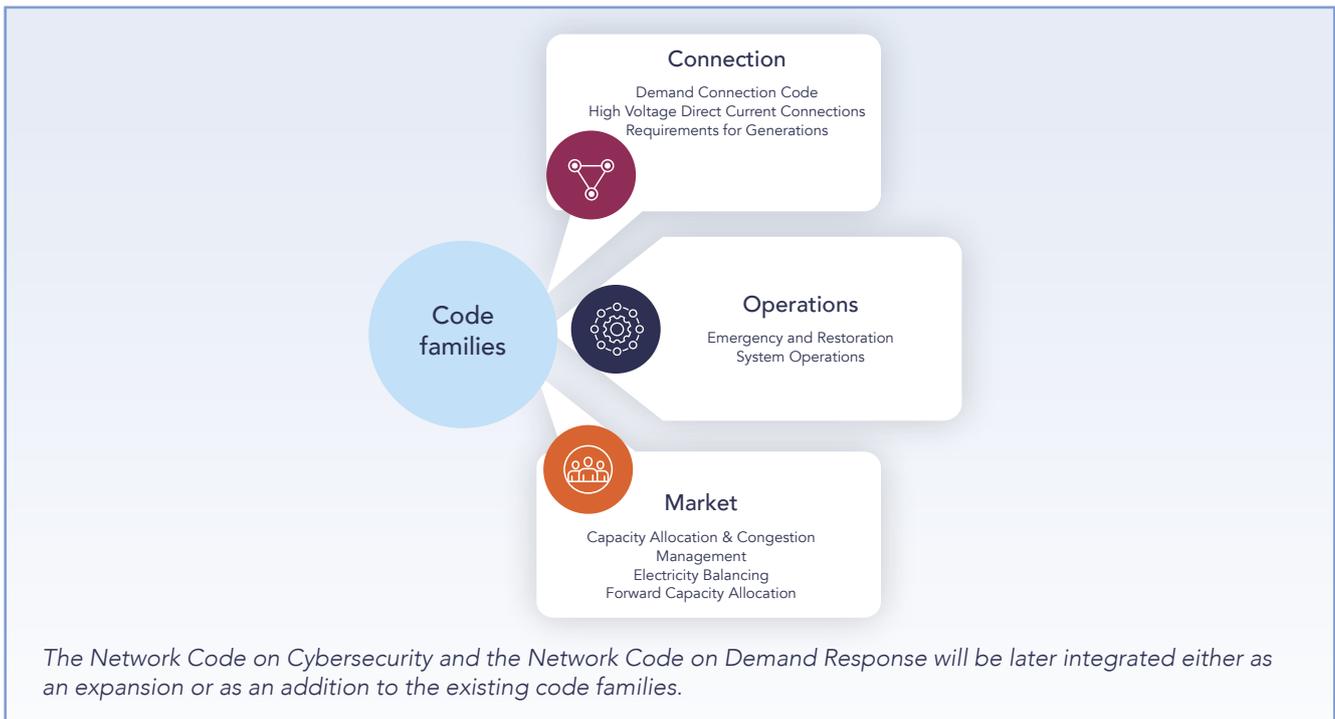
The **Clean Energy Package** finally enshrined the factual importance of DSOs in the EU's energy legislation with the Electricity Market Regulation (2019/943/EU), thus **establishing DSO Entity** (formally founded in June 2021). DSO Entity has the clear mandate "to promote the completion and functioning of the internal market for electricity, and to promote optimal management and a coordinated operation of distribution and transmission systems" as defined in the Electricity Market Regulation (2019/943/EU) (Art. 52)<sup>4</sup>. Together with its members, and in close cooperation with ENTSO-E, DSO Entity works on the establishment of the technical rules to make the climate objectives a reality.

In 2021 ENTSO-E and DSO Entity signed a **Memorandum of Understanding (MoU)** consolidating the cooperation between the two entities, specifically regarding the development of network codes and guidelines. In the MoU both bodies expressed "their willingness to cooperate on and ensure transparency in the development of all new network codes or guidelines, regardless of whether ENTSO-E or DSO Entity have been given the lead [...]"<sup>5</sup>.



### INFO BOX A

European law's peculiarity, the electricity network codes are a set of rules aiming at harmonising the EU internal electricity market by covering requirements for power generation, demand, grid connection, network operations, and the wholesale market participation. In some cases, the rules are adopted as "guidelines" rather than "network codes". Due to the nature and characteristics of the rules, the network codes and guidelines are legally binding and directly applicable to allow the implementation of the same set of rules across all Member States. The first set of network codes and guidelines were adopted under the Electricity Market Regulation (EC) No 714/2009 creating three families of codes. With the Clean Energy Package, the specific process to develop network codes and guidelines was aligned with the Treaty on the Functioning of the European Union specifying that some network codes and guidelines will be adopted as delegated acts and some network codes as implementing acts, both legally binding regulations. Although only a structural change at first sight, this change actually gives clear guidance for the development phase of the rules as delegated acts, as well as their adoption. The Clean Energy Package includes already two new acts: the Network Code on Cybersecurity (NCCS) is expected to be published in early 2024 and the Network Code on Demand Respond (NCDR) under development since March 2023. Both acts are seen to expand or be an addition to the existing code families.



**Assigned tasks: an ever-growing mandate:**

According to the Electricity Market Regulation (2019/943/EU), DSO Entity is mandated to carry out several core tasks. To simplify, DSO Entity usually summarises its core tasks in three pillars which are (1) developing technical rules such as network codes and guidelines, (2) cooperating with the TSOs / ENTSO-E, and (3) identifying and sharing best practices in the form of Knowledge Sharing.



Figure 3: DSO Entity's three pillars of activities

While the Electricity Market Regulation (2019/943/EU) outlines DSO Entity's core and wide range of tasks and responsibilities, such as the development and proposal for amendments of network codes and guidelines (Art. 59-60) and the adoption of best practices on the coordinated operation and planning of transmission and distribution systems (Art. 55), DSO Entity's portfolio of responsibilities does not end there. Other legislative and non-legislative

1. Commission Regulation (EU) 2016/631 of 14 April 2016 establishing a network code on requirements for grid connection of generators; Commission Regulation (EU) 2016/1388 of 17 August 2016 establishing a Network Code on Demand Connection; Commission Regulation (EU) 2016/1447 of 26 August 2016 establishing a network code on requirements for grid connection of high voltage direct current systems and direct current-connected power park modules.
2. Commission Regulation (EU) 2016/1719 of 26 September 2016 establishing a guideline on forward capacity allocation; Commission Regulation (EU) 1222/2015 of 24 July 2015 establishing a guideline on capacity allocation and congestion management; Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing.
3. Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation; Commission Regulation (EU) 2017/2196 of 24 November 2017 establishing a network code on electricity emergency and restoration
4. Op cite
5. Memorandum of understanding between ENTSO-E and EU DSO Entity (11 January 2022). Available online: <https://eudsoentity.eu/publications/download/10>

acts attribute additional tasks and mandates to DSO Entity. Please find in Table 1, an overview of the most relevant tasks currently mandated to DSO Entity.

Table 1 reveals that recent legislative and non-legislative acts adopted in 2023 significantly added to DSO Entity’s workload and strengthened its profile and responsibilities. For instance, through new obligations in the Electricity Market Design<sup>1</sup> reform (COM/2023/148) to improve the Union’s electricity market design (EMD) which assigns DSO Entity jointly with ENTSO-E with the task to develop a methodology for the assessment of the flexibility needs (Art. 19c). Furthermore, the non-legislative Grid Action Plan (COM/2023/757)<sup>2</sup> published on 28 November assigns seven action points out of the 14 proposed to be delivered or supported by DSO Entity. Among them are the intensification of sharing of best

practices on various aspects of the energy system such as on network development planning and cooperation with TSOs and other actors; active support for the Pact of Engagement<sup>3</sup> together with ENTSO-E, ACER and the Renewable Grid Initiative (RGI); support and guidance for members to support smart grid projects as Projects of Common Interest (PCIs) and support to the EC and ACER regarding the development of more fitting regulatory frameworks including anticipatory investments and a fair Capital Expenditures (CAPEX) / Operating Expenses (OPEX) remuneration (more details see chapter 4.1. on the Grid Action Plan).

CROSS-CUTTING MANDATE (IN REGULATION)			
Cooperation with ENTSO-E and TSOs		Identification and sharing of best practices	
<b>Network codes (in regulation)</b>		<b>Technical regulations (IA, DA)</b>	
NC Cybersecurity (Implementation & TCM development)	NC Demand Reponse (Development finalisation)	Joint Working Group with ENTSO-E (IR on electricity metering and consumption data)	Participation in developing data reference models & requirements (IAs on data for switching & DR, EPBD and EMD data requirements for energy sharing and buildings)
NCs Grid Connection (Amendment)	Potential new NCs from next Priority List		
<b>Mandates from other legislation</b>		<b>(AD-HOC) Tasks assigned from EC (Non-legislative acts)</b>	
Development of methodology to assess flexibility needs w/ ENTSO-E (Electricity Market Regulation) (New not yet in force)	Participation in TYNDP development scenarios (TEN-E Regulation)	Development of Digital Twin & Smart Grid Indicators with ENTSO-E (Action Plan Digitalising the Energy System)	Report with best practices of Network Development Plans (NDP) & best practices for TSO-DSO cooperation in NDP incl. sector integration (Copenhagen Forum 2023)
Integration of gas DSOs in DSO Entity (Gas Market Regulation) (New not yet in force)		DSO Entity is assigned to support the delivery of 7 to 14 actions (Action Plan Grids) (New)	Ad Hoc requests for inputs from the EC (e.g. Grid Conference, permitting)
<b>Legend</b>			
<span style="color: #800000;">■</span> As provided by DSO Entity's mandate (*Electricity Market Regulation (2019/943/EU)/**Electricity Market Directive (2019/944/EU)/Implementing Regulation)			
<span style="color: #666666;">■</span> As provided by Implementing Regulation under the scope of DSO Entity's mandate			
<span style="color: #cccccc;">■</span> As assigned by the European Commission in other (non-) legislative acts under the scope of DSO Entity's mandate			

Table 1 : Origins of some of DSO Entity’s main mandated tasks

1. Commission Proposal COM(2023)148 of 14 March 2023 for a Regulation amending Regulations (EU) 2019/943 and (EU) 2019/942 as well as Directives (EU) 2018/2001 and (EU) 2019/944 to improve the Union’s electricity market design. Available online: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52023PC0148&amp%3Bqid=1679410882233>

2. Op Cite

3. Commission Pact for Engagement of 28 November 2023 “A Pact for Engagement - Ensuring early, regular and meaningful stakeholder engagement in grid development”. Available online: <https://energy.ec.europa.eu/system/files/2023-11/Pact%20for%20Engagement%202023.pdf>

## Foundation and establishment of a sector-integrated DSO Entity as core task for the years to come:

One of the new legislative acts goes beyond simply adding new tasks to DSO Entity's portfolio but aims to adapt its structure and general features. In this respect the Regulation on the internal markets for renewable and natural gases and for hydrogen COM/2021/804 (Gas and Hydrogen Regulation)<sup>1</sup> needs to be highlighted, which foresees the integration of gas DSOs into DSO Entity and thus, the creation of one DSO Entity for electricity and gas and hydrogen. In this respect, DSO Entity is assigned with the task of amending its Statutes, updating its Rules of Procedure and financing rules, as well as publishing a Code of Conduct and a list of registered members and "draft updated rules of procedure of DSO Entity shall ensure fair and balanced representation of all participating distribution system operators [...]" (Art. 37 (3)) of gas DSOs within DSO Entity. This assignment will not only entail changes in DSO Entity's structure and governance, but also require financial and human resources to prepare and facilitate a successful integration.

**Summarising**, DSO Entity's mandate is geared towards supporting the EU's objectives with respect to the creation of a cyber-resilient, digitalised, renewable, decentralised and decarbonised energy system. This goes hand in hand with DSO Entity's mandate to participate in the development of technical rules such as network codes and guidelines, intensify the cooperation with TSOs and among DSOs to share best practices on distribution networks.

## 2.2 STRUCTURE, GOVERNANCE AND EXPERT BODIES

The **governance of DSO Entity** relies on an engaged BoD<sup>2</sup> elected by the General Assembly and who are involved in regular activities in close cooperation with the EGs.

- ▶ **The Executive Committee (ExCo)**, composed of the President and the three Vice-Chairs of the BoD, provides support to the Secretariat and the BoD, when appropriate.
- ▶ **The Strategic Advisory Group (SAG)**, which guarantees cooperation with DSO associations and country representatives not represented on the BoD, is a forum for consultation and can give advice on relevant decisions and projects.
- ▶ **The Country Expert Group (CEG)**, composed of one DSO representative per Member State, is the contact body for the representatives of DSO members in all EU countries and can be consulted by the BoD or the EGs for an opinion on relevant projects or decisions.
- ▶ At the heart of DSO Entity's work are the **four Expert Groups (EGs) and two Task Forces (TFs)** that bring together more than 150 experts.

All governance bodies contribute to ensuring a **balanced representation of the membership**.

In addition, **four Board Committees** advise and support DSO Entity on specific tasks: the selection of experts through the Expert Selection Board Committee (BESC), DSO Entity's relations and cooperation with ENTSO-E through the TSO-DSO Board Committee (T&D BC), communication and Knowledge Sharing through the Communication Board Committee (CBC) and governance and relevant topics through the ExCo (refer to above).

1. Commission Proposal COM(2021)804 of 15 December 2021 for a Regulation on the internal markets for renewable and natural gases and for hydrogen. Available online: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2021%3A804%3AFIN>

2. DSO Entity's Board of Directors is composed of 27 Board members and one President.

# General Assembly

## Board of Directors



Figure 3 : The governance of DSO Entity

The work of DSO Entity's members and its governance bodies are **supported daily by the Secretariat**. In January 2024, it numbered 19 permanent employees reaching the staff objective set for 2023, which is a significant increase from 10 FTEs at the beginning of 2023. With the growing team, DSO Entity's Secretariat is able to be more structured, with dedicated departments for monitoring EU regulatory affairs, supporting and coordinating EGs, guaranteeing efficient member management, and facilitating professional communication.

### At DSO Entity's heart lies the work of the Expert Groups

The EGs provide the fundamental pillars of DSO Entity's work. They are responsible for the technical work involved in developing network codes and guidelines, as well as for developing technical papers on best practices and cross-sectoral matters. They work upon requests from the BoD, as well as on their own initiative, and they can also provide advisory opinions. EGs are created and dissolved following a justified proposal of the BoD to the General Assembly, on both a permanent or temporary basis. Their composition reflects the **technical knowledge as well as the size**

**and geographical diversity** across the DSO members and respects their relevant expertise. The BESC is the guardian of capability and of the principle of diversity when selecting experts for EGs and TFs, while also ensuring there is a balanced representation of DSOs, regardless of their size, country, and other relevant criteria.

The EGs' core work and main tasks derive from the mandate given to DSO Entity in Article 55-56 in the Electricity Market Regulation (2019/943/EU) and other legislative and non-legislative acts. The cooperation with ENTSO-E on drafting, implementing, and monitoring the network codes and guidelines relevant to the operation and planning of distribution grids takes center stage. However, the establishment of technical network codes is not an isolated activity, but closely connected to broader European strategies and perspective. It encompasses the digitalisation of the European economy, the creation of a common data market, the European Green Deal, and the climate neutrality objective. As a result, other important activities include the identification of best practices in areas such as network planning, the integration of Renewable Energy Sources (RES), facilitating demand side flexibility or contributing to the digitalisation of DSOs.

# DSO ENTITY EXPERT GROUPS AND TASK FORCES

<b>EXPERT GROUP</b> Cybersecurity	EG CS 	<table border="1"> <thead> <tr> <th>Creation Date</th> <th>Number of Members</th> <th>Number of Countries</th> </tr> </thead> <tbody> <tr> <td>March 2022</td> <td>29</td> <td>19</td> </tr> </tbody> </table>	Creation Date	Number of Members	Number of Countries	March 2022	29	19
	Creation Date	Number of Members	Number of Countries					
March 2022	29	19						
<p>Scope and Objective of Activity</p> <ul style="list-style-type: none"> <li>• Cooperation with ENTSO-E on the preparation and implementation of the Network Codes ('NC') in particular the NC on Cybersecurity (NCCS);</li> <li>• Preparing communication materials about the Network Code</li> <li>• Taking part in the selected consultation process by preparing comments and corrections proposal in the field Cybersecurity.</li> </ul>								
<b>EXPERT GROUP</b> Distributed Flexibility	EG DF 	<table border="1"> <thead> <tr> <th>Creation Date</th> <th>Number of Members</th> <th>Number of Countries</th> </tr> </thead> <tbody> <tr> <td>March 2022</td> <td>30</td> <td>18</td> </tr> </tbody> </table>	Creation Date	Number of Members	Number of Countries	March 2022	30	18
	Creation Date	Number of Members	Number of Countries					
March 2022	30	18						
<p>Scope and Objective of Activity</p> <ul style="list-style-type: none"> <li>• Contributing to creating foundations for flexibility market that unlocks the value of consumer participation in the sustainable energy system.</li> </ul>								
<b>EXPERT GROUP</b> Data Interoperability	EG DI 	<table border="1"> <thead> <tr> <th>Creation Date</th> <th>Number of Members</th> <th>Number of Countries</th> </tr> </thead> <tbody> <tr> <td>June 2021</td> <td>23</td> <td>11</td> </tr> </tbody> </table>	Creation Date	Number of Members	Number of Countries	June 2021	23	11
	Creation Date	Number of Members	Number of Countries					
June 2021	23	11						
<p>Scope and Objective of Activity</p> <ul style="list-style-type: none"> <li>• The main task of the EG DI is to advise and support the European Commission in monitoring the implementation of, and further developing the implementing acts on data interoperability</li> </ul>								

**EXPERT GROUP**  
 Existing Network Codes

EG NC



Creation Date

Number of  
MembersNumber of  
Countries

October 2022

25

16

## Scope and Objective of Activity

- The given mandates and objectives of the Expert Group are to review all Existing Network Codes (NCs).
- During 2022-2023, the focus is based on EC and ACER initiatives to review Grid Connection network codes, on both RfG (Request for Generations) and DC (Demand Connection)

**TASK FORCE**  
 Digitalisation of the  
 Energy System

TF DESAP



Creation Date

Number of  
MembersNumber of  
Countries

October 2022

28

15

## Scope and Objective of Activity

- Develop a concept of a Digital Twin of the European Electricity Grid of adequate granularity
- Develop a limited set of tailored Smart Grid Indications

**TASK FORCE**  
 Ten-year Network  
 Development Plan

TF TYNDP



Creation Date

Number of  
MembersNumber of  
Countries

December 2023

19

11

## Scope and Objective of Activity

- Investigating the opportunity to collaborate with the ENTSOs on the TYNDP process
- React to the public consultations on the TYNDP process

## COUNTRY EXPERT GROUP

The CEG is a unique body within DSO Entity. Part of DSO Entity's EGs, it has a **distinctiveness** resulting from its structure. The CEG constitutes a **contact body of DSO representatives from all Member States** appointed by their respective countries<sup>1</sup>. It is a body providing advice to the BoD and contributing to the delivery of DSO Entity's tasks by sharing expertise and knowledge.

### Uniqueness

- ▶ **Forum embodying the diversity of DSOs in Europe:** Gathering DSOs from all Member States to shed light on DSO diversity and providing best practices.
- ▶ **Central link between all DSOs from each country:** Connecting all DSOs from each country through their DSO national representative to collect input from a country perspective (and not from a DSO-company perspective) and to ensure various national positions are reflected<sup>2</sup>.

### Role

- ▶ **Consultative role to the BoD:** Providing opinion on relevant decisions and projects to the Board and being kept informed of relevant developments (e.g., network codes, Annual Plans, Knowledge Sharing Strategies)<sup>3</sup>.
- ▶ **Supportive role to DSO Entity's Knowledge Sharing Strategy:** Providing a forum to consult, to identify, and to collect and share best practices from all 27 Member States.

### FOCUS: KEY SUPPORT TO KNOWLEDGE SHARING STRATEGY

CEG is one of the main contributors to the activities and projects as part of DSO Entity's Knowledge Sharing Strategy helping fulfill its two major objectives:

- ▶ **Internally:** Identifying, collecting, and learning about the differences and (similar) challenges faced by DSOs in all Member States and the (best) practices implemented.
- ▶ **Externally:** Informing about the diversity of DSOs (mapping) and sharing best practices to external stakeholders to raise awareness on the role and relevance of DSOs.

