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Working Group 1 Update

ETIP SNET South-Eastern Regional Workshop - Zagreb

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Introduction

WG1 Reliable, economic and efficient smart grid system

Work Group 1 addresses **business and technology trends** contributing to the **overall energy system optimization** at **affordable investment and operation costs**.

It will focus on system aspects, addressing the main functionalities, quality and efficiency of the electricity system as such and consider the benefits of its integration with the other energy vectors.

Chair Antonio Iliceto ENTSO-E

Introduction

WG1 Reliable, economic and efficient smart grid system

The **flexibility options** investigated in WG1 are:

- New transmission and distribution technologies (power electronics for instance),
- Setting up interfaces with storage, demand response, flexible generation and synergies with other energy networks (i.e. how to couple the electricity networks with the gas and heat networks).
- WG1 also follows Set Plan Action 4 related to grid smartening in the sense of grid observability and controllability (i.e. tools for managing the variability and uncertainty of operational conditions at several timescales), increased grid hosting capacity and economic efficiency of the system through the use of ICT.

Introduction

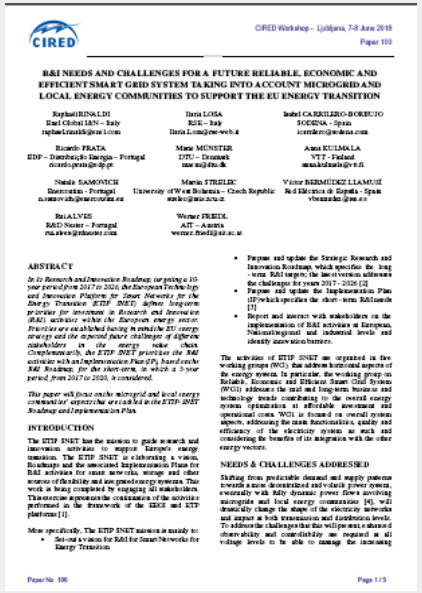
Activities

- **Contribution to ETIP SNET Vision 2050 which was published on 27 June 2018**
  https://www.etip-snet.eu/etip-snet-vision-2050/

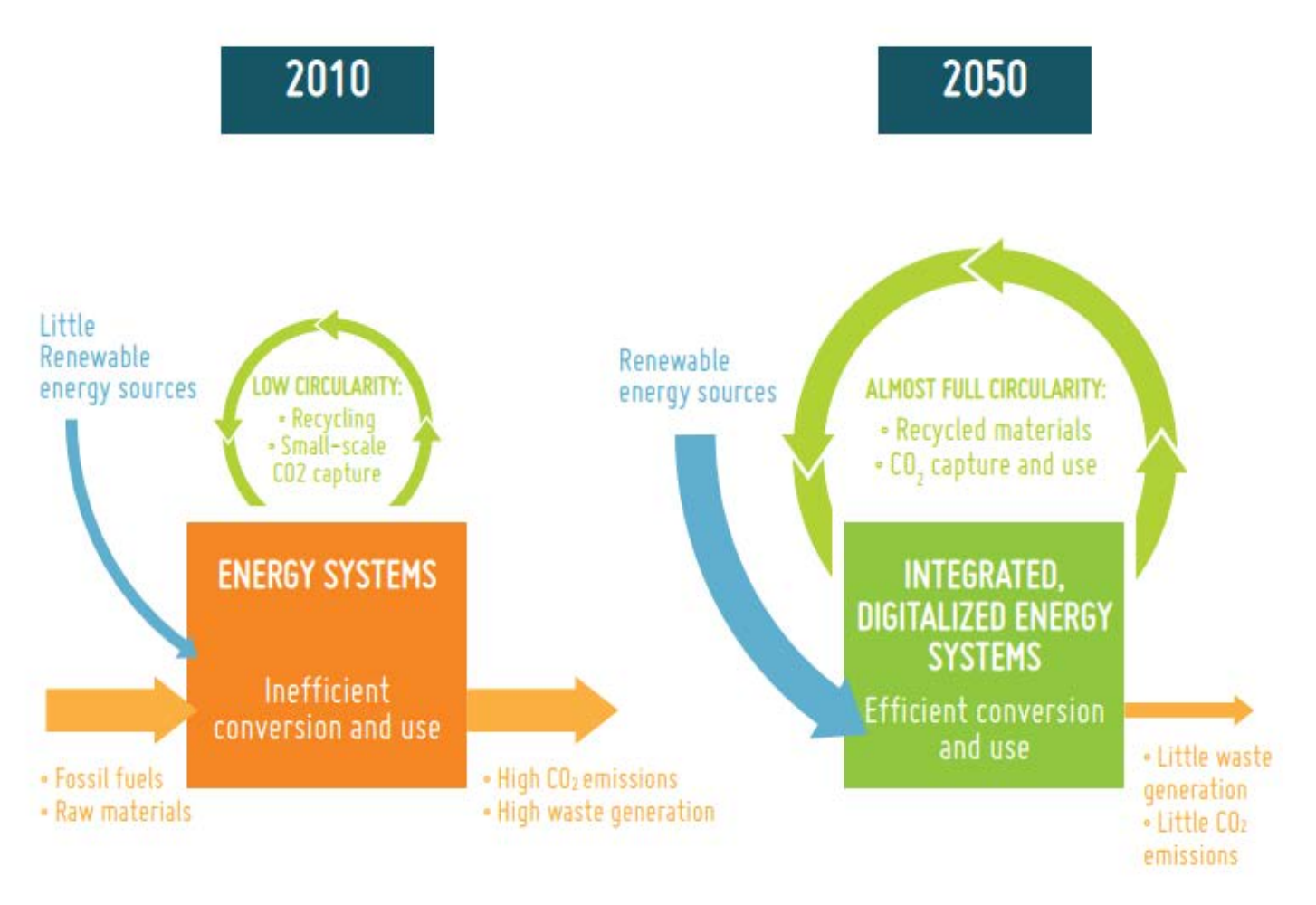
- **CIRED paper** June 2018, Slovenia
  - Focus on microgrids authorised by ExCo

