

NAME : DANNY KLAAR
COUNTRY : THE NETHERLANDS
REGISTRATION NUMBER : 618

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Question 2.7: How are the roles and functions of supra-national, national and sub-national operations centres evolving to support the energy transition?

The power system landscape is rapidly changing due to the energy transition in Europe and in the whole globe characterised by further automation leading to a smart grid to which smart devices in smart homes are being connected. Electrification of the society will help to achieve the goal of a carbon neutral society. There is already a steep increase in Renewable Energy Resources that are connected to the grid such as photo voltaic (PV) panels, electrical vehicles (EV) and heat pumps (HP) which makes the electricity power system more weather dependent.

With the Clean Energy Package electricity regulation new tasks for Regional Coordination Centres (RCCs) have been defined and already the previous Third Energy Package regulation has led to the introduction of new processes and tools that were implemented like the ENTSO-E Operational Planning Data Environment (OPDE).

New coordination challenges are a logical consequence of the many operational challenges introduced by a vast scheme of off-shore windfarms connected to the grid being part of the huge RES proliferation resulting in a more weather dependent power system. Stability management is a key topic that needs proper attention and RCCs might in the future support TSOs in making dynamic security assessment in the operational planning time frame. Data quality and cyber security are crucial in the many critical processes and need to be taken care of.

New processes and tools are needed to be able to cope with the above mentioned challenges: stability management from a regional perspective, improved forecasting of the power system state, data analytics/artificial intelligence providing operational insights and supporting control and optimization algorithms will be part of this new future operational environment, with fast decision support provided by new EMS/SCADA systems which are fed with Phasor Measurement Unit data to support visibility of phenomena as well.

Operating the energy power system is going to be more dynamic and more complex having in mind not only the volatility in power trade, but also the introduced power, voltage and frequency control devices to further utilize the system to its limits.

Security of supply, resilience and risk preparedness at supra-national, national and sub-national level are key topics that constantly need attention. Innovation by all stakeholders is needed to realize the further development at the right pace of cross-border regional coordination to support the energy transition.