Figure 4: The Country Expert Group as unique body within DSO Entity

1. In accordance with DSO Entity's Statutes, Article 19(6).

2. DSO Entity's Rules of Procedure, Art. 6

3. DSO Entity' Statutes, Article 19(6)

### 2.3. CORE PRINCIPLES AND WAY OF WORKING

DSO Entity’s governance is built on the core principle of diversity in the three dimensions relevant for the association – gender, geography, DSO size and type – to recognise the variety of its members and guarantee the balanced representation of its entire membership in its different bodies<sup>1</sup>. To maximise the balanced participation of its members, DSO Entity strives to adopt a platform (Figure 6) way of working by:

- ▶ Facilitating the processes within its member community: When developing network codes and guidelines and when sharing knowledge and best practices, DSO Entity reaches out frequently to all its members, big and small, using modern Information and Communication Technology (ICT) to reduce traveling time.

- ▶ Developing content from an integrated, fact-based and customer-centric approach: DSO Entity enables electricity customers to play their important role in the energy transition.
- ▶ Being open-minded, embracing necessary change, acting, and being solution-oriented: DSO Entity chooses to be transparent, to encourage maximum participation and to limit complexity, seeking input from experts and non-experts alike.

Working at the European level, DSO Entity is both open and neutral about the feasibility and proportionality of network codes and country-specific differences. The association will pursue applicability for all members, large and small, rural and urban, regional and transnational, to encourage involvement and ensure benefits for all its members based on the principle of balanced representation.

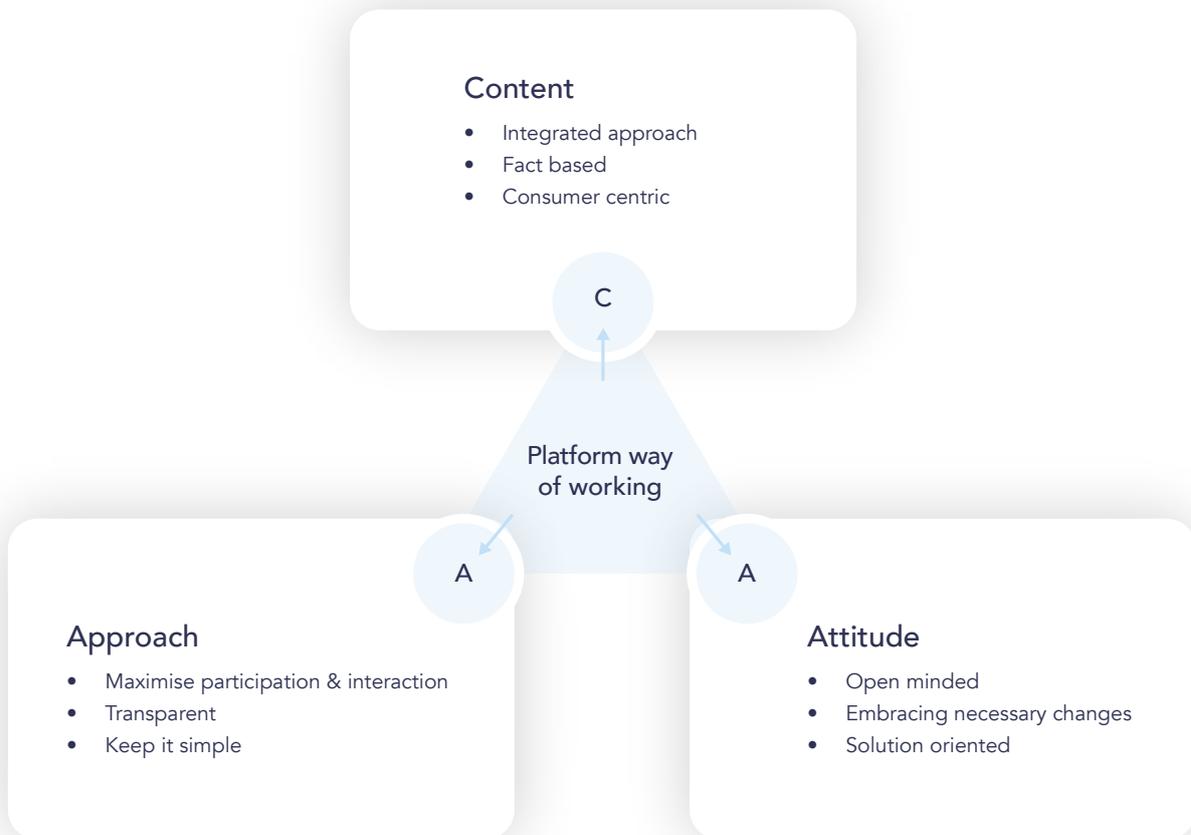
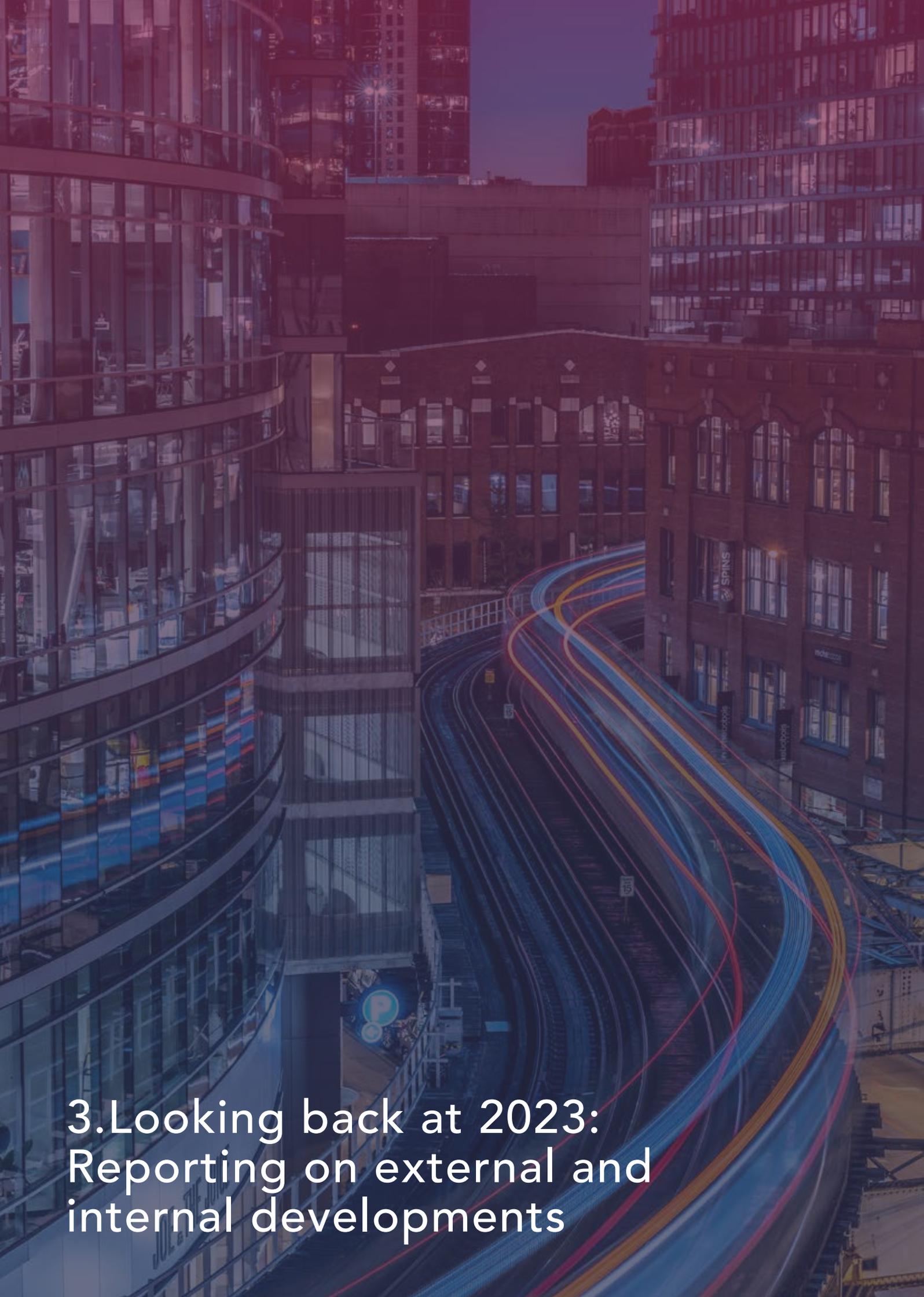


Figure 5: DSO Entity strives to work with its members through a platform way of working

1. DSO Entity’s membership is distributed among three main categories: DSO with less than 100,000 connected customers, DSOs with more than 100,000 connected customers but less than 1 million, and DSO with more than 1 million connected customers.



### 3. Looking back at 2023: Reporting on external and internal developments

### 3.1. GENERAL EU DEVELOPMENTS: DSOS IN THE LIMELIGHT

#### Delivering the Green Deal: A year to finalise the Fit for 55 package and other DSO-related files

2023 was a crucial and decisive year in EU decision-making on central energy files, leading to further accelerate the trajectory towards a renewable and decentralised energy system. With DSOs being the core link to customers in the energy chain.

2023 brought political agreements on more than a dozen energy- and climate-related files which were under negotiation since mid-2021. Most of them were part of the Fit for 55<sup>1</sup> (FF55) package, a mammoth of 13 legislative proposals, which set the right conditions to accelerate the transition towards a more renewable

and decentralised energy system. Delivering on the industrial aspect of the European Green Deal<sup>2</sup>, the EC also published a proposal for a Regulation on establishing a framework of measures for strengthening Europe's net-zero technology products manufacturing ecosystem COM(2023)161 (Net Zero Industry Act, NZIA)<sup>3</sup> on 1 February 2023<sup>4</sup>. The proposal under triologue negotiations integrates grid technologies in the list of strategic net-zero technologies recognising the major role of network infrastructure in achieving the EU's targets set for 2030 and 2050<sup>5</sup>.



#### INFO BOX B

#### The Fit for 55 package and crucial energy legislative files for DSOs in delivering the EU's climate objectives

The FF55 has both direct and indirect repercussions for DSOs aiming to increase the EU's energy targets and align the policy measures in keeping with the new goal of climate neutrality. Although at a first glance, DSOs seem not to be at the forefront of the FF55 proposals, they remain the core enablers of many of the set objectives.

DSOs will be the facilitators of the highest targets set to:

- ▶ Speed up the deployment of renewables;
- ▶ Accelerate the roll-out of electric vehicles (EVs);
- ▶ Increase energy savings by enabling flexibility solutions;
- ▶ Implement requirements for data access and interoperability;
- ▶ Manage the grid reliably with additional complexity.

In the aftermath of the war in Ukraine and in a period of continuous emergencies, the FF55 was reinforced with the REPowerEU Strategy in March and May 2022 that proposed even more ambitious targets, such as increased obligations for the deployment of renewables.

1. The FF55 package was proposed in two stages with a part I in July 2021 and a part II in December 2021
2. Commission Communication COM(2023)62 of 1 February 2023 to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions: A Green Deal Industrial Plan for the Net-Zero Age. Available online: [https://commission.europa.eu/system/files/2023-02/COM\\_2023\\_62\\_2\\_EN\\_ACT\\_A%20Green%20Deal%20Industrial%20Plan%20for%20the%20Net-Zero%20Age.pdf](https://commission.europa.eu/system/files/2023-02/COM_2023_62_2_EN_ACT_A%20Green%20Deal%20Industrial%20Plan%20for%20the%20Net-Zero%20Age.pdf)
3. Commission Proposal COM(2023)161 of 16 March 2023 for a Regulation of the European Parliament and of the the Council on establishing a framework of measures for strengthening Europe's net-zero technology products manufacturing ecosystem (Net Zero Industry Act). Available online: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52023PC0161>
4. Commission Proposal COM(2023)161 of 16 March 2023 for a Regulation of the European Parliament and of the the Council on establishing a framework of measures for strengthening Europe's net-zero technology products manufacturing ecosystem (Net Zero Industry Act). Available online: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52023PC0161>
5. Commission Proposal COM(2023)161 of 16 March 2023 for a Regulation on establishing a framework of measures for strengthening Europe's net-zero technology products manufacturing ecosystem (Net Zero Industry Act). Available online: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52023PC0161>

In March 2023, in a context of energy crisis and need to protect customers, additional impetus to tame high energy prices and boost demand response were given, with the proposal of EMD reform (COM/2023/148)<sup>1</sup>. The proposal contains highly relevant proposals for DSOs addressing demand response, flexibility, and metering questions, and has a close connection to the currently developed NCDR detailing key measures on:

- ▶ The need for anticipatory investments;
- ▶ The development of a methodology for the assessment of flexibility needs by DSO Entity and ENTSO-E jointly;
- ▶ The introduction of a definition for dedicated measurement devices embedded in an asset which sets a clear distinction with regular (smart) meters directly connected to the network;
- ▶ The inclusion of new requirements for transparency on grid capacity and of a right to energy sharing.

Furthermore, legislation contributing to delivering the flagship project “Europe fit for the Digital Age” were adopted in November 2023; including the Regulation (EU)2023/2854 on harmonised rules on fair access to and use of data (Data Act)<sup>2</sup>, aiming to harmonise data sharing rules for non-personal data, and the proposal COM(2022)454 for a Regulation on horizontal cybersecurity requirements for products with digital elements (Cyber Resilience Act, CRA)<sup>3</sup>. Its purpose is to introduce a legal framework ensuring the cybersecurity of digital products throughout their entire lifecycle.

With less than a year before the end of the EC’s mandate foreseen for next June 2024, almost all legislative proposals under the umbrella of the European Green Deal could be delivered (see Table 2).

1. Op cite

2. European Parliament and Council Regulation (EU)2023/2854 of 13 December 2023 harmonised rules on fair access to and use of data and amending Regulation (EU) 2017/2394 and Directive (EU) 2020/1828 (Data Act). Available online: <https://eur-lex.europa.eu/eli/reg/2023/2854/oj>11. Commission Pact for Engagement of 28 November 2023 “A Pact for Engagement - Ensuring early, regular and meaningful stakeholder engagement in grid development”. Available online: <https://energy.ec.europa.eu/system/files/2023-11/Pact%20for%20Engagement%202023.pdf>

3. Commission Proposal COM(2022)454 of 15 September 2022 for a Regulation on horizontal cybersecurity requirements for products with digital elements and amending Regulation (EU) 2019/1020. Available online: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52022PC0454>

Legislation	Status	Transposition timeframe	Impact on DSOs
Alternative Fuels Infrastructure Regulation (AFIR) (repealing Directive 2014/94/EU) <sup>1</sup>	✓ Adopted (entered into force on 12 October 2023)	Application in all Member States as of 13 April 2024	85% of the charging will be done at home and 6% in the workplace by 2030 <sup>2</sup>
F-Gases Regulation <sup>3</sup>	✓ Formally adopted by Council and EP (publication pending)	Application within 6 months after entry into force (expected for Q4 2024)	
Decarbonised Gas and Hydrogen Market Regulation (COM/2021/804) (revision)	✓ Provisionally agreed on 8 December 2023 (adoption pending)	Application within 6 months after entry into force (expected for Q4 2024)	Integration of gas (and H2) DSOs within DSO Entity
Electricity Market Regulation and Directive (revision)	✓ Provisionally agreed on 14 December 2023 (adoption pending)	Transposition within 6 months after entry into force (expected for Q4 2024-Q1 2025) - excluding Art. 4 and 15 of Directive which are to be transposed within 24 months following entry into force	Relevant measures for DSOs are related to the assessment of flexibility needs, dedicated measurement devices, anticipatory investments and energy sharing
Net-Zero Industrial Act (new regulation)	👥 EP and Council's positions adopted. Trialogue phase started on 13 December 2023		Grid technologies are part of the list of strategic net-zero technologies
Data Act (new regulation)	✓ Adopted (entered into force on 11 January 2024)	Application in all Member States as of 12 September 2025	Rules for the treatment of non-personal data as well as data-interoperability aspects are relevant for DSOs
Cyber Resilience Act (new regulation)	✓ Provisionally agreed on 30 November 2023 (adoption pending)	Application in all Member States 36 months after entry into force (expected for Q2 2027)	The introduction of common cybersecurity rules for digital products and services affects DSOs.
Renewable Energy Directive (RED) (revision) <sup>4</sup>	✓ Adopted (entered into force on 20 November 2023)	Transposition in national laws by 21 May 2025	Around 70% of the installed renewable capacity will be connected to the distribution grid <sup>5</sup>
Energy Efficiency Directive (EED) (recast) <sup>6</sup>	✓ Adopted (entered into force on 10 October 2023)	Transposition in national laws by 11 October 2025	Active contribution to the 11.7% energy consumption reduction target by 2030 <sup>7</sup>
Energy Performance of Buildings Directive (EPBD) (revision) <sup>8</sup>	✓ Provisionally agreed on 7 December 2023 (adoption pending)	Transposition in all Member States 24 months after entry into force (expected for Q4 2024-Q1 2025)	65M chargers needed to accommodate 130M EVs expected on the EU roads by 2035 <sup>9</sup>

Table 2: Delivering the European Green Deal: Completion of the FF55 package and progress on other key energy files

1. European Parliament and Council Regulation (EU) 2023/1804 of 13 September 2023 on the deployment of alternative fuels infrastructure, and repealing Directive (EU) 2014/94. [2023] OJ L234/1. Available online: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023R1804&qid=1697791554400>. The AFIR shall apply in all Member States as of 13 April 2024
2. Eurelectric (2022). Power sector accelerating e-mobility: Can utilities turn EVs into a grid asset?, p.27. Available online: [https://www.eurelectric.org/media/5704/power-sector-accelerating-e-mobility-2022\\_eyeurlectric-report-2022-030-0059-01-e.pdf](https://www.eurelectric.org/media/5704/power-sector-accelerating-e-mobility-2022_eyeurlectric-report-2022-030-0059-01-e.pdf)
3. Commission Proposal COM(2022)150 of 5 April 2022 for a Regulation on fluorinated greenhouse gases, amending Directive (EU) 2019/1937 and repealing Regulation (EU) No 517/2014. Available online: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52022PC0150>
4. European Parliament and Council Directive (EU) 2023/2413 of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652. The RED revision shall be transposed into national laws by 21 May 2025
5. Eurelectric (2022). Power sector accelerating e-mobility: Can utilities turn EVs into a grid asset?, p.27. Available online: [https://www.eurelectric.org/media/5704/power-sector-accelerating-e-mobility-2022\\_eyeurlectric-report-2022-030-0059-01-e.pdf](https://www.eurelectric.org/media/5704/power-sector-accelerating-e-mobility-2022_eyeurlectric-report-2022-030-0059-01-e.pdf)
6. European Parliament and Council Directive (EU) 2023/1791 of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955 (recast). OJ L231. Available online: <https://eur-lex.europa.eu/eli/dir/2023/1791/oj>. The EED shall be transposed into national laws by 11 October 2025
7. Ibid
8. Commission Proposal COM(2021)802 of 15 December 2021 for a Directive on the energy performance of buildings. Available online: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52021PC0802>
9. Eurelectric (2022). Power sector accelerating e-mobility: Can utilities turn EVs into a grid asset?, p.27. Available online: [https://www.eurelectric.org/media/5704/power-sector-accelerating-e-mobility-2022\\_eyeurlectric-report-2022-030-0059-01-e.pdf](https://www.eurelectric.org/media/5704/power-sector-accelerating-e-mobility-2022_eyeurlectric-report-2022-030-0059-01-e.pdf)

## Eyes turned towards implementation: 2023 marked a European grid momentum

The completion of the FF55 and related files at the European level only marks the beginning of the transposition phase at the national level. The EU's legislative targets and requirements will need to be transferred into concrete measures on the ground and implemented at the local level. Thus, **the attention turns to the implementation of the measures** and how to ensure all the right conditions are set to guarantee that Europe can deliver on its targets. This is where DSOs play a crucial role as technical enablers of most of the new targets.

