

# *Integration of RES and challenges of distributed generation*

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# Renewables in the Energy Community



- **Directive 2009/28/EC as adapted and adopted by the Ministerial Council in 2012**
  - *including binding targets to 2020, 10% RES in transport*
- **State Aid Guidelines on Environmental Protection and Energy 2014-2020**
  - **RES integration into the market, support granted based on competitive process**
- **Energy Community Policy Guidelines for competition and renewable energy (2015)**
- **European Commission Communication on Delivering a New Deal for Energy Consumers accompanied by **Best practices on Renewable Energy Self-consumption****
- **Renewable Energy Coordination Group – reactivated in 2016**
- **Signature of the WB6 Sustainability Charter – July 2016**

Source: kmbdg



*Contracting Parties are required to:*

- ***develop transmission and distribution grid infrastructure, intelligent networks, storage facilities and the electricity system, for further development of electricity production from renewable energy sources;***
- ***accelerate the authorisation procedures for grid infrastructure;***
- ***coordinate approval of grid infrastructure with administrative and planning procedures;***



## *TSO and DSO in their territory:*

- **guarantee the transmission and distribution of electricity produced from renewable energy sources;**
- **provide for either priority access or guaranteed access to the grid-system of electricity produced from renewable energy sources;**
- **priority dispatch to generating installations using renewable energy sources** without endangering secure operation of the national electricity system and based on transparent and non-discriminatory criteria;
  - TSO and DSO to **report** to the competent regulatory authority on those **measures** and indicate which corrective measures they intend to take in order to **prevent inappropriate curtailments.**



***TSO and DSO to provide any new producer of energy from renewable sources wishing to be connected to the system with the comprehensive and necessary information required, including:***

***(a) a comprehensive and detailed estimate of the costs associated with the connection;***

***(b) a reasonable and precise timetable for receiving and processing the request for grid connection;***

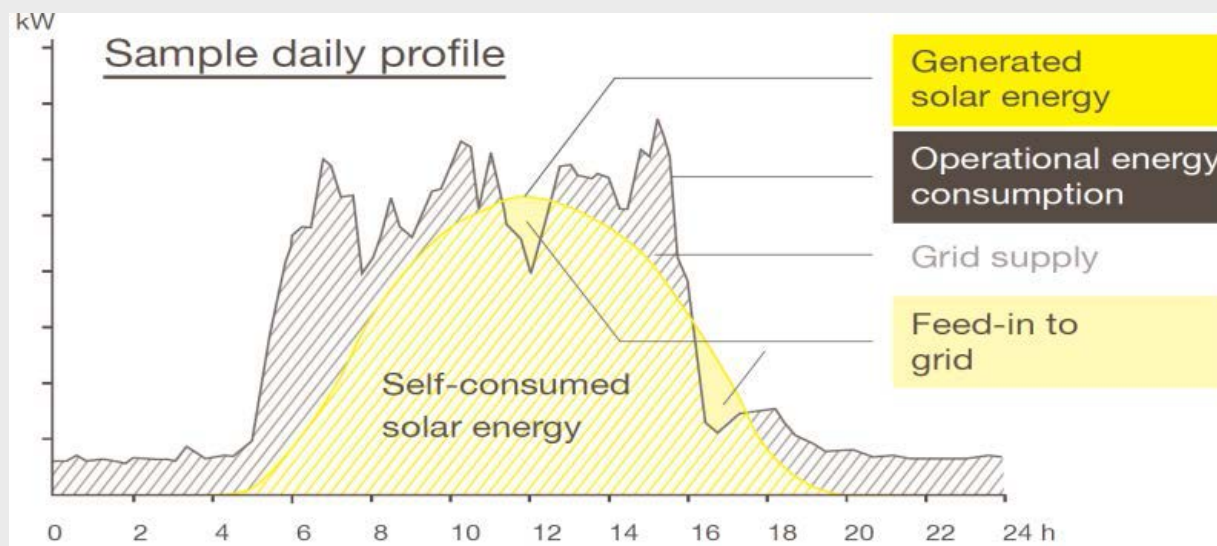
***(c) a reasonable indicative timetable for any proposed grid connection.***

*Producers of electricity from renewable energy sources wishing to be connected to the grid to issue shall be allowed to call for tender for the connection work.*

