

ASSESSMENT OF POTENTIAL ATTACK VECTORS, THREATS AND RISKS OF MORE RENEWABLE, DECENTRALIZED, CROSS-SECTORAL AND PARTICIPATORY FUTURE ENERGY SYSTEMS

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Overview

The currently ongoing energy transition in many regions worldwide is expected to result in much more renewable, decentralised and participatory energy systems. Besides others, one of the motivations and drivers for this decentralisation of the energy systems in energy policy making is to become more independent – or even self-sufficient – from (primary) energy fuel imports from abroad. E.g., the establishment of local energy communities is on top of the policy agenda of the European Commission. However, less has been analysed and said about potential new threats, risks and attack vectors in a future energy systems which denoted to be sustainable and thus superior compared to the existing one.

Methods

In this paper a systematic categorization of potential attack vectors, threats and risks of more renewable, decentralised and participatory future energy systems is conducted. Different determinantes in this respect are e.g.

- Attacks (terrorist, cyber/hacker attacks,...)
- Weather and climate extremes (heat/cold waves, floods, thawing permafrost soils,...)
- Resource shortage (natural gas, mineral resources, metals,...)
- Governance failure (unstable political developments and geopolitical trouble spots and consequently disruptive energy and climate policy,...)
- Acceptance failures of the population (e.g. due to high energy costs or socially incompatible transfer payments for support instruments, reduced security of supply, ethical concerns about the procurement of raw materials,...)

In addition, risk assessment methods as well as key qualitative and quantitative performance indicators (KPIs) are developed to enable the assessment of future energy systems according to the different threat determinates listed above. Based on that, subsequently, selected narrative threat scenarios are described more in detail referring again to the listed determinates above.

Results

At present no robust results are available. They are planned to be presented, however, at the conference. Different possible future energy systems characterised by different structural setups/technology portfolios in different economies (industrialized/transition/developing countries) are planned to be assessed.

Conclusions

Although there are no results available yet, first insights into the topic indicate that there remain still many risks, threats and potential attack vectors also in the future. Some of the challenges of today's energy systems are simply reallocated (in terms of geography, market participants affected, ethical questions,...) and can't be removed entirely. Some of them, however, can be overcome. Notably then when we can better manage to implement circular economies than today.