Without a power network fit for purpose and ready to integrate the surge of renewable energies, the EU will not achieve its climate targets by 2030 nor reach its REPowerEU objectives. As a result, European power grids were brought to the centre of the EU's agenda for the first time in European energy policy history. On 7 September 2023, the **High-level Forum "Future of Our Grids"** was held gathering decision-makers, industry leaders and innovators to raise awareness of the crucial role of transmission and distribution grids in facilitating Europe's energy transition. DSO Entity, as a partner to the Forum, contributed to representing DSOs in moderating one session, and in addressing and gathering inputs on the challenges ahead (i.e., necessary investments and funding for future-proof infrastructure, regulatory regime, skills, and procurement, permitting).

Building on the momentum, the EC proposed its **Grid Action Plan (COM/2023/757)**<sup>1</sup> at the PCI Days on 28 November 2023. The initiative is solely dedicated to grids and marks the recognition of DSOs' key role in a decentralised energy system and aims to support grids in the implementation of the agreed EU's energy and climate legislation in the next 18 months. The proposal identifies and addresses seven core challenges faced by the power network when delivering net-zero targets. Highlighting in particular permitting, the regulatory framework and the need for significant investments. By 2030, an estimated **EUR 375-425 billion will be needed in distribution grids**<sup>2</sup>. All challenges identified include and highlight the DSO dimension and partly propose specific DSO support. DSO Entity is identified as a key actor in 7 of the 14 action points proposed (mainly jointly with ENTSO-E). This prominent role shows the appreciation for its important role as a platform of expertise for all DSOs in Europe (for more details on the Grid Action Plan (COM/2023/757), see Chapter 4.2.).

In summary, 2023 represents a true milestone year for the European energy policies and **depicts a momentum for the distribution grids**. All legislative developments highlight DSOs' increasingly important role in delivering decentralised renewables, empowering customers, smartening the grid, and facilitating distributed flexibility; as well as the need to set the right conditions to ensure all EU's targets and requirements are implemented at national and local levels.

1. Op Cite

2. Ibid

### 3.2 INTERNAL DEVELOPMENTS AND 2023 EXPERT GROUPS' REPORTS

In 2023, good progress was made in all three pillars: the work of all EGs and TFs intensified, the cooperation with ENTSO-E increased in various aspects and DSO Entity's first Knowledge Sharing Strategy was developed and implemented. Table 3 gives a high-level summary of the core activities and achievements within the three pillars.

Pillar 1 – Developing technical rules (such as network codes/guidelines)
Four EGs and two TFs in full operation, involving more than 150 experts and supported by the BoD, SAG and CEG.
All relevant tasks related to technical workstreams, especially network codes and related consultations were delivered with the launch of the public consultation on the NCDR's first draft with ENTSO-E, the active participation in amending the Grid Connection Network Codes, the continuous feedback given to consultations on updated drafts of NC CS and preparatory work done for the development of the NCCS' Terms Conditions and/or Methodologies (TCMs).
New assignments were also fulfilled like the Joint Working Group's establishment with ENTSO-E on the implementation of data reference models and the launch of the Joint Task Force with ENTSO-E on the Digital Twin and Smart Grid Indicators (SGIs).
Interaction with institutional key stakeholders intensified, such as with DG ENER, ACER, ENTSO-E, and other relevant energy parties leading to an increase of requests for inputs (e.g. EU Grid Forum, Florence/Copenhagen/Dublin Forums, Smart Energy Expert Group (SEEG) membership).
Pillar 2 – DSO-TSO cooperation
Joint TSO-DSO Work Program 2022-2023 up and running and regularly updated.
Joint adaptation and cooperation on additional tasks not foreseen initially (e.g. setup of Joint Working Group on data reference models).
Three live DSO-TSO Board Committee meetings with intensified discussions on the Joint Work Program, network codes development and Knowledge Sharing like exchanges on a future grid vision.
Pillar 3 – Knowledge Sharing
Development and implementation of the Knowledge Sharing Strategy 2023 in parallel to EU developments (e.g. EMD paper, Grid Connection Paper; see Chapter 3.3.). RDI activities: After a dialogue with the Board, DSO Entity will work on some RDI-related activities in 2024 mainly focusing on the development of the Technical Vision and providing guidance on information on funding opportunities. Direct participation in innovation actions (e.g. Horizon EU projects) will not be prioritised.
Several interventions in panels and conferences to share DSO perspective (e.g. partner of the EU Grid Forum, speaker at the EU Sustainable Energy Week, Florence/Copenhagen/Dublin Forums, Enlit 2023 and EMPower 2023).

Table 3: High-level overview of DSO Entity's core achievements in 2023 in the three pillars

The core technical work was done by the EGs and TFs, and Figure 6 shows that all defined milestones for 2023 were delivered on time. However, this only gives very little high-level insight into the work done by the EG and TFs. The detailed reports of their accomplishments are thus presented in greater detail in the following pages.

## REPORT 2023 | All milestones for 2023 are met

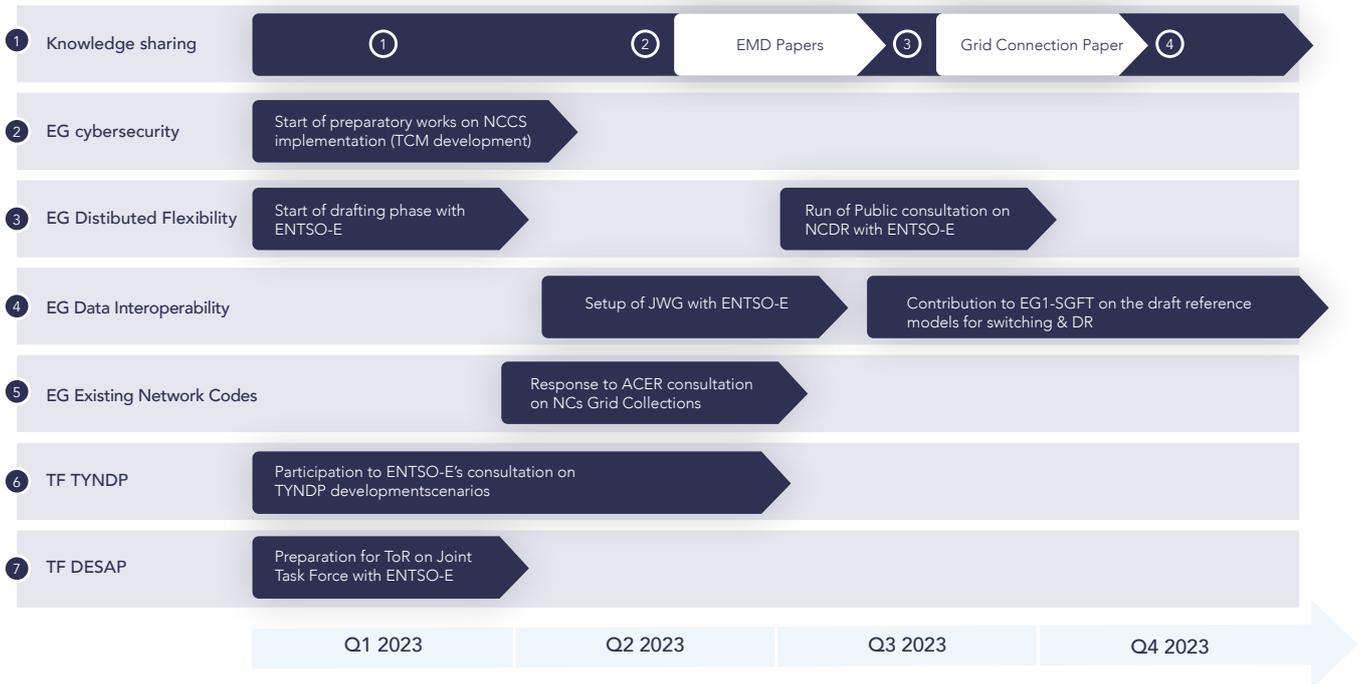


Figure 6: DSO Entity's milestones achieved in 2023



### INFO BOX C

#### Strengthening cooperation between DSOs and TSOs

2023 marked the third year of intensive cooperation with ENTSO-E on a variety of initiatives. This close cooperation will continue to thrive next year with the Grid Action Plan's (COM/2023/757) delivery which foresees many tasks to be performed together by DSO Entity and ENTSO-E.

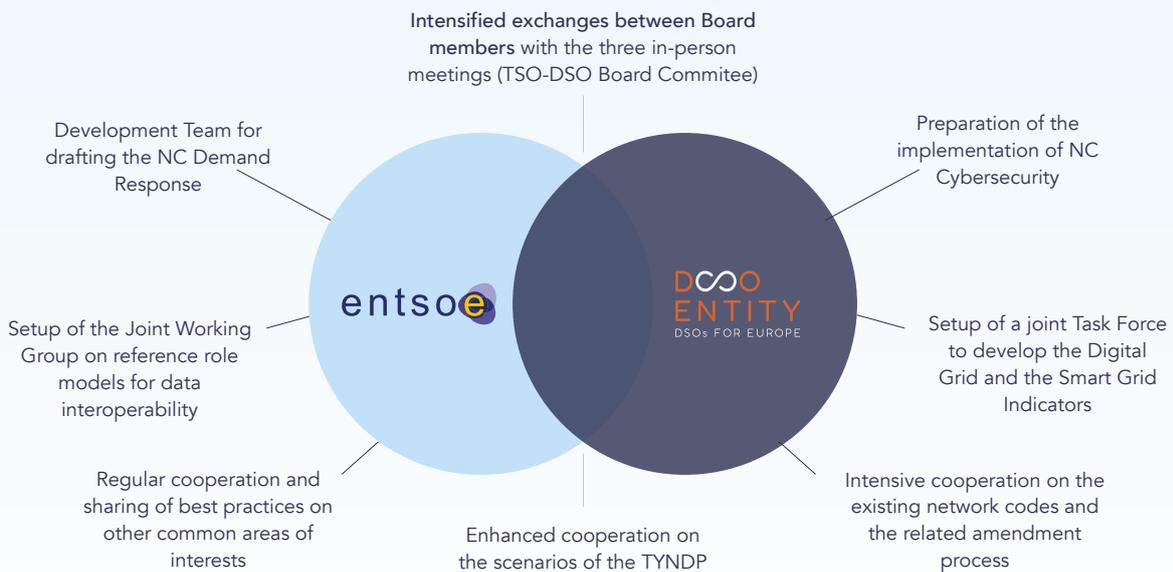


Figure 7: Areas of cooperation with ENTSO-E

# REPORTING 2023: EXPERT GROUP CYBERSECURITY (EG CS)

Expert Group Cybersecurity was focused on the following deliverables:

- ▶ Finalizing the Network Code on Cybersecurity and planning the work to start with the Terms, Conditions & Methodologies (TCMs) that will be used by the NCCS,
- ▶ Prepare communication material concerning NCCS,
- ▶ Input for consultation on ongoing EU legislation related to Cybersecurity,
- ▶ Cooperation with relevant stakeholders,
- ▶ Knowledge Sharing

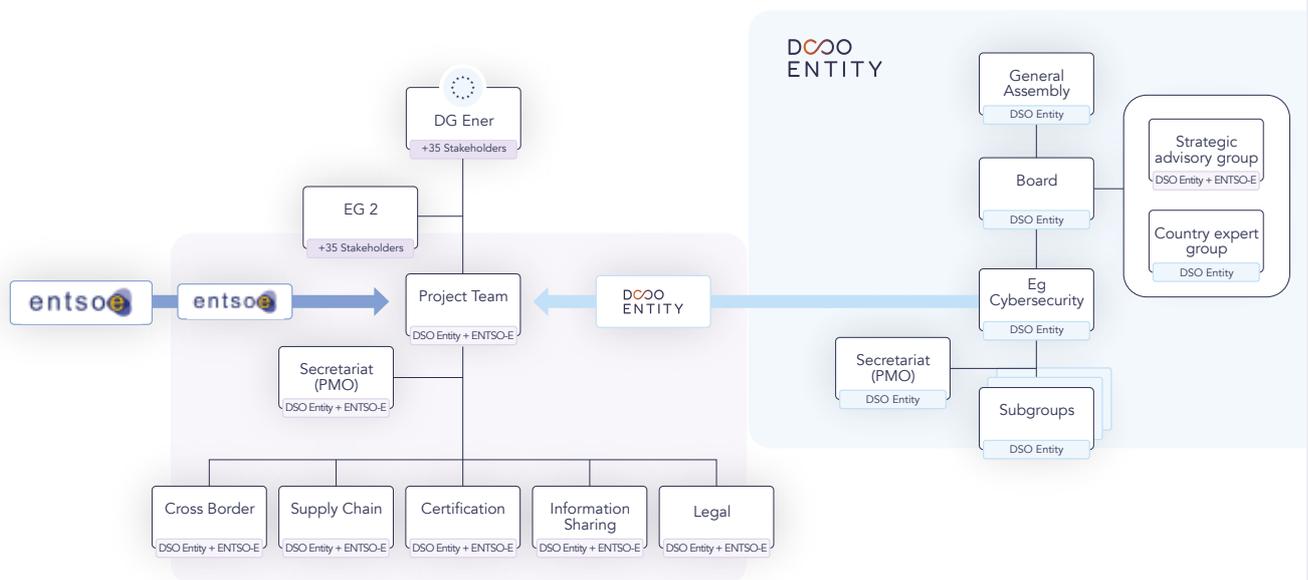


Figure 8: Organigramme including the monitoring of joint activities with ENTISO-E.

## Work area

### FINALISING THE NETWORK CODE ON CYBERSECURITY AND PREPARING THE WORKPLAN FOR TERMS, CONDITIONS & METHODOLOGIES (TCMS)

The last draft version of the NCCS was published in October 2023. In collaboration with ENTISO-E in the Project team, EG CS have completed the following steps:

- ▶ Supported the Commission during the review process of the last version of the NC and provided feedback on Public Consultation.
- ▶ Prepared TCMs that will be necessary shortly after the NCCS entry into force (i.e implementation).
- ▶ Synchronised internal approval process enacted in parallel with ENTISO-E

## Deliverable

Network Code Cybersecurity (NCCS) and TCMs

**Work area**

**COOPERATION WITH RELEVANT STAKEHOLDERS**

In 2023, cooperation with ENTSO-E has been filled with fruitful and mutually beneficial exchanges, with several bilateral meetings organised between experts and Secretariat’s of both associations.

In addition to this, EG CS has closely cooperated and attended meetings with ENISA, ACER, DG ENER (including SGTF-EG#2) and the EU CSIRT Network. Constructive cooperation was also initiated with the European Network for Cyber Security (ENCS) and EE-ISAC, where several experts participated in seminars and meetings.

**Deliverable**

Memorandum of understanding was signed between ENCS and DSO Entity.

**Work area**

**INPUT FOR CONSULTATION ON TECHNICAL ASPECTS OF EU LEGISLATION RELATED TO CYBERSECURITY**

EG CS experts prepared input to ongoing EU files within the framework of DSO Entity’s technical mandate on the topic of cybersecurity, such as:

- ▶ RED Delegated Act Draft Standard: CEN-CLC/JTC13/WG8
- ▶ Proposal for a regulation by the Commission: Cyber Resilience act, new cybersecurity rules for digital products and ancillary services

**Deliverable**

Reflection Papers concerning the aforementioned topics.

**Work area**

**KNOWLEDGE SHARING**

On 13 January the EG CS organised an internal Webinar on the topic of Business Continuity Management (BCM). The objective of the workshop was to have a better understanding of BCM with a special focus on DSOs. Therefore, the workshop was divided into a more general introduction by an external expert on BCP and a focused part on DSO-related aspects during which three best practices of experts from Belgium, Estonia and Ireland were presented.

**Deliverable**

Internal workshop on Business Continuity Management and summarizing fact sheet with key-findings.

Timeline	2023				2024				2025			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Development TCMs and preparatin for implementation												
Prepare communication material concerning NCCS												
Input for consultation on ongoing EU legislation related to Cybersecurity												
Communication with relevant stakeholders												
Preparation Risk Assessment Cycle												





## REPORTING 2023: EXPERT GROUP DISTRIBUTED FLEXIBILITY (EG DF)

The EG DF, consisting of 30 experts from diverse European countries, aims to advise the Board in the field of distributed flexibility and steering DSO Entity's activities related to distributed flexibility.

To ensure the efficient and coherent use of resources, the EG organized and overviewed its activities with subgroups. The Secretariat supports the group with project management related services. Figure 9 shows the organigram including the monitoring of joint activities with ENTSO-E.

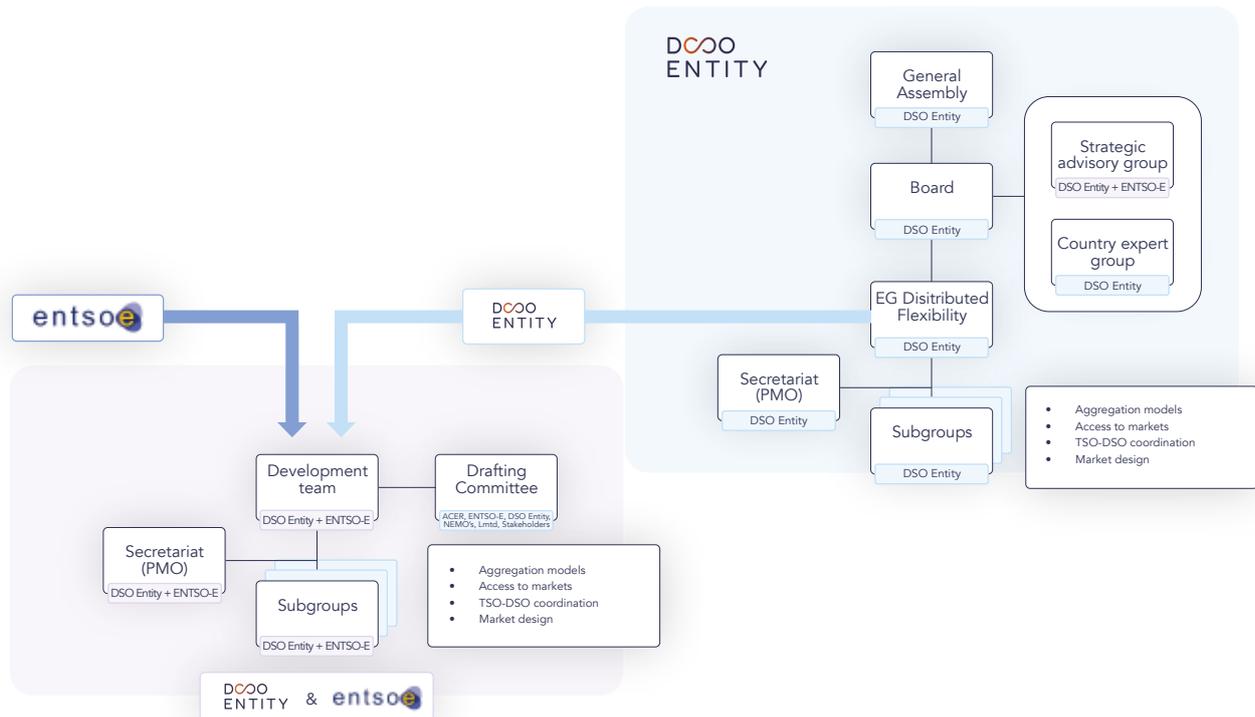


Figure 9: Organigramme for EG DF and the Development team for NC DR

In 2023, the work of EG DF during 2023 mainly focused on the development of the NC DR in accordance with the Framework Guidelines on Demand Response ('FG DR')<sup>1</sup> published by ACER, advising the European Commission on the reform of the Electricity Market Design and the development of key communication messages on flexibility. The EG DF organised 5 in-person meetings in 2023 (with hybrid options) to ensure an efficient and more collaborative way of working among its 30 experts.

### Work area

#### COOPERATION WITH ENTSO-E

In view of the joint mandate, DSO Entity in cooperation with ENTSO-E and with the support of the Drafting Committee shall submit a proposal for NC DR to ACER. Distributed flexibility is considered as a key between DSOs and TSOs, therefore, an intense and close cooperation was crucial within the Development Team and the Subgroups to elaborate the joint NC DR proposal. The development team organised over 10 physical meetings and 10 calls. The 4 subgroups meet on a weekly basis.