## European Commission Communication 2015 - Best practices on self-consumption

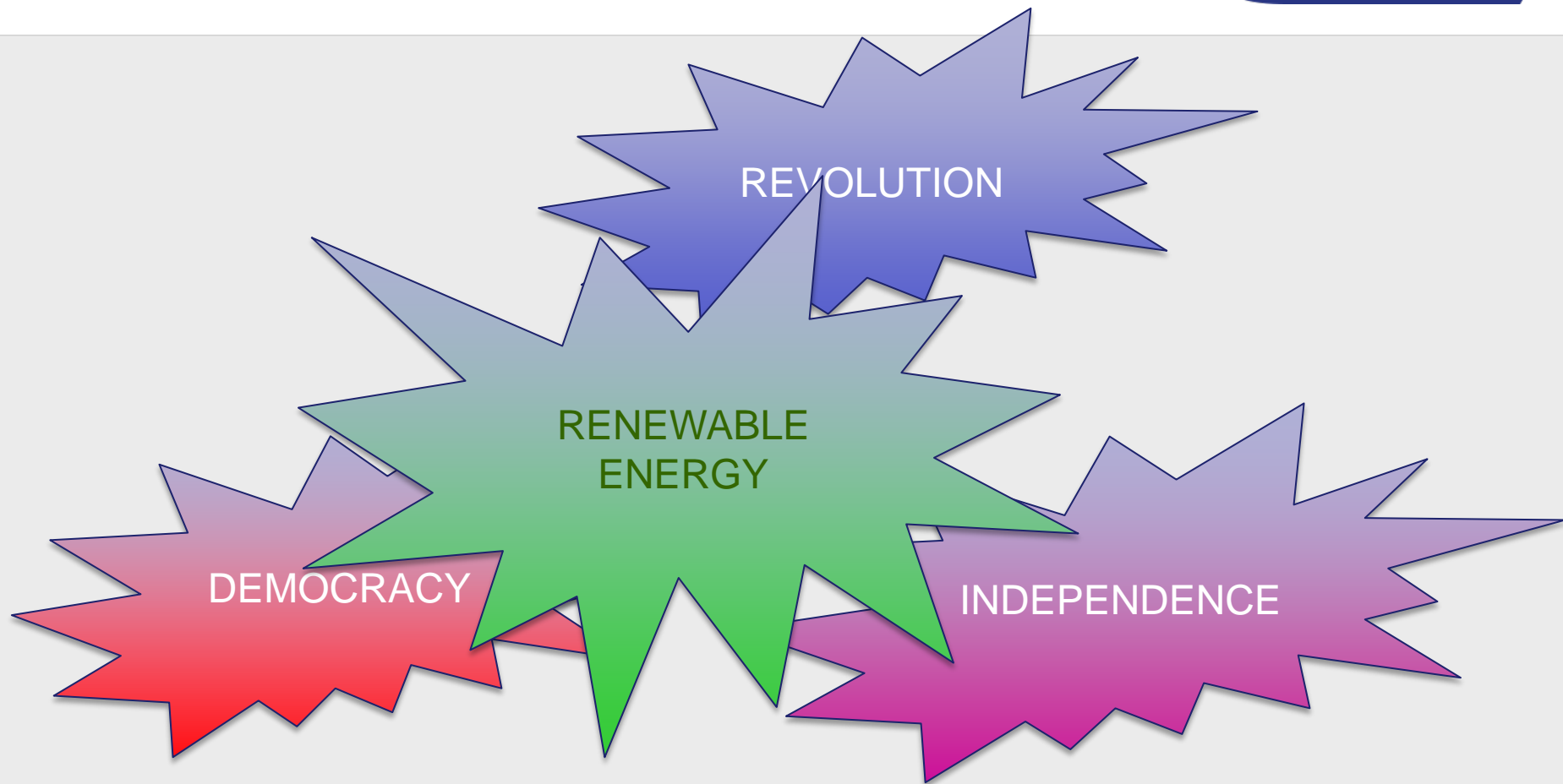
**Objective:** identify best practice for promoting cost-effective self-consumption

**Scope:** micro and small-scale renewable energy systems (below 500 kW)





- *Consumers right to renewable energy self-consumption and distributed storage*
- *Preference to be given to direct self-consumption over injection into the grid of non-consumed renewable electricity*
- *Limiting net-metering schemes to phase-in periods and regular review in a transparent and predictably way*
- *Avoidance of retroactive changes to existing self-consumption projects to guarantee investment security.*
- *Giving the right market signals through time-of-use tariffs*
- *Tariff frameworks may be adjusted: result is higher fixed charge but variable charge for fixed cost recovery retained for efficiency reasons*
- *Ensuring predictable conditions by announcing caps of installed capacities after which grid cost exemption are revised.*