- **CIGRE collaboration** August 2018, Paris
  - A high visibility standpoint for ETIP SNET

- **White Papers** In progress
  - Holistic architecture for future power system
  - Grid planning coordination across system operators
  - Measurement infrastructure for optimal operation
  - Energy sector interfaces



Energy transition



Key objectives

1) Protecting the environment
2) Creating affordable and market-based energy services
3) Ensuring security, reliability and resilience of energy supply

Key Research and Demonstration Activities

Some examples

- Deployment of efficient novel services in the electricity retail markets
- Standardised interactions among electricity stakeholders
- Technical framework will **empower real customers with higher quality and quantity of information** on their energy consumptions
- Evaluate close to real time metering data, made available by DSOs - under customer consent - and in a standardised and non-discriminatory way to all players in the electricity retail markets (e.g. electricity retailers, aggregators, ESCOs and end consumers)
- Facilitate the emergence of new markets for energy services, enhancing competitiveness and encouraging the entry of new players and benefitting energy customers

Key Research and Demonstration Activities

Some examples

- Find answers and propose new practical solutions to the increasing integration of Renewable Energy Sources in the existing electricity transmission network.
- Ancillary services provided from distribution network to the whole system
- Optimise the TSO-DSO interface to enable real-time coordination will be needed between the different actors
- Evaluate architectures of the real time markets and regulatory implications
- Different TSO-DSO interaction modalities are compared on the basis of national key cases (Italy, Denmark, and Spain);

Key Research and Demonstration Activities

Some examples

- Observability and control of LV grid
- Extensive use of AMI Infrastructure
- Enhance the role of DSOs to facilitate and open market for services
- Participation of customers, distributed generation and energy storage in network management

Key topics

1. Holistic architecture for future power system

- Are the existing smart grid solutions compatible with each other?
- Can the existing smart grid solutions be introduced on a large scale?
- What are the data exchange requirements?
- What are the coordination mechanisms for market sand data?

2. Grid planning coordination across system operators

- Flexibility: How are grid plans coordinated between different network operators?
- Do different rules at network ownership boundaries lead to sub-optimal connection locations and network investment?
- How are new technologies such as RES and DER accounted for in load and generation forecasting for network planning?
- Are new grid codes needed to realise benefit of deferring grid reinforcements by using flexible load / generation

3. Measurement infrastructure for optimal operation

- What guidelines / protocols do we need to ensure interoperability in digital data for measurement / control?
- What are the infrastructure needs to facilitate advanced planning and optimal control of future networks?

4. Energy sector interfaces

- What is the benefit of the integrated networks / energy vectors and transport sector?
- What are the potential savings in transmission/distribution and storage (having in mind less investments in power grid infrastructure)
- Who should take the responsibility of an integrated perspective?
- What kind of regulation has to be developed to facilitate this integration?

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Thank you