1. ACER (2022), Framework Guideline on Demand Reponse. Available online: [https://acer.europa.eu/sites/default/files/documents/Official\\_documents/Acts\\_of\\_the\\_Agency/Framework\\_Guidelines/Framework%20Guidelines/FG\\_DemandResponse.pdf](https://acer.europa.eu/sites/default/files/documents/Official_documents/Acts_of_the_Agency/Framework_Guidelines/Framework%20Guidelines/FG_DemandResponse.pdf)

## Work area

### COOPERATION WITH OTHER STAKEHOLDERS

To capture key stakeholders' views in the NC DR, a Drafting Committee was established (as foreseen in Regulation (EU) 2019/943) moreover, the Drafting Committee). Throughout the development of the NC DR, the development team iteratively adjusted the way of working with the Drafting committee to align with its member's expectations. In addition to a series of regular meetings, the development team organised additional workshops for the Drafting committee:

The increase of interactions with the NC DR Drafting Committee impacted the workload, leading to the EC tolerating a delay of two months (from 8 March to 8 May 2024) to submit the proposal for NC DR to ACER.

Moreover, to foster transparency and engagement of all stakeholders, the Development team organised:

- ▶ Two public workshops presenting the process to draft the NC DR and its core messages: one in the beginning of the launch of the Development team (April 2023) and another one during the public consultation period (October 2023);
- ▶ Public consultation (from 29 September to 10 November 2023) where all stakeholders had the opportunity to raise their opinion and make suggestions for the NC DR, collecting around 1800 comments.

## Work area

### EXTERNAL CONSULTATIONS

The EG DF experts represented DSO Entity and shared their expertise on distributed flexibility at the occasion of the consultation for the reform of the Electricity Market Design.

## Work area

### REPRESENTATION OF DSO ENTITY AT EXTERNAL EVENTS

The EG DF experts represented DSO Entity and shared their expertise on distributed flexibility at various events in 2023. The Chairmanship team and experts had opportunities to intervene in several courses and workshops of the Florence School of Regulation (FSR) as well as other conferences (e.g., Florence Forum, CE4EUislands, CIDE annual event, etc.) organised in Brussels and in other EU Member States.



## REPORTING 2023: EXPERT GROUP DATA INTEROPERABILITY (EG DI)

### Work area

#### SETTING UP THE JWG

In April 2023, the final version of the Terms of Reference written by DSO Entity and ENTSO-E were released. That document sets that, to deliver the tasks stated in Article 12 of the Implementing Regulation (EU) 2023/1162, the Joint Working Group (JWG) will be composed of a decision body and 3 Task Forces (including experts nominated by both DSO Entity and ENTSO-E). Furthermore, to ensure the engagement with relevant stakeholders, a stakeholders' panel was created for each one of the Task Forces.

Throughout the remainder of the year, that structure was put in place with the decision-making body, with two of the three task forces and one of the stakeholders' panels having their kick-off meetings in 2023.

### Deliverable

ENTSO-E & DSO Entity's Terms of Reference of the Joint Working Group.

### Work area

#### DELIVERY OF MANDATED TASKS FOR THE JWG

Out of the three Task Forces, only Task Force 1 (TF1) had expected deliverables for 2023 as it was required to identify doubts Members have when identifying the reference models put forward in the Implementing Regulation (EU) 2023/1162.

### Deliverable

TF1 delivered 3 workshops to obtain the necessary input for the guidance and reporting of national practices for Implementing Regulation (EU) 2023/1162:

- ▶ Workshop #1: Introducing the structure of the JWG, the members in each task force, the procedure to set up the stakeholder panels and the schedule of the deliveries.
- ▶ Workshop #2: Focused on introducing the IA and structure of the JWG, data interoperability models and national experiences of MS.
- ▶ Workshop #3: Work done by the TF1 on the guidance and a presentation of initial assessment by the MS.

### Work area

#### CONTRIBUTION TO THE WORK OF THE EG1 GROUP OF THE SGTF

Members of EG DI took active roles in supporting the European Commission in the work being undertaken by EG1.

### Deliverable

No deliverables expected.

**Work area**

**COORDINATION WITH EBIX**

Members of EG DI have participated in the work of ebIX. This coordination has resulted in an offer by ebIX to transfer their models to DSO Entity when they finish operations in December 2023.

**Deliverable**

No deliverables expected.

**Work area**

**KNOWLEDGE SHARING**

**ASK ME ANYTHING WEBINAR:** DSO Entity's first AMA took place on 11 July, during which members of the Expert Group and the Commission provided valuable insights to the audience on matters concerning Data Interoperability.

**Internal paper on submetering:** An internal reflection paper was disseminated in May 2023, designed to highlight the options and opportunities that come with an integration of assets behind the main certified meter into metering infrastructure, markets, and related processes.

**Deliverable**

No deliverables expected.



## REPORTING 2023: EXPERT GROUP EXISTING NETWORK CODES (EG NC)

### Work area

#### REVIEW OF GRID CONNECTION NETWORK CODES

Throughout 2023, EG NC has focused mainly on ACER's initiative to review the grid connection codes, specifically the Requirements for Generators Network Code (NC RfG) and the Demand Connection Network Code (NC DC). The EG's work culminated in the 25 September response to the public consultation issued by ACER. The EG's work also included frequent meetings with ENTSO-E counterparts, with the aim of finding a common DSO-TSO position on most topics. Among the topics covered for the NC RfG are: electromobility, grid forming technologies, storage, significant modernisation, and mixed customer sites.

Among the topics covered for the NC DC are low frequency demand disconnection (LFDD), reactive power exchange, and certification requirements.

### Deliverable

- ▶ February - the EG produced a technical paper to elaborate on DSOs' concerns about ENTSO-E's positions on grid forming and RoCoF.
- ▶ April- May - EG chairs and vice-chairs participated in person in the ACER workshops organised in Ljubljana and presented DSO Entity views.
- ▶ September - submitted the response to ACER's public consultation on grid connection network codes.
- ▶ October - The EG produced a position paper on Grid Forming (within RfG) shared with ACER and ENTSO-E. The paper was then circulated to DSO Entity's Board Members.
- ▶ November-December - Interactions with ACER, ENTSO-E and stakeholders, mostly also considering the European Stakeholder Committee platform. Updated position on grid forming including next steps.

### Work area

#### KORRR – SOGL

In 2023, several meetings related to KORRR (key organisational requirements, roles and responsibilities in relation to data exchange) were held with ENTSO-E. Internal to DSO Entity, the EG had several interactions with two other expert groups (ie the EG on Demand Side Response and the EG on Data Access and Interoperability), as the data transfer implications of the NC DC and KORRR could have a significant impact in the new NC or implementing acts. KORRR is part of SO GL (System Operation Guideline)

### Deliverable

There were no tangible deliverables regarding this. The EG met several times with counterparts at ENTSO-E to discuss the topic. Given the uncertain timetable for the enabling legal changes in the SOGL (and the capacity allocation and congestion management guideline) ENTSO-E decided in Q3 to deprioritise their proposed modification to KORRR.

### Work area

#### EUROPEAN STAKEHOLDERS COMMITTEES – SYSTEM OPERATIONS AND GRID CONNECTIONS

The European Stakeholders Committee (ESC) is a discussion forum dedicated to the development of network codes. From inception, the organisers of the ESCs have been ACER and ENTSO-E. Given DSO Entity's legal responsibilities to represent EU DSOs to ACER and the EU, the Expert Group on the Existing Network Codes argued to ACER that the organisation of ESC meetings should be a shared responsibility between ENTSO-E and DSO Entity. The role of organiser is fundamentally important, as it provides organisational and agenda-setting powers.

### Deliverable

- ▶ ACER shall give 1 seat for experts starting 2024 in both System Operation (SO) and Grid Connection (GC) ESC forums- process to be finalised in February 2024.
- ▶ The revised ToRs were approved in December 2023, thus allowing DSO Entity to participate in SO and GC ESCs. DSO Entity obtains organiser status starting in 2024.

### Work area

#### KNOWLEDGE SHARING

As Knowledge Sharing is one of the three founding pillars of DSO Entity, the Expert Group Existing Network Codes organised knowledge-sharing activities for members within the organisation. This included the Ask Me Anything webinar on 11 December, where approximately 70 experts from member companies attended. Special attention was given to the EG's responses in the public consultation for the revision of connection network codes.

Furthermore, several internal papers were developed by the EG on crucial topics, such as grid forming.

### Deliverable

- ▶ October: Grid-forming capabilities within the revision of the RfG Network Code
- ▶ December: "Ask Me Anything" Webinar on the grid connection network codes



## REPORTING 2023: TASK FORCE DIGITALISATION OF ENERGY SYSTEM ACTION PLAN (TF DESAP)

### Work area

#### ESTABLISHING THE JOINT TASK FORCE

After the signature of the Declaration of Intent (DoI), DSO Entity and ENTSO-E engaged in establishing the Joint Task Force DESAP (JTF DESAP). Based on the Memorandum of Understanding (MoU) between DSO Entity and ENTSO-E, the group drafted a Terms of Reference (ToR) including an NDA between all involved organisations. The JTF consists of the same proportion of experts from ENTSO-E and DSO Entity. The JTF is led by the two co-chairs. For DSO Entity the co-chair is the elected chair of the TF DESAP. The JTF launched its work in Q1 with a series of monthly hybrid meetings to formulate first expectations, clarify the work approach, establish a first timeline on Smart Grid Indicators (SGI) and Digital Twins (DT), visualized in figure 10 and identify the state of art in both organisations. After the summer months, the JTF started preparing a detailed project plan which will define the joint work in the years 2024 & 2025.

### Deliverable

- ▶ ENTSO-E & DSO Entity's Terms of Reference of the Joint Working Group. (Achieved in Q2)
- ▶ NDA between all involved organizations. (Achieved in Q2)
- ▶ Project plan for 2024-2025 (Achieved in Q4).

### Work area

#### OUTLINE A CONCEPT FOR A EUROPEAN DIGITAL TWIN

According to TF DESAP, the creation of a DT should be achieved through coordinated investments in five areas: (i) observability and controllability; (ii) efficient infrastructure and network planning; (iii) operations and simulations for a more resilient grid; (iv) active system management and forecasting to support flexibility and demand response; and (v) data exchange between TSOs and DSOs. The DT will not be created in one go but will be a continuous investment and innovation effort for years to come. TF DESAP will base their work on the DT, on the challenges identified in 2023 and in collaboration with ENTSO-E. In Q4 2023, TF DESAP drew the conclusion that, instead of a scientific approach, a more practical approach on DT may be more beneficial to support the energy transition in Europe. Core of this more practical approach would be to establish a constant exchange between all relevant stakeholders on already existing solutions. TF DESAP will integrate this idea in its work plan for 2024.

### Deliverable

Developing a first joint understanding of Digital Twin and what it could be. (Achieved throughout 2024).

### Work area

#### FORMULATING COMMON CHALLENGES IN THE POWER GRIDS

The JTF DESAP identified early that the group first needs to clarify the challenges that should be addressed with a DT and SGIs. Therefore, the JTF DESAP met for a series of hybrid meetings in Q1/Q2 to work on clarifying and formulating the relevant grid challenges that may be addressed with SGIs and/or DTs. After this initial series of meetings within the JTF DESAP, DSO Entity worked during the summer months to draft an aligned internal position on the relevant challenges resulting in the white paper on DSO current and future challenges. As part of this white paper, the TF DESAP also outlined the connection between the challenges, SGIs and DTs (see Figure 10).

### Deliverable

No deliverables expected.

**Work area**

**DEFINE SMART GRID INDICATORS FOR THE EUROPEAN GRID OPERATORS**

DSO Entity considers a limited set of tailored SGI a key tool for system operators in the future to shape investments into smartening their power grids. The TF DESAP launched the work on SGI by collecting information about the state of the art on SGIs in all EU Member States, through internal input from experts participating in the TF DESAP and through input from the Country Expert Group for the Member States not directly involved. The importance of our work on SGIs was also underlined during the Copenhagen Forum during which DSO Entity and ENTSO-E were requested to inform the Forum in 2024 about their progress on the topic.

**Deliverable**

- ▶ Working document summarising the state of the art on SGIs in Europe and in Literature. (First interim version achieved in Q4)
- ▶ In June 2023, TF DESAP, ENTSO-E, DG ENER, ACER and CEER met to have an informal exchange on the progress of SGI.

**Work area**

**KNOWLEDGE SHARING**

As one of DSO Entity main pillars, TF DESAP engaged in Knowledge Sharing activities on all levels within DSO Entity. Particularly noteworthy are experts of TF DESAP presenting our work at events: ENLIT 2023, ETIP SNET, Copenhagen Forum and the internal Ask Me Anything Webinar.

**Deliverable**

Engagement in different dissemination and Knowledge Sharing activities.

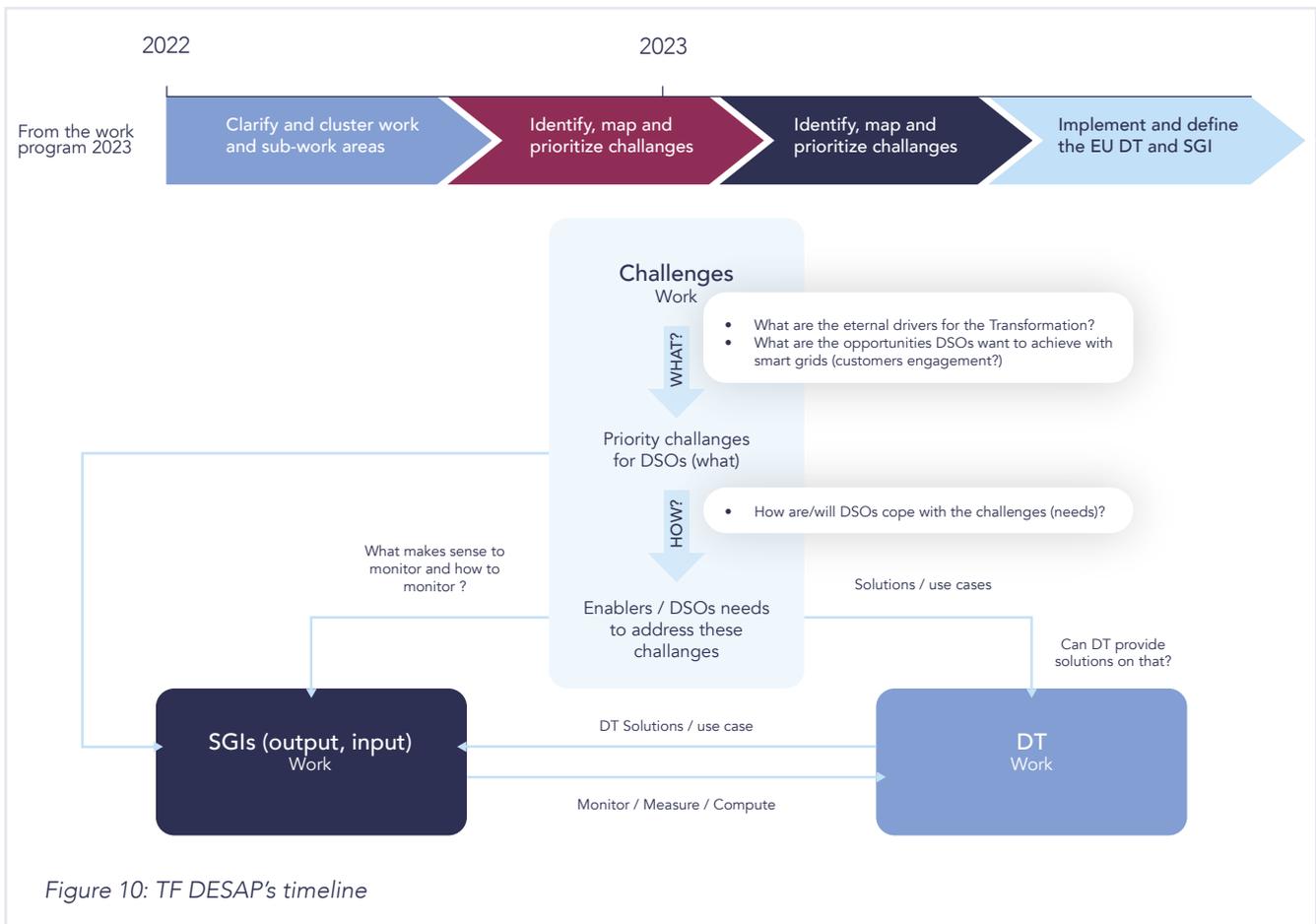


Figure 10: TF DESAP's timeline



## REPORTING 2023: TASK FORCE TEN-YEAR NETWORK DEVELOPMENT PLAN (TYNDP)

### Work area

#### TYNDP SCENARIO DEVELOPMENT

The trans-European energy infrastructure Regulation (EU)2022/869 (TEN-E)<sup>1</sup> identified DSO Entity as a key stakeholder that the ENTSOs (ENTSO-E & ENTSOG) should consult as part of the TYNDP process. DSO Entity participated in the TYNDP process by having multiple exchanges between the association on the topic of scenario building and by reacting to the public consultation in 2023. Additionally, DSO Entity joined the new formed Stakeholder External Technical Advisory Group (ETAG) in Q3/4 2023.

### Deliverable

The TF TYNDP reacted to the first public consultation on the TYNDP 2024 scenarios input parameter.

### Deliverables expected

The second public consultation on the TYNDP scenario building is anticipated for Dec/Jan 2023/2024. TF TYNDP will investigate and react to it as anticipated in the work plan 2023.

### Work area

#### KNOWLEDGE SHARING

TF TYNDP engaged in multiple Knowledge Sharing activities on topics related to the TYNDP process. The most notable of these activities were the TF presentations series on the distributed network development plans. Additionally, the TF invited a guest speaker to present the group with the status of the Smart Grid PCI projects and the problems with such projects. The Ask Me Anything Webinar for TF TYNDP is planned for January 2024

### Deliverable

- ▶ Exchange on the status of Smart Grid PCI projects [Q2/Q3 2023]
- ▶ Presentation series within the TF TYNDP on the topic of distributed network development plans [Q3/Q4 2023]
- ▶ Ask Me Anything Webinar [Q1 2024]

1. European Parliament and Council Regulation (EU)2022/869 of 30 May 2022 on guidelines for trans-European energy infrastructure (TEN-E), amending Regulations (EC) No 715/2009, (EU) 2019/942 and (EU) 2019/943 and Directives 2009/73/EC and (EU) 2019/944, and repealing Regulation (EU) No 347/2013. [2022] OJ L152/45

### 3.3. COMMUNICATION AND KNOWLEDGE SHARING PRIORITIES

#### Identification and sharing of best practices as integral part of DSO Entity’s activities

As mandated by the Electricity Market Regulation (2019/943/EU), DSO Entity works with its members and partners to **identify, collect and disseminate best practices** related to grid topics and its core areas of expertise. In light of the considerable diversity of the more than 2,500 DSOs operating in Europe, the sharing of knowledge and best practices plays an essential role in achieving Europe’s energy transition. With a member base over 25 million connections from DSOs in all 27 Member States, coverage in EU is nearing 100%. DSO Entity strives to develop into a dedicated platform for DSOs of all sizes and shapes to share and exchange best practices and expertise.

To this end, DSO Entity launched its **first Knowledge Sharing Strategy in 2023** aiming to:

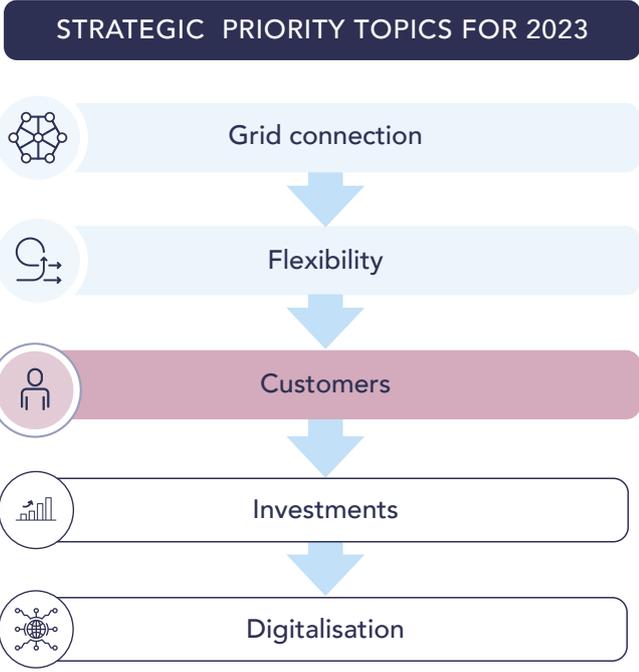
1. **Internally:** Facilitate exchange of knowledge and best practices among DSOs.
2. **Externally:** Disseminate and raise awareness on the role and relevance of DSOs using all communication tools and platforms available

#### Knowledge Sharing, an opportunity for DSO Entity’s members:

- ▶ Learning about technical topics and increasing understanding of EU-level developments.
- ▶ Exchanging among DSOs concrete practices implemented within companies and countries to find collective solutions addressing the transition’s challenges.
- ▶ Collecting and comparing DSO and country facts and figures to sketch what is happening in the EU-27.