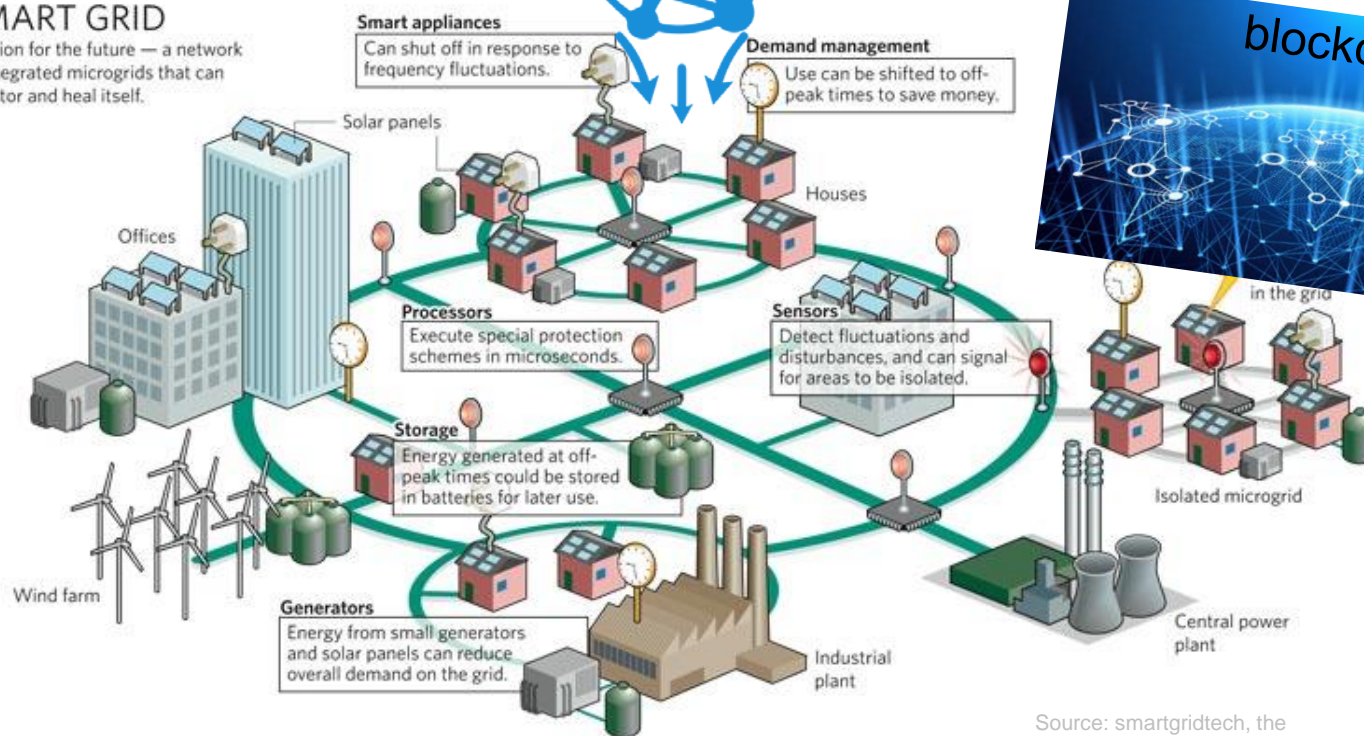


# Electricity system of the future ?



## SMART GRID

A vision for the future — a network of integrated microgrids that can monitor and heal itself.



Source: smartgridtech, the conversation, stellartadinsystem



## **Examples:**

### **E.ON – AURA (Germany)**

<http://www.eon.com/en/media/news/press-releases/2016/4/7/eon-begins-selling-electricity-storage-system-in-germany.html>

### **ENECO – CrowdNett - virtual power plant (Holland)**

<https://www.eneco.nl/actie/crowdnett/>

### **Kiwi – Demand response solutions and peer-to-peer energy sharing (UK)**

<http://www.kiwipowered.com/files/download/e7d4c6c1a9af352>



- emergence of prosumers
  - significant, up to 60% decrease of solar PV cost projected to 2025 (comp.2015) (IRENA)
  - solar PV auction in Germany 2016 - 7 ¢€/kWh, Dubai 2016 – 2,99 ¢/kWh
  - blockchain – peer-to-peer energy transactions
  - aggregators - el. storage and demand-side participation
  - almost zero marginal cost of energy even negative prices on the wholesale market
- utilities transformation >>> energy suppliers to energy service providers
  - digitalisation of energy – Internet of Things
  - smart grids
- citizens participation through energy cooperatives (RES generation, supply and, in the future, distribution)

## Useful links:

- [https://www.energy-community.org/portal/page/portal/ENC\\_HOME/DOCS/2938033/0633975AD78C7B9CE053C92FA8C06338.PDF](https://www.energy-community.org/portal/page/portal/ENC_HOME/DOCS/2938033/0633975AD78C7B9CE053C92FA8C06338.PDF)
- [https://www.energy-community.org/portal/page/portal/ENC\\_HOME/DOCS/3892323/256E442005065CB8E053C92FA8C02D35.PDF](https://www.energy-community.org/portal/page/portal/ENC_HOME/DOCS/3892323/256E442005065CB8E053C92FA8C02D35.PDF)
- [https://www.energy-community.org/portal/page/portal/ENC\\_HOME/DOCS/4188394/34EDFA0DA700275FE053C92FA8C0834E.pdf](https://www.energy-community.org/portal/page/portal/ENC_HOME/DOCS/4188394/34EDFA0DA700275FE053C92FA8C0834E.pdf);
- [http://ec.europa.eu/energy/sites/ener/files/documents/1\\_EN\\_autre\\_document\\_travail\\_service\\_part1\\_v6.pdf](http://ec.europa.eu/energy/sites/ener/files/documents/1_EN_autre_document_travail_service_part1_v6.pdf)
- [https://www.energy-community.org/portal/page/portal/ENC\\_HOME/NEWS/News\\_Details?p\\_new\\_id=13102](https://www.energy-community.org/portal/page/portal/ENC_HOME/NEWS/News_Details?p_new_id=13102)



*Welcome to the energy revolution!*  
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