



jointly with



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## Four main scenarios - a proposal

For NEPP, four different main scenarios are suggested: **Reference, Climate market, Regional policy and Green policy.** In the scenario-generating process, input and inspiration were taken from scenario studies made by other institutes and research organizations such as WEO of IEA, Power choices of Euroelectric and EU Roadmap of the European Commission. These scenarios were analyzed in order to identify similarities and differences as well as the fundamental concepts of the different scenarios.

### Four main scenarios are suggested

The following four main scenarios are suggested to be used in the project; Reference, Regional policy, Climate market, and Green policy; see Figure 1. For the four scenarios, there are two main dimensions that characterize the scenarios: the policy dimension and technological dimension. With focus on the policy dimension, a brief descriptions of the four pathways are presented below.

#### Reference scenario

The main purpose of the Reference scenario is to analyze to what extent the energy and climate goals of EU are reached with the existing set of policy instruments. This scenario is comparable to the “EU baseline” of the EU commission and the “Current Policy Package” in WEO of IEA.

#### Climate market

Climate market is conceptually very similar to the Market Pathway in Pathways 1. However, there will be a refinement of models and results in NEPP. Moreover, it will be more pronounced that we consider a situation with a more common climate ambition on a global scale, which for instance allows for global emission trading schemes. This scenario can be compared with “Power choices” of Euroelectric and “Global action” of the European Commission.

#### Regional policy

Regional Policy is a development of the Policy Pathways in Pathways 1. The main concept is still the same, i.e. a scenario with more detailed policy steering and that is more demand-side oriented. However, differences in regional policies will in this phase be further highlighted. This regards both differences in policies between different EU

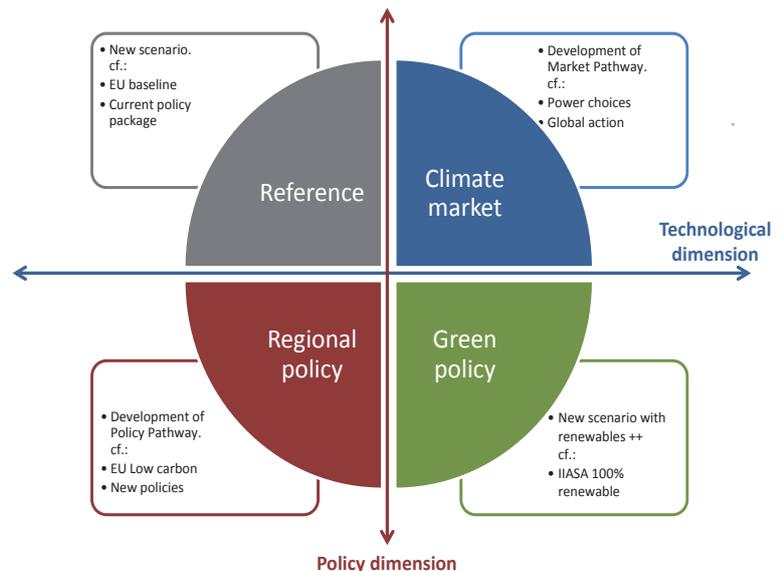


Figure 1. The four suggested scenarios for Pathways

member states, as well as different ambitions in a global perspective. The Regional policy scenario can be compared with the “EU fragmented action” and “High Energy Efficiency” scenario of the European commission and the “New policies” scenario in WEO of IEA.

The main purpose of the Regional Policy and Climate Market scenarios is to investigate what different sets of policies mean for the energy-system development towards a given (and ambitious) climate target. Furthermore, the balance between market solutions (in Climate Market) and political interventions (in Regional Policy) is essential. Moreover, the implication of different degree of geographical harmonization of policy instrument can be investigated. These two main scenarios are comparable in the sense that they both reach very ambitious climate targets (of the same size) by 2050. The means and the surrounding factors to reach this given target are, however, rather different. Such differences between the scenarios may also apply to the emission trajectories towards 2050 (even if they still meet the same goal).

#### Green policy

This is a new scenario that focuses on the use of renewable energy sources. The main purpose of the Green Policy scenario is to analyze the consequences of

having a future energy system that consists of a very high share of renewables (in terms of, e.g., costs, emissions, handling intermittency, and use of resources). Thus, it is of less importance to identify driving factors behind the development of such a scenario but more a question to scrutinize an energy system with a very high share of renewable and the challenges and opportunities that are associated with such a development.

## Technological dimension

With the technological dimension we mean the difference in technological development and technological options that the different scenarios imply or require, see examples in Table 1.

**Table 1.** Example of technological dimensions characterizing the four scenarios

	CCS	Nuclear	Renewables	Renewable electricity targets
Reference	Starting from 2025, max 20% annual growth	Stagnation+phase-out	National RES target to 2020, slight increase thereafter	Maybe
Climate market	Starting from 2020, max 25% annual growth	Same share (%) as today, but phase-out in Ger. and addition in Po.	National RES target to 2020, none thereafter	None
Regional policy	Starting from 2030, max 20% annual growth	Maintaining existing capacity and German phase out by 2023	National RES target to 2020, increasing thereafter	x% solar PV, y% offshore, z% wave of the total Renew target
Green policy	None	European phase-out	Very high target	

## Boundary conditions

Besides differences in policy dimension and technological dimension, there can also be differences in boundary conditions for the different scenarios. For instance, the demand of electricity can differ between the scenarios, as illustrated in Figure 2.

## Scenario variants

Within each main scenario there will be room for additional scenario variants. These may consist of sensitivity analyses (where single important parameters and/or input assumptions are varied in order to test the robustness of the results) and more scenario-oriented analyses where several important inputs assumptions and/or parameters are varied simultaneously. For instance, the role of nuclear power and CCS might be an issue to investigate in the initially nuclear and CCS oriented main scenario “Climate Market”. For “Green policy” one can, for instance, elaborate with the contribution of the different renewable technologies.

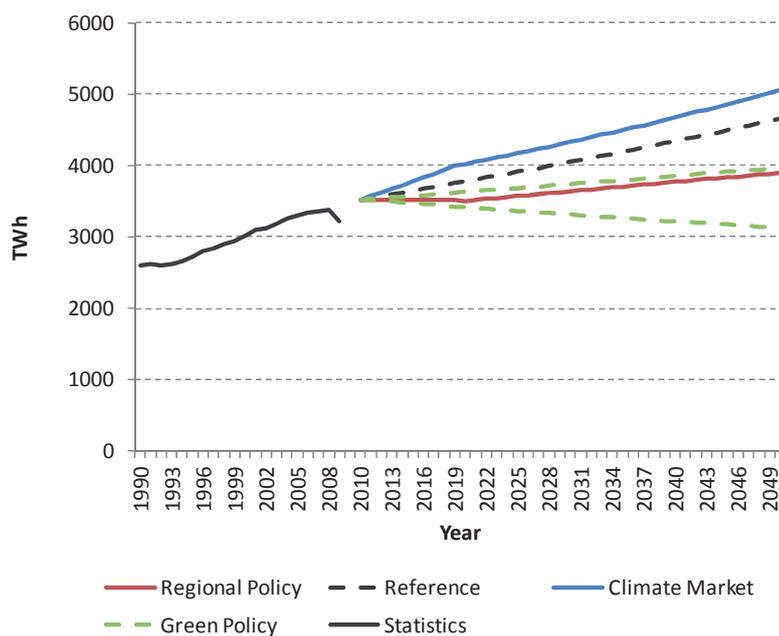


Figure 2: Proposed demand for electricity in four suggested main scenarios.

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