#### 2023 marked the first year of implementation of DSO Entity’s Knowledge Sharing Strategy

In 2023, DSO Entity adopted its **first Knowledge Sharing Strategy together with the Communication Strategy for 2023**, thereby officially launching the work on its third pillar of activities. Based on the results of a survey conducted among DSO Entity’s members and experts at the end of 2022 and the analysis of EU developments, the Knowledge Sharing Strategy 2023 identified five potential strategic priority topics. Out of the five potential topics, **“grid connection” and “flexibility” were selected to be at the core of the activities for the year 2023**. The cross-cutting priority ‘customers’ was selected to be always at the heart of the development of every project on the two other priorities in the focus due to its decisive part in DSOs’ daily activities.



To deliver the two priorities of grid connection and flexibility, DSO Entity worked on two main Knowledge-Sharing projects under the form of papers available on the website: a paper and several contributions to the discussion on the **EMD reform (COM/2023/148)**<sup>2</sup>; and a **report about challenges and practices on connecting renewables to the distribution grid**. The report, published in November 2023, offered a comprehensive overview of DSOs’ obligations in the FF55 and REPowerEU, raising awareness on the key challenges in connecting renewables to the grid and providing insightful practices to overcome them<sup>3</sup>.

2. DSO Entity (21 April 2023) “Observations on: Electricity Market Design Proposals”. Available online: <https://www.eudsoentity.eu/publications/download/20>  
 3. DSO Entity (November 2023) “DSOs Fit for 55 - Challenges, practices and lessons learnt on connecting renewables to the grid”. Available online: <https://www.eudsoentity.eu/publications/download/51>

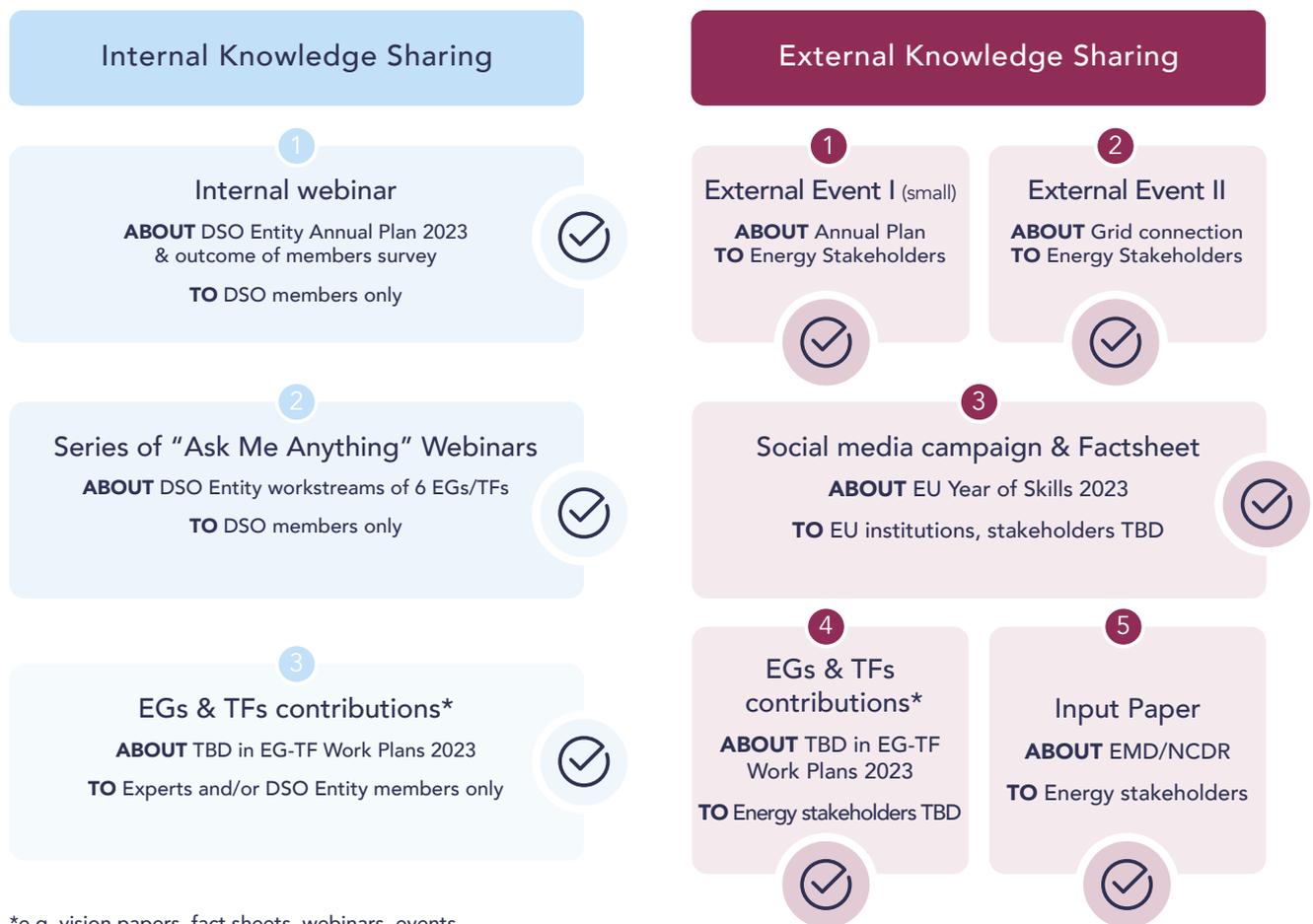


Figure 11: Reporting on the Knowledge Sharing Strategy 2023's deliverables

## The Country Expert Group's role in implementing the Knowledge Sharing Strategy

The CEG plays an essential role in collecting practices from all Member States. Composed of one DSO representative per country, it is a body of expertise and knowledge well-suited to map Europe's current state of play (see Figure 5). In 2023, the CEG was highly involved in different projects, such as organising 'country pitches' presenting the distribution grid's situation in each Member State and contributing to developing DSO Entity's Grid Connection Paper (i.e., report identifying challenges and sharing best practices on connecting RES to the grid).

With a strong connection to its Communication Strategy, DSO Entity delivered on its Knowledge Sharing Strategy by striving to increase the participation of its members by strengthening its internal communications (i.e., newsletter, new branded website), by organising a series of 'Ask Me Anything' webinars that gave the

opportunity to all members to directly interact with DSO Entity's experts on ongoing technical work, by launching campaigns related to EU developments with members and partners (e.g. EU Year of Skills campaign on social media resulting in a factsheet) and by assuring the presence of DSO Entity members and experts in different European events.

The interconnection between the Communication Strategy and Knowledge Sharing is made possible to deliver a variety of activities in the frame of the third pillar on an external level with all the actors involved in the energy transition. It focuses on participating in events, creating media partnerships (i.e., recording video interviews), and prepare an ad hoc campaign on DSO Entity's social media platforms with the aim of sharing technical expertise to connect and interact with broadened audiences while reaffirming our online presence in the sector.

### DISSEMINATION HIGHLIGHTS 2023



Figure 12: DSO Entity's external engagement and dissemination of technical expertise

### DSO Entity as a DSO platform of Knowledge Sharing at the EU level

In 2023, DSO Entity intensified its efforts to build its credibility in the EU landscape as well as its relations with EU institutions (especially the EC), external energy stakeholders and partners. It is reflected in DSO Entity's participation and intervention in various external events with a special mention for its partner role in the EU Grid Forum in September 2023. The multiplication of exchanges, memberships and joint initiatives with institutional actors also speaks of the growing recognition of DSO Entity as a reference interlocutor and institutional platform for DSOs at the EU level.



**Institutional Memberships**

Electricity Coordination Group  
 Smart Energy Expert Group (SEEG)  
 Investor Dialogue

#### (RE-)SIGNING OF INITIATIVES

- ▶ Declaration for enhancing consumer protection in October 2023.
- ▶ Pact of Engagement in November 2023 to ensure early, regular and meaningful stakeholder engagement in grid development.
- ▶ Memorandum of Understanding (MoU) to develop the state of the art of the cyber security with the European Network for Cyber Security (ENCS).



# 4. Looking ahead to 2024: Work priorities and Work Programs

#### 4.1. GENERAL EU DEVELOPMENTS IN 2024: PREPARING FOR A NEW LEGISLATIVE TERM (2024-2029)

With the European Parliament's elections scheduled for 6-9 June 2024, all legislative activities will come to an end at the last plenary session in April. Since the 27 Commissioners' College will also be renewed, no new big (legislative) initiatives are to be expected in 2024. It will only be in autumn and winter of 2024 that the European institutions will fully get back to business and embark on their next five-year legislative journey (2024-2029). Figure 13 gives an overview of the most relevant highlights in the institutional renewal in 2024.

However, given the long approval processes, it will only be in the first half of 2024 that several legislative files relevant for DSOs will formally enter into force and thereafter the transposition process in the Member States will start. This will be the case for files such as the EMD reform (COM/2023/148), the Renewable and Natural Gases and Hydrogen Regulation (COM/2021/804)<sup>1</sup>, the NZIA (COM/2023/161)<sup>2</sup>, the EPBD (COM/2021/802)<sup>3</sup> and the CRA (COM/2022/454)<sup>4</sup> (see Table 2 with expected approvals in Chapter 3.1.).



Figure 13: Steps by step towards the new legislative term of 2024-2029

1. Op cite  
 2. Op cite  
 3. Op cite  
 4. Op cite

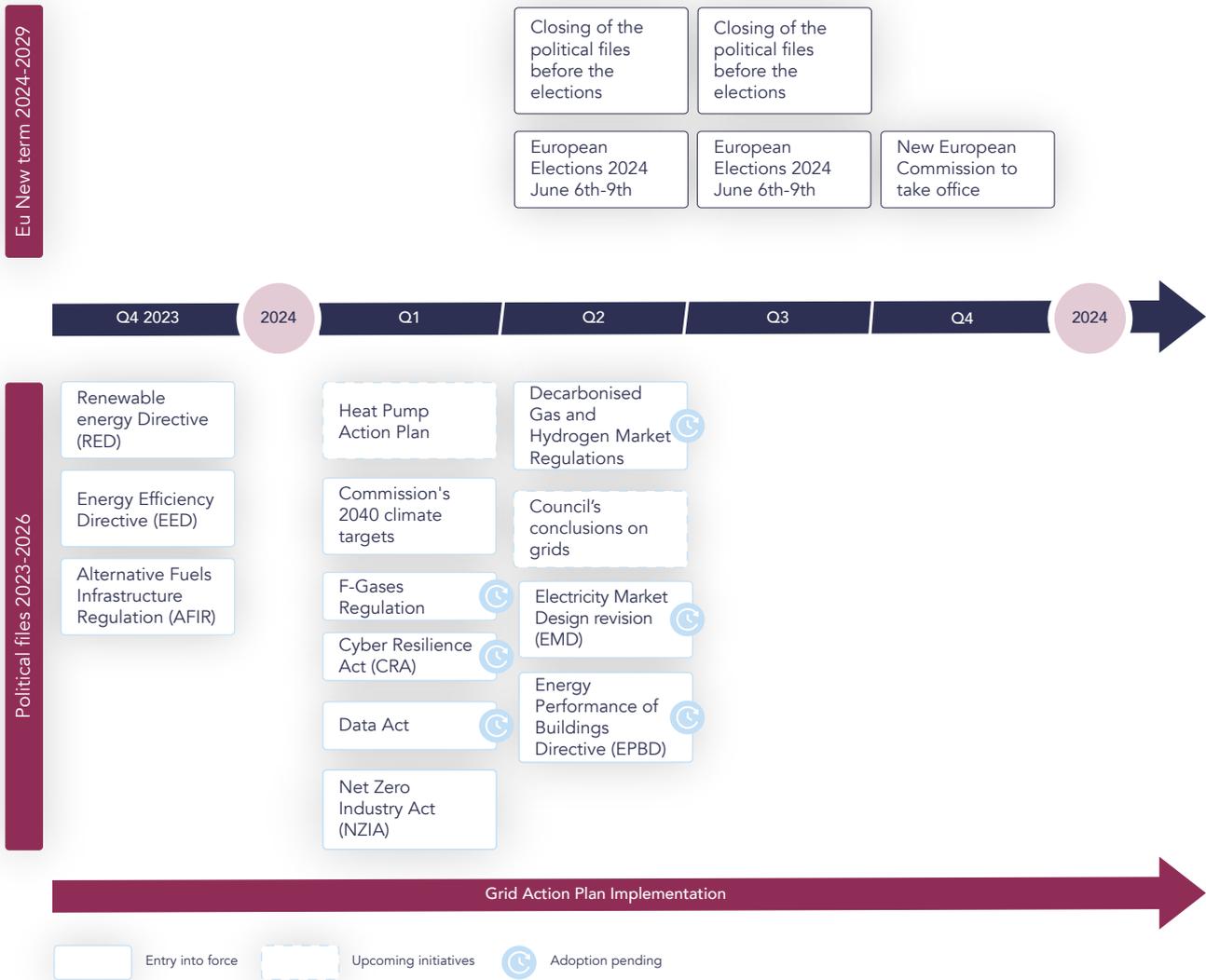


Figure 14: Overview of general EU legislative files to monitor and core technical workstreams to deliver

Although no new general European legislative developments are expected, the work of the EC’s administrative branch and DSO Entity’s technical workstreams will continue as well as preparations for implementation. With the Grid Action Plan (COM/2023/757), the EC has given itself and other institutional stakeholders, such as DSO Entity, ENTSO-E and ACER, several action points to be delivered within the next 18 months to support the energy legislation’s national implementation. In this respect, the EC’s

important exchange forums such as Copenhagen, Florence and Dublin Forums will continue to act as highly relevant arenas of discussions. Furthermore, new arrangements such as the Pact of Engagement will have to be filled with life. This time will certainly also be used by the EC to reflect about what is needed in the next five years to make the ambitious climate goals a reality and already work on potential priorities for the new Commissioner College that will take office at the end of 2024.

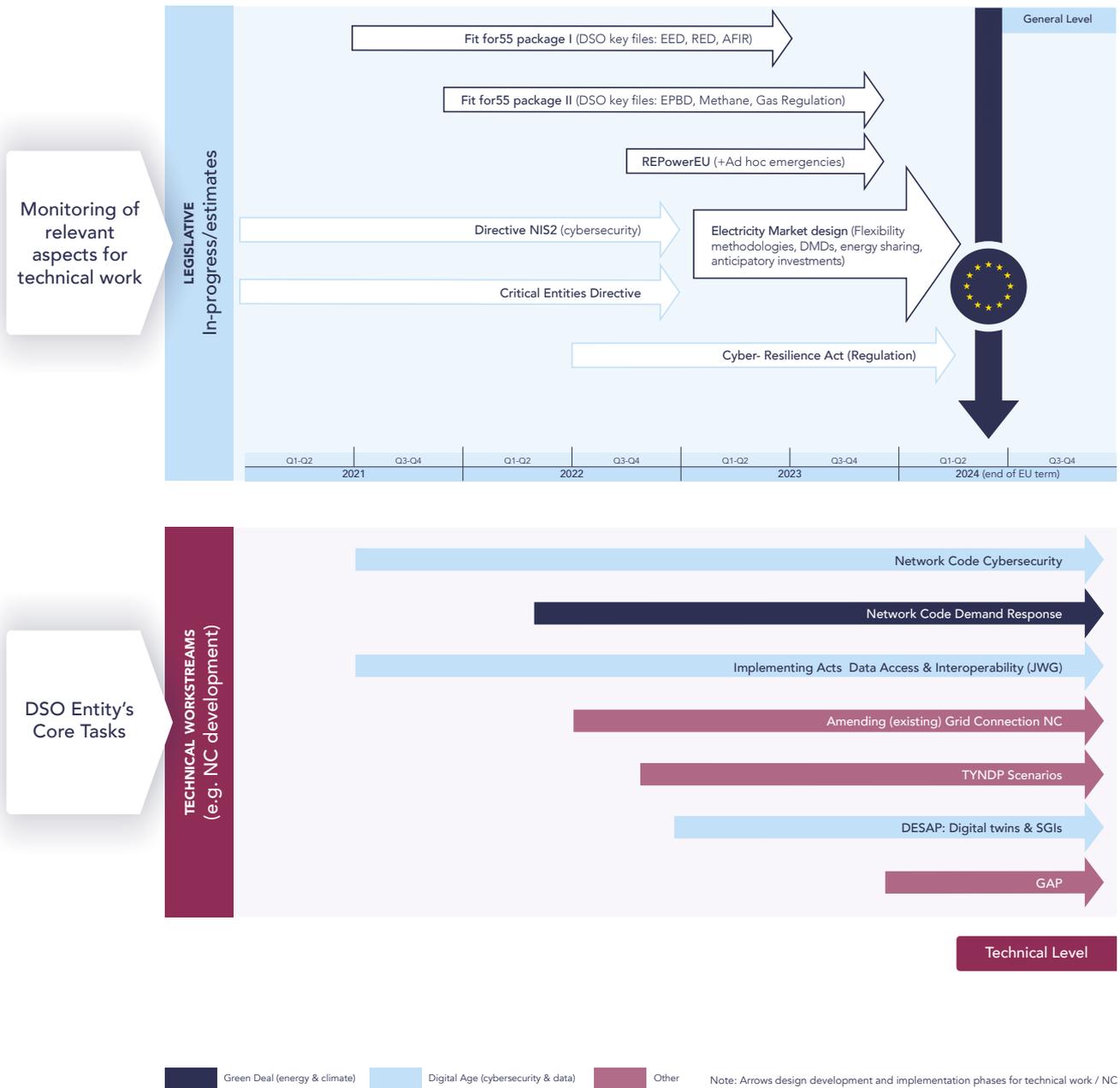


Figure 15: Overview of general EU legislative files to monitor and core technical workstreams to deliver

Figure 15 shows the abrupt end of the processes related to more general legislative files' and DSO Entity's technical core work which continues unabated. As mentioned before, the Grid Action Plan

(COM/2023/757) published on 28 November 2023 took up the grid momentum and proposed several action points to be delivered within the next 18 months (see further the details in Table 4).

## THE GRID ACTION PLAN AT A GLANCE



- ▶ Support for grids during implementation
- ▶ Grids as EU-success story but now challenge for the delivery of energy targets
- ▶ Especially, challenges of high investment needs to DSOs are highlighted

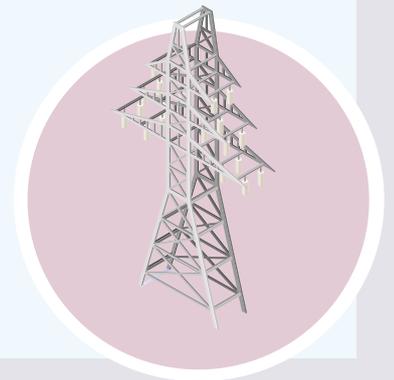


- ▶ Non-legislative initiative of the European Commission with measures meant to support the grid during the implementation phase of existing energy legislation
- ▶ The Action Plan describes 7 challenges and 14 Action Points that should support implementation in the next 18 months



- ▶ DSOs and the decentralised level are in the focus like never before
- ▶ Right challenges are identified and meaningful measures proposed often specific measures are mentioned for DSOs (e.g. permitting, funding, remuneration schemes)
- ▶ DSO Entity appears as a key-actor and is responsible for the delivery of 7 out of 14 Action Points (often together with ENTSO-E)

"The EU is bringing grids to the center of its agenda"



Challenge	Action Point	DSO relevant tasks assigned to DSO Entity or other bodies	Timeframe
(Challenge 1) Accelerating the implementation of PCIs and developing new projects	[1]	The main focus is on TSOs but it is mentioned that a new approach to identify and support local grid projects appears necessary to prevent gaps in the future [connex with action 3 and 10]	As of 2024
(Challenge 2) Improving long-term grid planning for a higher share of RES and increased electrification: Need for long-term visibility of network needs, especially at DSO-level, is highlighted, as well as the importance of better support for PCI applications for smart grids projects.	3	DSO Entity to support DSO grid planning by mapping the existence and characteristics of DSO development plans; and by improving best practices and recommendations. DSO Entity, with the EC, to reinforce their support to the design and submission of PCI applications for smart grid projects.	Mid-2024
(Challenge 3) Introducing regulatory incentives for forward-looking grid build-out: Need for a supportive regulatory framework bringing investment certainty and recognising the importance of anticipatory investments & accounting for both CAPEX and OPEX in network tariffs, is stressed	4	DSO Entity, with ACER and ENTSO-E, to support the EC in proposing guidance for conditions to approve anticipatory investments.	Q1 2025

<p><b>(Challenge 4) Incentivising a better usage of the grids:</b> More transparency on grid hosting capacities (capacity maps, frameworks for non-firm connection agreements etc.). Insufficient smart grids incentives (e.g. insufficient OPEX compensation; rising digitalisation costs, data processing, flexibility procurement)</p>	6	DSO Entity, with ENTSO-E, to agree on harmonised definitions for available grid hosting capacity for system operators and to set a pan-EU overview	Mid-2025
		DSO Entity, with ENTSO-E, to issue guidance and recommendations to digitalise and streamline procedures for grid connection requests. [National regulatory authorities (NRA)'s work on non-firm connection agreements]	Mid-2025 at the latest
	7	DSO Entity, with ENTSO-E, to promote smart grid uptake, network efficiency & innovative technologies, and to update the Technopedia.	End 2024
	[8]	ACER, in its tariff report, to recommend best practices in relation to the promotion of smart grids and network efficiency technologies through tariff design, focusing on the consideration of OPEX in addition to CAPEX and benefit sharing	January 2025
<p><b>(Challenge 5) Improving access to finance:</b> Need to raise awareness on EU funding opportunities, especially for DSOs, is in the focus. The unprecedented increase in the volume of capital expenditure of DSOs affects key financial performance indicators such as credit ratings. Need for tailor-made financing products to support grids</p>	[9]	EC to identify tailored financing models and strengthen dialogue to address obstacles to private financing (Investors Dialogue)	
	10	DSO Entity to collaborate with the EC to raise awareness on the available options to increase funding applications for DSOs. Kick-start with dedicated high-level meeting with Member States on funding for DSOs. DSO Entity should support raising awareness	Q1 2024
<p><b>(Challenge 6) Accelerating deployment through faster permitting and public engagement:</b> Focus is on supporting the acceleration of permitting over long distances and crossing several jurisdictions, &amp; constraints in staffing and digitalisation of the competent authorities.</p>	[11]	EC to support permitting acceleration, among others EC will support application of permitting rules in RED/emergency regulation (overriding public interest) as regards DSOs.	As of 2024
	12	DSO Entity with ACER, ENTSO-E and RGI to sign the Pact for Engagement to reinforce stakeholder engagement	As of end of 2023
<p><b>(Challenge 7) Strengthening grid supply chains:</b> Lead times for procuring specific grid components are increasing due to a growth in global demand but also divergency in product specificities. Further concerns regarding reliance on high-risk third country suppliers for critical components, insufficient access to raw materials and staff shortages aggravate the situation.</p>	13	DSO Entity, with ENTSO-E, to collaborate with technology providers to develop standard technology specifications.	Q4 2024
		DSO Entity, with ENTSO-E, to develop mechanisms for providing increased visibility to manufacturers into their upcoming procurement plans for equipment and systems on all voltage levels	Q4 2024
	[14]	EC to promote common technical requirements for generation and demand connection (DC) in revision of NC RfG and DC to ensure manufactures can benefit from single market access	By 2025

\* ■ Magenta marks a task to be delivered by DSO Entity

Table 4: Short overview of the Grid Action Plan's contents and DSO-related tasks

## 4.2. INTERNAL DEVELOPMENTS: WORK PRIORITIES AND EXPERT GROUPS' WORK PROGRAMS 2024

Despite 2024's particularity as an election year, DSO Entity's work will not decrease but rather intensify due to the continuous ongoing work on developing technical requirements and the additional tasks assigned in the Grid Action Plan (COM/2023/757) in November 2023. This implies a further reinforcement of the cooperation with ENTSO-E as several tasks in the Grid Action Plan (COM/2023/757) are jointly assigned to both entities. Furthermore, the sharing of best practices will continue with the implementation of the Knowledge Sharing Strategy 2024 focusing on one flagship project: the development of a Technical Vision for DSO Entity. This Technical Vision should be ready to be presented by

the end of the year, right on time to give guidance for the next legislative term by informing about DSOs' realities and needs to enable the energy transition.

### High-level overview of core activities in all three pillars in 2024

Figure 16 gives a high-level summary of highlighted core activities in 2024. All the details regarding the EGs and TFs' core workstreams and deliveries as well as for Knowledge Sharing and the Technical Vision's development are summarised in the subsequent pages and Chapter 4.3.

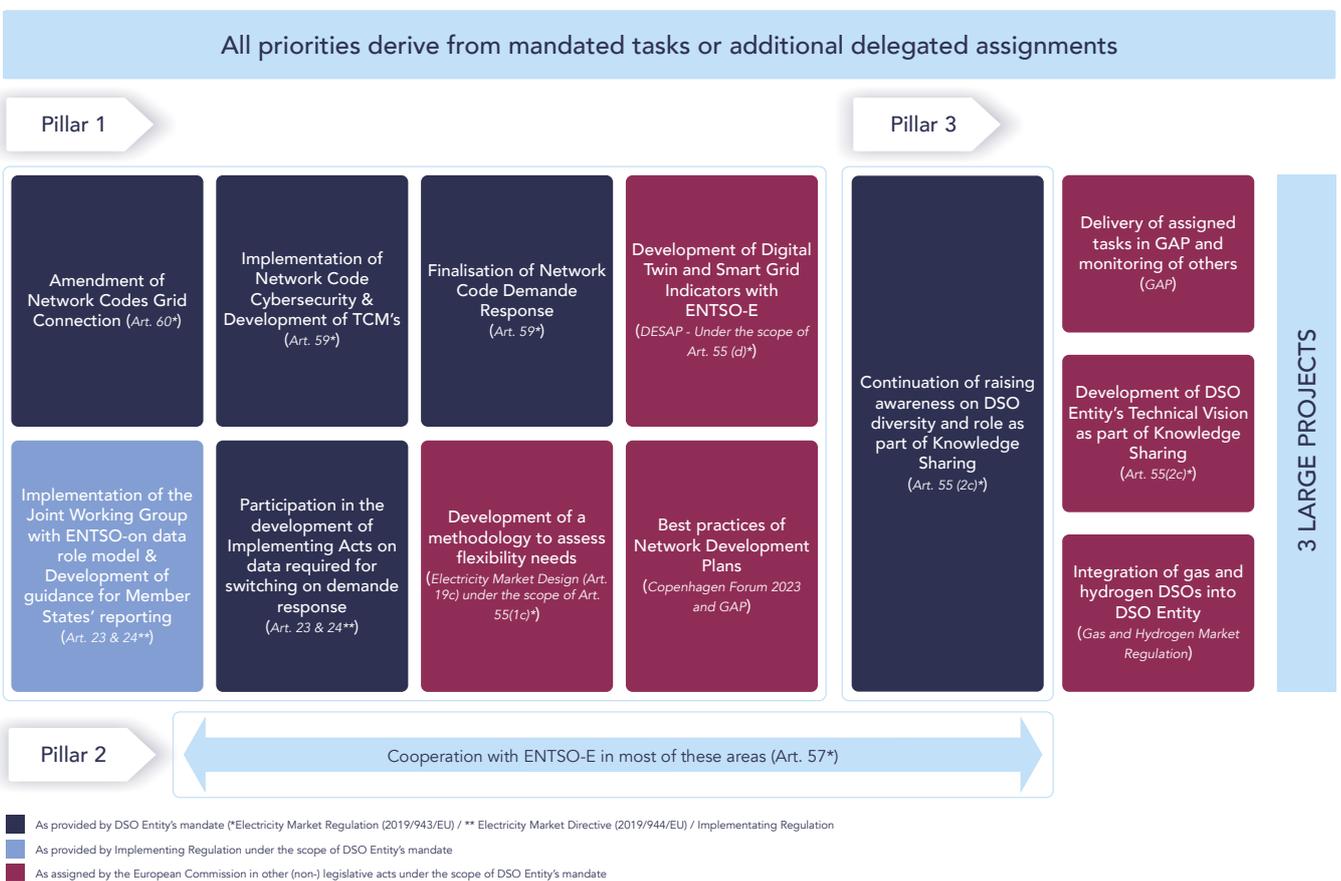


Figure 16: High-level overview of core activities in the Expert Groups and Task Forces' Work Programs 2024

### Cooperation with ENTSO-E on the delivery of jointly assigned tasks in the Grid Action Plan

The close cooperation with ENTSO-E will continue in all the work areas that were displayed in Chapter 3.2. and are described in the EGs/TFs' Work Programs

2024. Additionally, several of the Grid Action Plan's (COM/2023/757) tasks will have to be delivered together in 2024 and beyond.

Figure 17 gives an overview of the tasks that will have to be delivered jointly by DSO Entity and ENTSO-E.

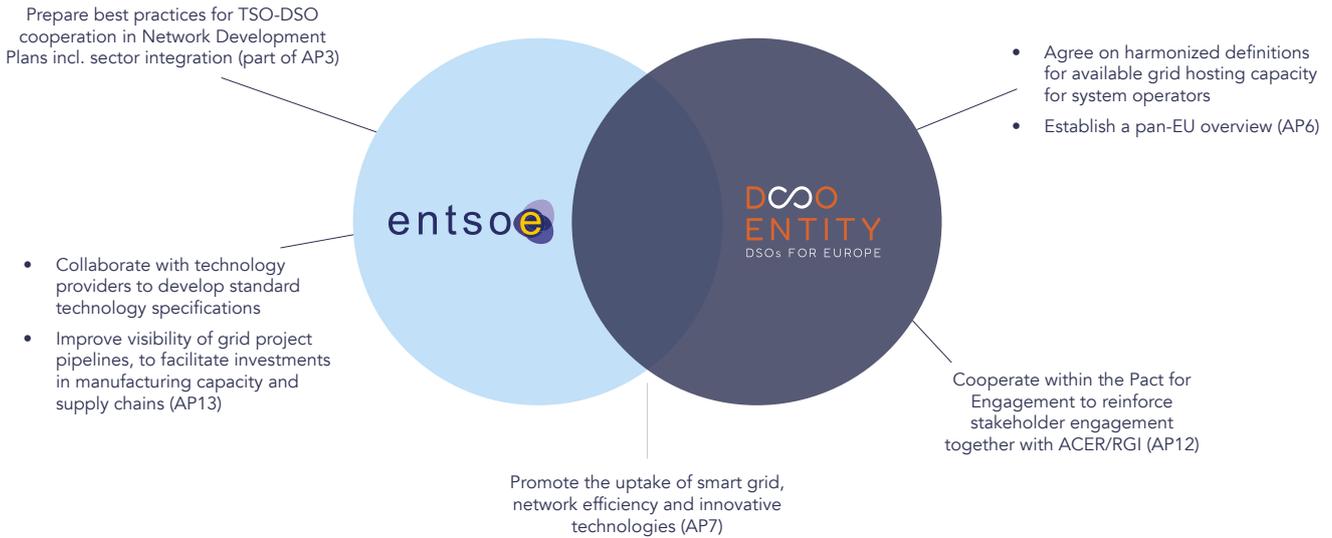


Figure 17: Future collaboration with ENTSO-E on jointly assigned tasks in the Grid Action Plan



INFO BOX D

Integration of gas DSOs within DSO Entity

In its recast of the Regulation on the internal markets for renewable and natural gases and for hydrogen (COM/2021/804) from December 2021, the EC proposed the integration of gas DSOs within the current DSO Entity's structure. A provisional agreement was reached during the triilogue meeting on 8 December 2023 that still needs to be formally adopted. However, the contents are clear, and it is foreseen that gas DSOs should in the future cooperate within DSO Entity.

The integration of gas DSOs into DSO Entity necessitates a substantial overhaul of DSO Entity's current structure and governance. The Regulation foresees that, within one year after its entry into force, the revised Statutes, Rules of Procedures and Financing Rules, must be submitted to the EC. The timeline below shows the anticipated implementation process for the new structure based on the Regulation text. However, DSO Entity will certainly do its utmost to ensure a smooth and rapid integration of gas DSOs into its structure

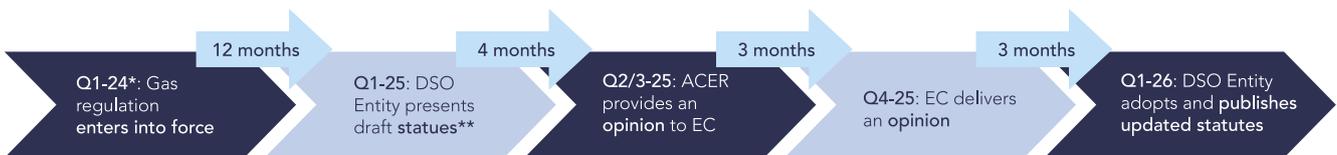


Figure 18: Timeline for the integration of gas DSOs as outlined in the Regulation

## THREE CROSS-CUTTING HORIZONTAL PROJECTS IN 2024

Apart from the activities described in the overviews of the EG and TFs, and Knowledge Sharing, the Secretariat will work on three larger cross-cutting projects:



1. **The preparation of the integration of gas and hydrogen DSOs into DSO Entity:** An important, but also time- and resources-intensive, task will be the revision of the Statutes, Rules of Procedures and Financing Rules to facilitate the integration of gas DSOs into DSO Entity as foreseen in the Renewable and Natural Gases and Hydrogen Regulation (COM/2021/804). This process will require close coordination with existing DSO Entity members, but also with the four European gas associations to ensure a mutually acceptable and welcomed outcome. Already in 2023, the Secretariat started to internally prepare for this integration by closely monitoring the developments of the Gas package and informal preparatory talks to ensure a smooth integration (for more information, please see the Info Box D).

**When**

This significant project of creating the foundations of a sector-integrated DSO Entity and putting them into practice will take longer than a year and is expected to be continued in 2025.



2. **The delivery of the assigned action points in the Grid Action Plan and the monitoring of relevant workstreams:** The Grid Action Plan (COM/2023/757) assigns DSO Entity to support the delivery of at least seven out of the 14 action points - often in cooperation with ENTSO-E and/or the EC and ACER. Given the publication of the Grid Action Plan (COM/2023/757) in late 2023, not all action points could yet be assigned to specific EGs and TFs before the AP24's deadline. Therefore, in early 2024 some EGs and TFs might need to integrate additional tasks into their workstreams. Furthermore, the establishment of new groups to cover certain aspects might be considered, especially in the areas of investments, remuneration and finance. In addition to the internal distribution of tasks, a close cooperation with ENTSO-E will have to be established. Since several of these action points will have to be delivered as a joint exercise with ENTSO-E, potential common working structures and groups will have to be set up between the two entities.

**When**

The Grid Action Plan's (COM/2023/757) timeframe is set at 18 months, so all deliverables will have to be accomplished by mid-2025 the latest, but many earlier throughout 2024.



3. **The development of a Technical Vision as part of the Knowledge Sharing Strategy:** In 2024, the Knowledge Sharing Strategy's strategic focus will be the development of a Technical Vision. While a more general vision had already been adopted in 2021, underlining DSO Entity's active support to the transition of the energy system into a decarbonised and digitalised one, a clear Technical Vision describing the characteristics of this future energy system from a DSO perspective is still lacking. Together with DSO Entity's members, the Secretariat will strive to bring together all its expertise in relevant areas, such as future system operation, flexibility and digitalisation, data management and interoperability, network planning and investments as well as resilience, cyber-aspects and emergency management. For more information, please consult Chapter 4.3.

**When**

A concrete project proposal will be developed at the beginning of the year and the Technical Vision's delivery is foreseen for late autumn 2024 so that the key-findings and recommendations can start to be disseminated right at the beginning of the new legislative term (2024-2029). The Grid Action Plan's (COM/2023/757) timeframe is set at 18 months, so all deliverables will have to be accomplished by mid-2025 the latest, but many earlier throughout 2024.

DSO Entity's comprehensive work, which derives from its mandated tasks, is mainly carried out in the EGs/TFs under the Secretariat's guidance and with its assistance



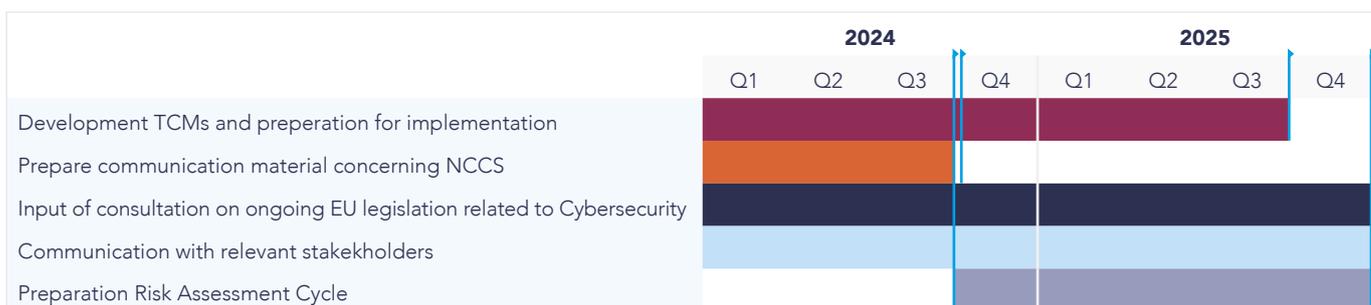
## WORK PLAN 2024: EXPERT GROUP CYBERSECURITY (EG CS)

Network Code Cybersecurity	WORK AREA	<p>Finalising the Network Code on Cybersecurity and preparing the Terms, Conditions &amp; Methodologies (TCMs) that will be used within the NCCS.</p> <ul style="list-style-type: none"> <li>▶ Prepare TCMs that will be necessary shortly after the NCCS comes into force.</li> <li>▶ Synchronise internal approval process together with ENTSO-E.</li> </ul>
	DELIVERABLES	<ul style="list-style-type: none"> <li>▶ Article 47(2) - The Project team will have to develop non-binding guidance on a number of issues: transitional electricity cybersecurity impact index (ECII), standardisation, etc.</li> <li>▶ Article 17(1)- The Project team will have to develop proposals for the cybersecurity risk assessment methodologies.</li> <li>▶ Article 36(8) - develop a cybersecurity incidents classification scale methodology.</li> <li>▶ Article 36(10) - Assess the possibility and the financial needs to develop a common tool.</li> </ul>

Prepare communication material concerning NCCS	WORK AREA	<p>Prepare communication material concerning NCCS</p> <p>EG Cybersecurity will prepare all necessary material (documents, slides and/or videos) to explain the NCCS in more detail as to what (Once the NCCS will enter into force)DSOs will have to implement.</p>
	DELIVERABLES	<p>Cybersecurity expert group will provide explanations to the DSOs about:</p> <ul style="list-style-type: none"> <li>▶ What is required of them,</li> <li>▶ How they should prepare themselves to the “next steps” of the implementation phase.</li> </ul> <p>Communication tools will be prepared by the EG CS and shared openly to any organisation willing to know more and/or to communicate about the NCCS.</p>

Input for consultation	WORK AREA	<p>Input for consultation on technical aspects of EU legislation related to Cybersecurity and Cooperation with relevant stakeholders</p> <p>Prepare expert responses to ongoing EU files within the framework of DSO Entity’s technical mandate on the topic of cybersecurity. EG CS will develop close relationships with relevant stakeholders in order to exchange relevant information, improve competencies and inform DSOs about main activities.</p>
	DELIVERABLES	<p>Prepare responses for the following topics:</p> <ul style="list-style-type: none"> <li>▶ RED Delegated Act Draft Standard: CEN-CLC/JTC13/WG8</li> </ul> <p>Develop close relationship with the European Commission and other relevant stakeholders.</p>

Knowledge Sharing	WORK AREA	EG CS will organise a number of internal and external knowledge sharing activities.
	DELIVERABLES	<ul style="list-style-type: none"> <li>▶ Internal workshop on Business Continuity Management (follow-up to first internal Webinar from January 2024)</li> <li>▶ Ask Me Anything Webinar,</li> <li>▶ Concept and first steps for the development of community of cyber experts</li> </ul>





## WORK PLAN 2024: EXPERT GROUP DISTRIBUTED FLEXIBILITY (EG DF)

Proposal for Network Code Demand Response (NC DR) and follow up work	OBJECTIVE	Submit a proposal for a network code and a supporting document based on Article 59(1)(e) of the Electricity Market Regulation by 8 May 2024 and align with ACER Framework Guideline on demand response.
	WORK AREA	<p>In line with Article 59(10), DSO entity, in cooperation with the ENTSO-E for Electricity, convened a drafting committee to support the network code development process. The drafting committee consists of representatives of EC, ACER, NEMOs, smartEn, Solar Power Europe, Eurelectric, EASE, IFEIC, EFET, WindEurope, and T&amp;D.</p> <p>Further work on the NC DR in 2024 consists of:</p> <ul style="list-style-type: none"> <li>▶ Analysis of received responses from the stakeholders in the public consultation and justify the taking into account or not of the remarks;</li> <li>▶ Develop the draft NC DR based on the remarks from stakeholders, but also based on further insights and discussions with ENTSO-E, (ACER and the Commission);</li> <li>▶ Following the submission of the draft NC DR, interact with ACER during their revision process;</li> <li>▶ Take part in the possible ACER (public) consultation, possibly together with ENTSO-E</li> </ul>
	DELIVERABLES & MILESTONES	<ul style="list-style-type: none"> <li>▶ Submit the final draft of the NC DR to ACER by 8 May 2024;</li> <li>▶ Participate together with ENTSO-E in a (public) consultation of ACER.</li> </ul>
Internal & External consultations on Flexibility	OBJECTIVE	Ensure consistency on ongoing EU legislations within the framework of DSO Entity's mandate, especially those with an impact on distributed flexibility.
	WORK AREA	<p>Reform of the EMD and other public consultations. EG DF focuses on the following EMD aspects related with the NC DC:</p> <ul style="list-style-type: none"> <li>▶ Dedicated measurement devices (Article 7b in the Regulation);</li> <li>▶ Investment climate for DSOs, cost reflective and neutral tariffs, realistic transition periods for technical realisation (Article 18(2) in Regulation and Article 15(a) in Directive)</li> </ul>
	DELIVERABLES & MILESTONES	<ul style="list-style-type: none"> <li>▶ Evaluation of the final Electricity Regulation and Electricity Directive in the frame of the Electricity Market Design initiative of the Commission);</li> <li>▶ Contribution to ACER public consultation on the removal of barriers to electricity demand response.</li> </ul>
Support to other EGs on flexibility related topics	OBJECTIVE	Foster transversality among the EGs by providing support with tasks closely related to flexibility, aiming to positively impact the efforts within the EG DF, with a specific emphasis on NC DR.
	WORK AREA & DELIVERABLES	<ul style="list-style-type: none"> <li>▶ Supporting the JWG on Data Interoperability to ensure the alignment with the NC DR;</li> <li>▶ Supporting EG Existing Network Codes during the amendment of RfG NC, DC NC, analysing their impact on NC DR.</li> <li>▶ Support those expert groups and task forces leading the work under the EU Action Plan for Grids, in topics related to distributed flexibility or demand response</li> </ul>

Development of a methodology for the analysis of flexibility needs by EU DSO Entity and ENTSO-E (Art. 19c (6) in the Regulation)	OBJECTIVE	Formulate a methodology in cooperation with ENTSO-E for analyzing flexibility needs as per Article 19c(6) of the Energy Market Directive (EMD) reform.
	WORK AREA & DELIVERABLES	<ul style="list-style-type: none"> <li>► Elaboration of methodology for the analysis of flexibility needs (9months after the adoption of the EMD reform)</li> </ul>

Communication and strategy for DSOs on Distributed Flexibility	OBJECTIVE	Communicate the works, priorities and positions of the EG DF to the members of DSO Entity, to relevant stakeholders and to develop a strategy for the implementation of Distributed flexibility
	WORK AREA & DELIVERABLES	<ul style="list-style-type: none"> <li>► Organisation of a series of webinar with experts from diverse European DSOs, sharing their best practices on flexibility. Presenters explain their use cases, mechanisms, motivation, added value, operational processes, and various topics related to flexibility;</li> <li>► Report to illustrate DSO's utilisation of flexibility mechanisms to fulfil their needs. On top of describing the practical experiences of diverse European DSOs, the report will spotlight today's approaches in deploying various flexibility mechanisms, including its structure, advantages &amp; disadvantages, and issues &amp; solutions of flexibility;</li> </ul>

EG DF Annual Plan 2024	Q1			Q2			Q3			Q4		
2024 EG DF Work Package Timeline	1	2	3	4	5	6	7	8	9	10	11	12
<b>WP 01. Proposal for Network Code Demand Response (NC DR) and follow up work</b>												
Deliverable 1. NC DR Proposal & Supporting Document												
Deliverable 2. Contribute ACER public consultation on NC DR												
Deliverable 3. Ask-Me-Anything Webinar on NC DR												
Milestone 1. NC DR Internal review												
Milestone 2. Approval of NC DR												
Milestone 3. Drafting Committee's NC DR review												
<b>WP 02. Internal and external consultations related to flexibility</b>												
Deliverable 4. Evaluate Electricity Regulation & Directive												
Deliverable 5. Contribute ACER Public Consultation												
<b>WP 03. Communication on distributed flexibility and dialog with relevant stakeholders</b>												
Deliverable 6. Ask-Me-Anything Webinar on EG DF												
Deliverable 7. Webinar series on flexibility best practices												
<b>WP 04. DSO strategy on flexibility</b>												
Deliverable 8. Identify use of flexibility mechanism												
Deliverable 9. Ask-Me-Anything Webinar on flexibility report												
Milestone 4. BoD revision report on flexibility												
<b>WP 05. Support to other EGs on flexibility related topics</b>												
Milestone 5. Selection of TF methodology for assessment of flexibility needs												
Milestone 6. Revision of Methodology for the assessment of flexibility needs												
Milestone 7. BoD approval for methodology of the assessment of flexibility needs												
<b>WP 06. Development of a methodology for the analysis of flexibility needs by EU DSO Entity and ENTSO-E (Art. 19c (6) in the Regulation)</b>												



## WORK PLAN 2024: EXPERT GROUP DATA INTEROPERABILITY (EG DI)

Contribution to the JWG	WORK AREA	EG DI will coordinate the participation of members of DSO Entity to the JWG. In addition, it will monitor, evaluate the work of the JWG and, when appropriate, provide advice to the Board of DSO Entity concerning the deliverables of the JWG.
	DELIVERABLES	<p>EG DI will play a crucial role in the delivery of proposals for the Commission for:</p> <ul style="list-style-type: none"> <li>▶ Guidelines for Member States to support in delivering their obligations arising from the Implementing Regulation 2023/1162</li> <li>▶ Implementing Regulation on Customer Switching; and</li> <li>▶ Implementing Regulation on Demand Response.</li> </ul>
Support work in the sub-groups of the Smart Energy Expert Group	WORK AREA	The new SEEG group, currently being created by the European Commission, will require appointed members to nominate potential participants in the sub-groups of the SEEG. When appropriate, EG DI could contribute to the development of the inputs of DSO Entity in some of the topics being under discussion..
	DELIVERABLES	No deliverables are expected in this work area
Support work in tasks related with the Grid Action plan	WORK AREA	The new Grid Action Plan published by the European Commission has identified a number of areas to be led or supported by DSO Entity. No specific area has yet been identified as a core task for EG DI. However EG DI is available to advise other expert groups in data and data interoperability topics.
	DELIVERABLES	No deliverables are expected in this work area
Extend the reflection paper on submeters (including DMDs)	WORK AREA	EG DI aims to update and expand the current internal paper on submeters (and dedicated measurement devices (DMDs) and start considering (technical) requirements to check and ensure the quality of the respective data from these DMDs so it can be used to facilitate demand response and flexibility services
	DELIVERABLES	The deliverable in this work area is: A reflection paper describing technical requirements for the use of DMDs

Reflection paper on data interoperability of Energy Communities	WORK AREA	This reflection paper will undertake an initial identification of the information that Energy Communities would need to provide to the System Operators to facilitate their integration in the operations of the network grid. A sub-group of EG DI will identify the processes (use cases) where different types of Energy Communities interact with the operations of the Distribution Grid and, for each of these processes, identify the information that needs to be exchanged.
	DELIVERABLES	<p>The deliverable in this work area is:</p> <ul style="list-style-type: none"> <li>▶ A reflection paper presenting the requirements in terms of information exchanges for an efficient integration of the different types of Energy Communities into the grid.</li> </ul>

Whitepaper on Energy Data Spaces	WORK AREA	EG DI aims to develop a whitepaper paper in close cooperation with important stakeholder groups for the utilisation of distributed flexibility. This paper will discuss how the EU Commission initiative on (Energy) Data Spaces could affect the operations of the distribution grids as well as identifying legal and technological barriers currently in place in the energy sector.
	DELIVERABLES	<p>The deliverable in this work area is:</p> <ul style="list-style-type: none"> <li>▶ A whitepaper paper on a federated Common European Energy Data Space.</li> </ul>

DELIVERABLES	Start	End	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Proposal for the Commission's guidelines for member states	Nov-23	Mar-24										
Proposal for the Commission's IA in Supplier Changing	Jan-24	Jun-24										
Proposal for the Commission's IA on Demand Repsonse	Jan-24	Dec-24										
Description of the repository	Jan-24	Apr-24										
Reflection paper describing technical requirements for the use of DMS	Mar-24	Sept-24										
Reflection paper on interoperability with Energy Communities	Apr-24	Oct-24										
Whitepaper on a Common European Date Space	Apr-24	Dec-24										



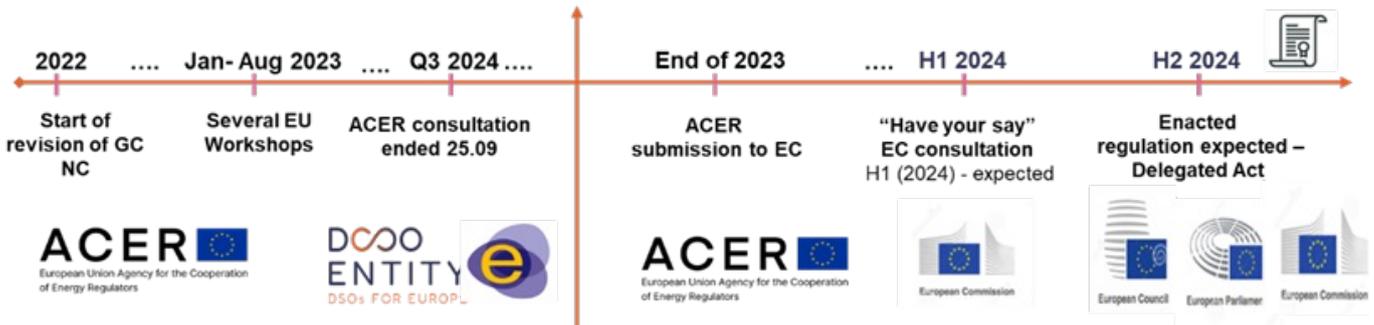
## WORK PLAN 2024: EXPERT GROUP EXISTING NETWORK CODES (EG NC)

Grid connection Network codes	WORK AREA	Following ACER submission to the EC on the proposed amendments to the NC RfG and NC DC to the Commission in December 2023, the EG Existing NC will analyse ACER legal text amendments and position itself based on DSO Entity expectations. During 2024, the legislative process is managed directly by the Commission based on a procedure process for Delegated Acts.
	DELIVERABLES	The inputs can be in several formats, such as formal submission to EC on the 2024 consultation expected, presentation of main attention points, a note with proposals and justification, and new text proposals.
Anticipatory work predicated on the amendments of the grid connection	WORK AREA	<p>Research and analysis</p> <ol style="list-style-type: none"> <li>1. Research, jointly with other key stakeholders into the issues and mitigations of Grid Forming Capabilities in DSO networks, EG NC will explore the likelihood of islands forming and what the range of associated parameters might be.</li> <li>2. Development of equipment certification schemes for EVs and heat pumps. This initiative intends to create a base in 2024, looking forward to 2025 as equipment certificates will be a mandatory requirement.</li> </ol>
	DELIVERABLES	The Deliverables, depending on the resources, shall be a report with specific guidelines and technical specifications to all EU DSOs, European NRAs and other legally designated bodies.
Interaction with the European Stakeholder Committees	WORK AREA	The current ESCs, Grid Connection (GC ESC) and System Operation (SO ESC), are of particular interest for the EG Existing NC. DSO Entity is a co-organiser of ESC beginning in 2024..
	DELIVERABLES	<p>Within the Secretariat, alongside the leadership team of the EG NC, we have the responsibility to prepare the agenda, minutes, and contents of discussion alongside ACER and ENTSO-E in all ESC events.</p> <p>Furthermore, In June 2024, DSO Entity will host both ESCs on SO and GC in Brussels (2-day event)</p>

Possible re-opening of existing NC or GL	WORK AREA	The reopening of any other existing NC is subject to ACER and EC. Assuming that existing NC such as the CACM Guideline, GLDMP, KORRR and BL GL come up for review, the EG will need to also explore who the relevant experts are to include in the EG
	DELIVERABLES	Q1 - Produce a compilation of the issues that DSOs should be promoting. The deliverables are subject to any reopening and immediate reactions from the EG based on consultation, direct interactions with ENTSO-E and ACER along with all relevant stakeholders

Communication with relevant Stakeholders	WORK AREA	Throughout 2024, the EG on Existing NC is open to conducting several meetings with relevant EU stakeholders on the topics of interest. Stakeholders could be EU institutions or EU associations for specific issues, such as EVs, heat pumps, or any other relevant EU associations.
	DELIVERABLES	No tangible deliverables to be expected in the work area

As of December 2023





## ACTION PLAN 2024: TASK FORCE DIGITALISATION OF THE ENERGY SYSTEM (TF DESAP)

Identifying challenges potentially motivating use of Digital Twin Solutions and definition of Smart Grid Indicators	WORK AREA	From the inception of the Task Force, the need was identified to establish a shared understanding and language within the Task Force in order then to collaborate effectively with ENTSO-E experts. To achieve this, TF DESAP has outlined in Work Area 1 the challenges and DSOs needs that Digital Twins (DT) and Smart Grid Indicators (SGIs) can address. This initiative, which saw significant development in 2023, is anticipated to be harmonised and finalised swiftly in 2024, so that common challenges for DSOs and TSOs can be identified and prioritised.
	DELIVERABLES	<ul style="list-style-type: none"> <li>▶ TSO-DSO challenges and opportunities related to present and future needs of the EU electricity system [September].</li> </ul>
Defining Smart Grid Indicators for the European Grid Operators	WORK AREA	The primary objective of the Task Force for Digital Energy System Action Plan (TF DESAP) in 2024 is to provide guidance and support for network operators on sustainable and cost-effective smart grid investments. This is to be achieved through a carefully selected set of Smart Grid Indicators, developed via a stepwise and collaborative learning process. A key milestone is to deliver a comprehensive initial update at the Energy Infrastructure Forum in June 2024. Building on the groundwork laid in 2023, TF DESAP will complete a report depicting the current implementation status of Smart Grid Indicators (SGIs) across European member states. This report will also include preliminary key principles which could serve to frame the definition of smart grid indicators. Eventually, the report will define an initial set of indicators aimed at addressing some of the challenges identified in the preparatory work leading up to 2024 to be potentially enriched in a second step starting from mid-2024 with results stemming from selected DT use-cases.
	DELIVERABLES	<ul style="list-style-type: none"> <li>▶ Key principles report on smart grid indicators in anticipation for the Energy Infrastructure Forum 2024 – to be potentially completed with output from DT use-cases.</li> <li>▶ Initial set of Smart Grid Indicators for the Energy Infrastructure Forum 2024.</li> </ul>
Defining a concept for a Digital Twin of the European electricity grid	WORK AREA	In 2024, the Task Force for Digital Energy System Action Plans (TF DESAP) will start to work jointly with ENTSO-E on the concept definition, as per project plan (final agreement with ENTSO-E ongoing). Conversely, the TF plans to expand its work on Digital Twins, moving away from an DSO-centric top-down approach that primarily involved discussions among TF's participants. TF DESAP decided on a more hands-on methodology. This revised strategy includes going for a use-case methodology and, in addition, engaging with external technology providers considered as essential for advancing the topic further. Consequently, the initial approach on DT will be continuously re-evaluated to ensure Knowledge Sharing about existing DT solutions is disseminated. This seems to be in line with EC's expectations as related by the Secretariat (Dec. 2023).
	DELIVERABLES	<ul style="list-style-type: none"> <li>▶ Initial list of priority use-cases for DT.</li> </ul>
Knowledge Sharing	WORK AREA	As a key component of DSO Entity, TF DESAP will actively participate in Knowledge Sharing at all levels across the organisation. TF DESAP also plans to engage in external events and conferences when possible. In collaboration with the event coordination team, a calendar of events will be updated on a continuous basis. A primary goal for 2024 is to present a unified and well-coordinated stance on Smart Grid Indicators at the Copenhagen Forum 2024. Regarding DT, TF DESAP is adopting a more practical, hands-on approach through collaboration with external technology providers. A significant initiative in this direction is the organisation of an event slated for the second quarter of 2024, aimed at fostering a broad exchange of ideas and insights on DT. Furthermore, in response to the Grid Action Plan, specifically action 7, released by the European Commission in November 2023, TF DESAP is exploring the potential to develop a knowledge exchange platform akin to ENTSO-E's Technopedia. This platform would serve as a hub for information and collaboration, enhancing the overall effectiveness and reach of the TF DESAP's initiatives.
	DELIVERABLES	<ul style="list-style-type: none"> <li>▶ Webinar and/or internal consultation on the topic of Smart Grid Indicators [Q1/Q2 2024].</li> <li>▶ Event or a limited exhibition on the topic of DT [Q2/Q3 2024].</li> <li>▶ A concept knowledge platform with inspiration from ENTSO-E's Technopedia</li> </ul>



## WORK PLAN 2024: TASK FORCE TEN YEAR NETWORK DEVELOPMENT PLAN (TF TYNDP)

Involvement in ENTSOs' TYNDP Process	WORK AREA	Following and contributing to ENTSO-E's and ENTSG's (ENTSOs)TYNDP process including the reactions to the public consultations and our participation in the scenario External Technical Advisory Group (ETAG) as established in 2023. TF TYNDP closely follows the TYNDP process and exchanges with the ENTSOs on specific key aspects of the process focusing especially on scenario development
	DELIVERABLES	<ul style="list-style-type: none"> <li>▶ Reacting to the public consultation related to the scenario development of the TYNDP process.</li> <li>▶ Participating in the activities of the ETAG, which are not detailed at the time of this report.</li> <li>▶ Preparing for the TYNDP process 2026</li> </ul>
Developing the Model DNDP for Europe	WORK AREA	In the course of 2023, TF TYNDP concluded that a direct involvement of DSO Entity's experts in the general TYNDP process or specifically on scenario development is of little benefit for all involved stakeholders. Following the summer break in 2023, TF TYNDP investigated alternative approaches to support DSOs in their system development work. Outcome of this investigation amounted to the proposal of the involved experts to reshape the focus of the TF away from an exclusive focus on the TYNDP process to a focus in 2024 on the larger topic of system development and specifically on the increasingly important topic of distributed network development plans (DNDP). For 2024, TF TYNDP will concentrate on reacting to the task related to DNDP coming from the Copenhagen Forum 2024 and the Grid Action Plan (COM/2023/757) as published by the European Commission in November 2023. The TF TYNDP agreed to engage in drafting a model DNDP for European DSOs in an approach to identify and harmonise good practices on DNDP drafting in Europe.
	DELIVERABLES	<ul style="list-style-type: none"> <li>▶ Reporting to the Copenhagen Forum on the progress of DNDP [Q2 2024]</li> <li>▶ A harmonised model DNDP for European's DSOs [Q4 2024]</li> </ul>
Supporting the work related to Article 19c of the Electricity Market Design	WORK AREA	Support the work as mandated to DSO Entity in article 19-c of the EMD. It is expected that the EMD will go into force in early Q2 2024. Following this DSO Entity and ENTSO-E will have 9 months to prepare their draft flexibility needs methodology as of the latest work version of the EMD. Independent of the final version of the EMD, DSO Entity needs to prepare for the work mandated within the EMD regulation and TF TYNDP may have a supporting role within this work.
	DELIVERABLES	<ul style="list-style-type: none"> <li>▶ Deliverables for this work are not defined as of yet.</li> </ul>
Knowledge Sharing	WORK AREA	As a key component of DSO Entity, the TF TYNDP will actively participate in Knowledge Sharing at all levels across the organisation in 2024. As a main activity on Knowledge Sharing, the TF TYNDP identified the need to largely exchange with DSO Entity's member base on the topic of DNDP. Additionally, as part of the increasing need to find funding opportunities for DSO infrastructure projects, TF TYNDP wishes to further investigate the opportunities of Smart Grid PCI projects for DSOs..
	DELIVERABLES	<ul style="list-style-type: none"> <li>▶ Workshop on DNDP with DSO Entity's members.</li> <li>▶ Workshop on the opportunities of Smart Grid PCI projects.</li> </ul>

### 4.3 COMMUNICATION AND KNOWLEDGE SHARING'S PRIORITIES FOR 2024

Knowledge Sharing's relevance as DSO Entity's third pillar received acknowledgement in 2023 and is expected to gain additional relevance given the tasks explicitly assigned to DSO Entity in the Grid Action Plan (COM/2023/757). Indeed, DSO Entity is a key actor of the delivery of several action points regarding the sharing of practices and information among DSOs, for instance such as for network development planning (action point 3) or funding opportunities for smart grids for instance (action points 3, 10). Reinforced by the Grid Action Plan (COM/2023/757), the Knowledge Sharing Strategy 2024 will focus on three core elements:

- ▶ The development of a **Technical Vision** which might include the delivery of some of the requested tasks by the Grid Action Plan (COM/2023/757).
- ▶ The pursuit and intensification of **information sharing about DSOs and their diversity** among all 900 members and external stakeholders.
- ▶ The exchanges on practices within **the EGs and TFs on specific expert topics**.

#### The customer in the center of DSO Entity's Technical Vision:

The internal consultation process on the Knowledge Sharing Strategy 2024 unveiled one shared priority within the membership: the development of a Technical Vision for DSO Entity. While the ongoing validity for the five potential strategic priority topics – identified in 2023 - were reiterated (see Chapter 3.3.), the need

for an all-encompassing frame was highlighted and it was advised to develop a frame to connect the dots. A more holistic Knowledge Sharing Strategy 2024 was requested, which would not only consist of detached single topics, but would be developed within a common frame. This frame should take up the form of a Technical Vision for DSOs with customers at its center.

While a more general vision had already been adopted in 2021 (see Info Box E), which underlined DSO Entity's active support for the transition of the energy system into a decarbonised and digitalised one, a Technical Vision regarding the characteristics of this future energy system from a DSO perspective is still lacking. The Technical Vision's aim will be to describe how a fully decarbonised energy system will differ from the current system and outline which key characteristics will have to be adapted from a DSO perspective to be able to deliver the EU's net-zero targets. Obvious aspects to be tackled could be the future operations including flexibility, automation and smartening of the grid, data-management and -interoperability questions, resilience, and emergency management, but also investments, network planning and market design issues. A concrete project proposal will be developed at the beginning of the year and the Technical Vision's delivery is foreseen for late autumn 2024 so that the key-findings and recommendations can start being disseminated right at the beginning of the new legislative term (2024-2029).



#### INFO BOX E

##### DSO Entity's general vision

In line with the EU's climate and energy objectives, DSO Entity is committed to supporting the path towards reaching Europe's carbon neutrality by 2050 and has developed its vision as follows: DSO Entity will support DSOs to actively facilitate the transition towards a CO<sub>2</sub>-neutral energy system in the next decades, ensuring security of supply with future-proof network codes and with enhanced collaboration between TSOs and DSOs.

### Further elements of the Knowledge Sharing Strategy 2024:

As mentioned before, the development of DSO Entity’s Technical Vision will not be the only focus of Knowledge Sharing in 2024 but be grounded in three columns which are described in Figure 19 below.

#### The Country Expert Group’s role in implementing the Knowledge Sharing Strategy 2024

The CEG will continue to play an important role in supporting the implementation of the Knowledge Sharing Strategy in 2024, specifically regarding the continuation of raising awareness on DSOs’ role and diversity by sharing best practices. Already in 2023, the CEG started an initiative in the form of “DSO country pitches” at the beginning of each meeting. In these sessions, key characteristics regarding DSOs in their respective country were shared (for instance on the number of DSOs in the country, the establishment of RES or citizen communities, or the status of the roll-out of smart meters). This practice will be continued in 2024 and should lead to the creation of a DSO country map which displays the differences between DSOs in the EU. This will ensure that knowledge is not only shared internally, but also expanded to a greater external audience. In addition, the CEG will continue to be an important body for advice and expertise regarding other relevant activities such as the Technical Vision’s development.



Figure 19: Overview of the three columns of the Knowledge Sharing Strategy in 2024

As in 2023, to deliver the 2024 Knowledge Sharing Strategy's objectives the third pillar will go hand in hand with the Communication Strategy 2024, which role will be to find the right format and platform to disseminate – between members and with external stakeholders - the deliverables.

Figure 20 depicts some selected highlights.

**IMPLEMENTATION TIMELINE 2024**

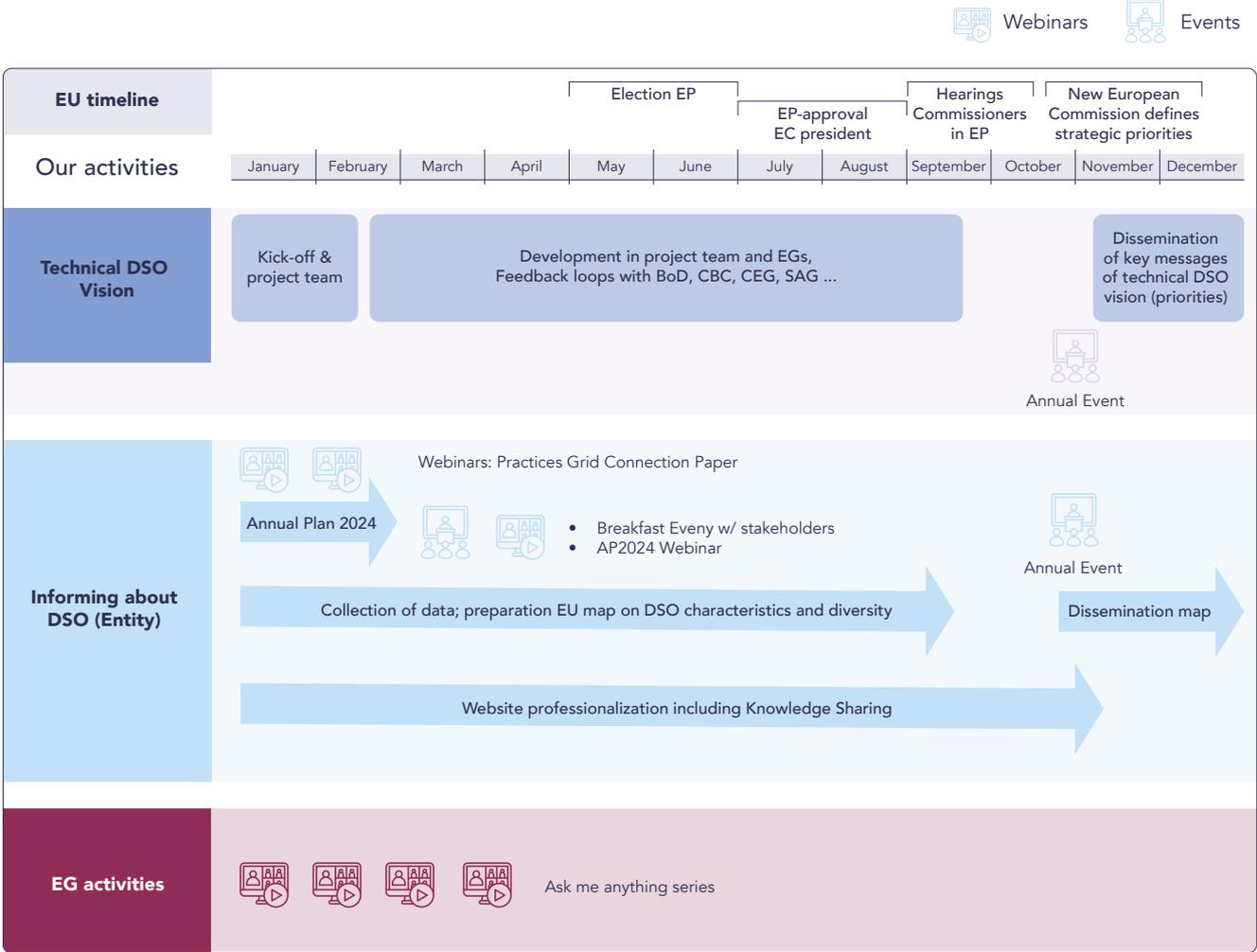
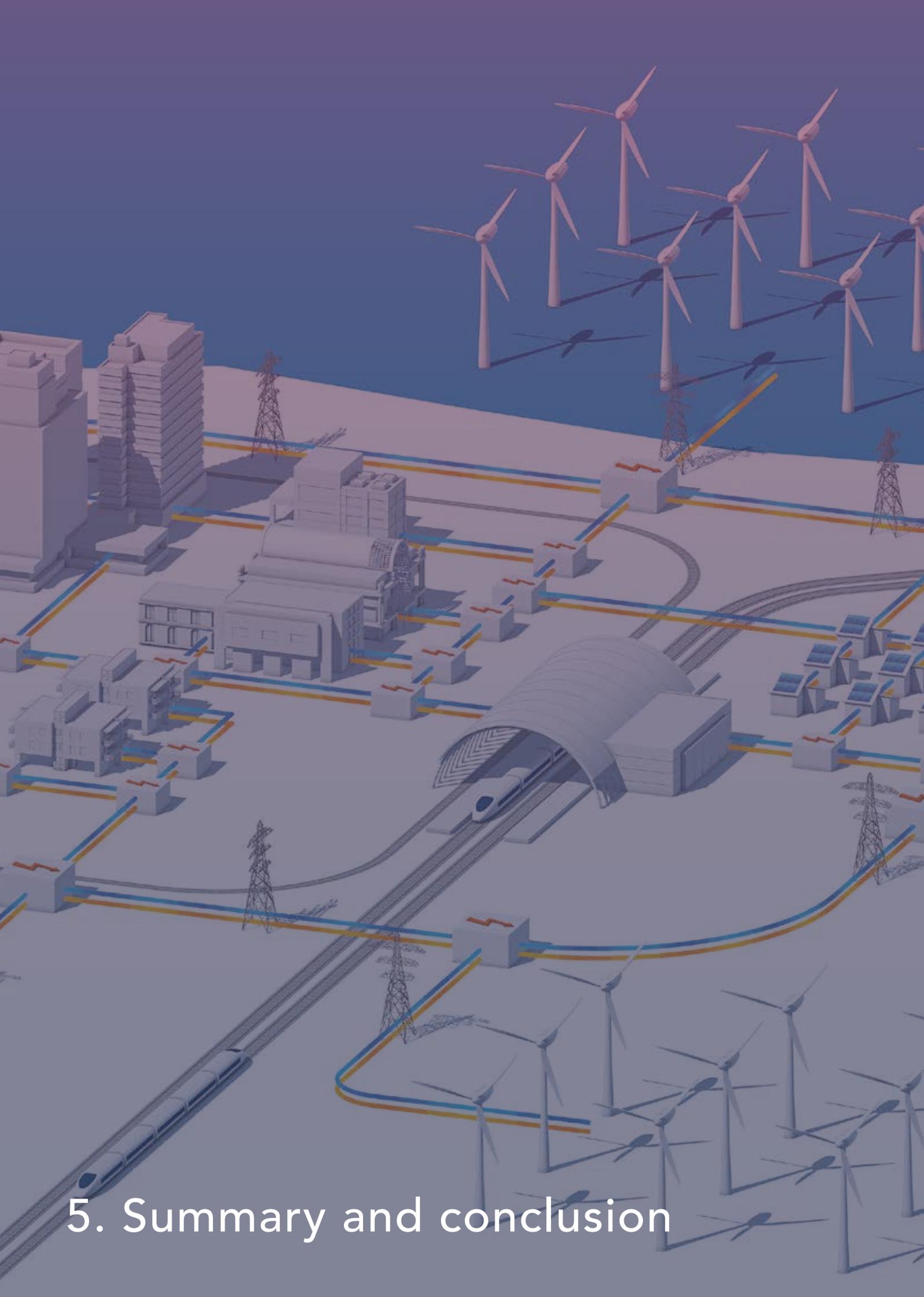


Figure 20: Implementation timeline including some highlights of the Knowledge Sharing Strategy 2024



## 5. Summary and conclusion

## “There is no green future for Europe without an upgraded power grid”

Energy Commissioner Kadri Simson<sup>1</sup>

In 2023, grids took centre stage at the European level and the crucial role of DSOs and TSOs as key facilitators of the energy transition was widely acknowledged. Achieving the European objective of climate neutrality, increasing the share of renewables and empowering customers requires the decentralisation and smartening of a formerly centralised and unidirectional system. For this holistic transformation of the energy system to happen, the right technical requirements and regulatory framework need to be in place to enable the grids to deliver.

Since 2021, DSO Entity has been a body mandated to promote the functioning of the European electricity market and facilitate the energy transition and remains actively dedicated to achieving these objectives. DSO Entity unites almost 900 diverse members from

all 27 Member States, and represents a manifold but collective voice of all European DSOs when working on technical conditions to enable this energy transition together with ENTSO-E.

### Looking back at 2023: The Grid Momentum unfolds and new workstreams are assigned to DSO Entity

While most of the groundwork for the organisation and governance was laid in 2022, by 2023 all EGs and TFs needed to fulfil DSO Entity's mandate at the time were established and could accomplish all deliverables in its three pillars, namely: (1) The development of technical rules such as Network Codes and Guidelines, (2) the strengthening of the close cooperation with ENTSO-E, and (3) internal and external Knowledge Sharing.

## Overview of the delivery of the tasks in 2023 in the three pillars

### PILLAR 1

Achieved milestones in the technical area included the development of the first draft for a Network Code Demand Response together with ENTSO-E and the organisation of a related public consultation (EG DF); the preparatory work on the implementation of the Network Code Cybersecurity (EG CS); the setting up of a Joint Working Group, with ENTSO-E, to support the Commission's works in the development of access and interoperability of metering data and contributing in developing future implementing acts on data interoperability for demand response and supplier switching (EG DI); an active engagement and enhanced role for DSO Entity in the European Stakeholder Committee and participation in consultations on the amendment of the Grid Connection Network Codes (EG ENC); the participation in ENTSO-E's consultation on the TYNDP development scenarios, and the start of closer interactions in the area of Network Development Planning (TF TYNDP). Furthermore, first steps towards the development of a Digital Twin and Smart Grid Indicators were set with the finalisation of the Joint Task Force's Terms of Reference with ENTSO-E inducing further concrete actions. With the support of DSO Entity's Secretariat, several EGs and TFs followed general legislative developments such as the Electricity Market Design and commented on technical aspects like Dedicated Measurement Devices.

### PILLAR 2

Most of the core deliverables, discussed above, were developed in cooperation and exchanged with ENTSO-E as DSO Entity's most entrusted partner. In 2023, a steady increase of new assignments to both entities was observed with concrete mandated tasks deriving from the Copenhagen Forum, but also from legislative (Electricity Market Design) and non-legislative acts (Grid Action Plan). This will contribute to further increase the close interactions and activities between the two legally mandated bodies.

### PILLAR 3

In addition to their contributions to the technical core workstreams, all EGs and TFs were involved in **internal and external Knowledge Sharing** activities with members and external stakeholders. In 2023, the first Knowledge Sharing Strategy was adopted by the Board and implemented throughout the year, partly in close interaction with the CEG which delivered DSO Entity's first report on the topic of connecting renewables to the grid. Internally almost 10 webinars were organized to inform and exchange with members on DSO Entity's activities and the EGs and TFs' Work Programs in the form of an "Ask me anything" webinar series, which will continue in 2024.

1. Energy Commissioner Kadri Simson (September 2023) "There is no green future for Europe without an upgraded power grid" Financial Times. Available at <https://www.ft.com/content/4c843612-1890-49bb-83eb-ddbe4495d6c9>

## Looking ahead to 2024: Working towards the technical achievement and delivery for a decarbonised EU

Although 2024 will be an “election year”, DSO Entity’s technical workstreams and mandated tasks will continue unabatedly. DSO Entity’s focus will continue to be on

delivering its enlarged mandate in the three pillars and, additionally, developing three major projects: (1) The delivery of the assigned tasks through the Grid Action Plan, (2) the development of a DSO Entity’s Technical Vision as a flagship project of the Knowledge Sharing Strategy 2024 and (3) the facilitation of the integration of gas and hydrogen DSOs into DSO Entity.



Figure 21: DSO Entity’s pillars and main projects for 2024

### Overview of core deliverables for 2024 in the three pillars

- PILLAR 1**  
 Regarding the technical activities, the EGs and TFs will continue to work on the finalisation of a draft Network Code on Demand Response and follow-up on further developments by ACER and the EC in this area (EG DF); the implementation of the Network Code Cybersecurity by drafting Terms, Conditions and Methodologies with ENTSO-E (EG CS), the active engagement in amending the Grid Connection Codes (EG ENC), the delivery - via the Joint Working Group with ENTSO-E, of guidelines for the Member States for their submission related to reference models for accessing metering data, draft Implementing Acts on data interoperability for customer switching and demand response (EG DI), as well as the development of the Digital Twin and Smart Grid Indicators (TF DESAP). Exchanging on Distribution Network Development Plans will intensify in 2024 since this was not only highlighted by the Copenhagen Forum but also in the Grid Action Plan including concrete deliverables for DSO Entity (TF TYNDP). While most of the new tasks assigned through the Grid Action Plan will be integrated in the existing EGs and TFs’ Work Programmes some more specific expertise might be needed by DSO Entity on financing, funding and investments and therefore in early 2024 we will investigate ways to ensure the right dedicated expertise will be available.
- PILLAR 2**  
 The close interaction with ENTSO-E will continue in all the established workstreams and intensify in the context of the delivery of new tasks mandated through the Grid Action Plan, but also the Electricity Market Design. The installation of new working and monitoring structures will have to be assessed in early 2024 and an updated version of the joint TSO-DSO work programme for 2024-25 will be prepared.
- PILLAR 3**  
 Knowledge Sharing activities will continue within the EGs and TFs entailing more opportunities for members to exchange but also to inform and discuss with external stakeholders. Especially, the project of the development of a Technical Vision as a flagship project of the Knowledge Sharing Strategy 2024 shall help raise awareness for the key role of DSOs in empowering customers and being technical enablers of the transition. Ultimately, this Vision shall provide recommendations for the new term (2024-2029) from a technical perspective.

While two of the above-mentioned projects - i.e., the Grid Action Plan and the Technical Vision - are partly embedded in the existing DSO Entity's three-pillar structure, the third project, namely the integration of gas and hydrogen DSOs into DSO Entity, is detached from the existing workstreams. This process will require close coordination with current DSO Entity's members, but also with the four European gas associations to ensure a mutually acceptable and welcomed outcome.

In 2024, DSO Entity, together with its almost 900 diverse and engaged members and in close cooperation with ENTSO-E, will continue to work towards the delivery of a decarbonised European energy system. By joining forces, we hope to accomplish our part in this transition by empowering customers, facilitating the integration of renewables and, most importantly, keeping the lights on for 450 million of European citizens.



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