Regional view on scenarios

24 March 2011

Regional stakeholder workshop Stockholm 24th March 2011

Hanne Kortegaard Nielsen, convenor of RG Baltic Sea subgroup for market modelling

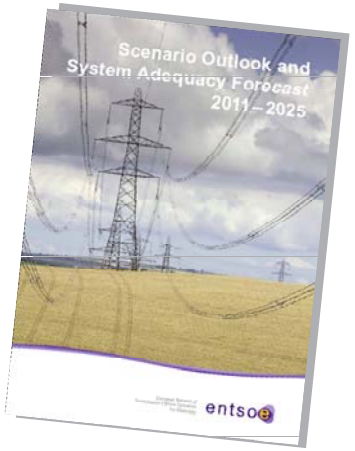
entsoe

Reliable Sustainable Connected

Aim and background for ENTSO-E scenarios

- Common foundation for the analyses for TYNDP and all six Regional Investment Plans

- "Scenario Outlook and Adequacy Forecast 2011" (SO&AF) published February 2011. Public consultation has been completed.
  - Scenario Outlook
  - Adequacy Forecasts
  - National Adequacy Forecasts



Available at
www.entsoe.eu

From “SAF” to “SO&AF”

New name for “System Adequacy Forecast” is

“Scenario Outlook & Adequacy Forecast”

Main changes between SAF-2010 and SO&AF-2011:

- Construction of EU2020 top-down scenario
- Generation adequacy assessments not just for power but also for energy
- Improved and extended data collection process
- New format and structure of Report

Data collection for adequacy and scenarios

For power balance adequacy assessments:

- Three scenarios (A, B and EU2020)
- Two reference points
  - 3rd Wednesday of January 19 p.m. (winter)
  - 3rd Wednesday of July 11 a.m. (summer)
- Years 2010, 2015, 2016, 2020, and 2025

- New: Pan-European market modelling database for scenarios and market modelling analysis
- Scenario B for 2015
- Scenario B for 2020
- Scenario EU2020 for 2020

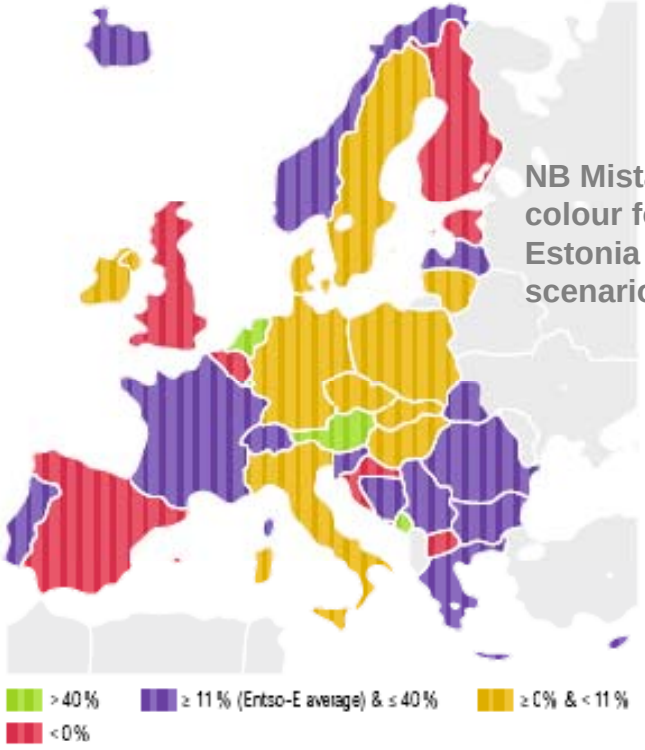
Used in
Regional analysis
for TYNDP and Reg. Inv. Plan

ENTSO-E EU 2020 scenario versus TSO vision scenario B

Key features	
Scenario EU 2020	**Scenario B**
Top down	Bottom up
Based on Long term vision of the future (3X20 targets)	Based on anticipated generation projects + short term vision (max. 7 years)
EU targets: National Renewable Energy Action Plans (RES capacity/energy and consumption) plus TSO assessment of conventional generation	Potential overestimation of generation capacity
Merit order: gas before coal	Merit order: coal before gas
No location information regarding new generation units	Location of new generation units are known

Example of regional power adequacy in SO&AF-2011

Scenario EU2020



NB Mistake in colour for Estonia in scenario EU2020

Figure 5.7:
Remaining Capacity minus Adequacy Reference Margin as a part of Reliably Available Capacity per country, January 2020, 7 p.m. Scenario EU 2020

Scenario B-2020

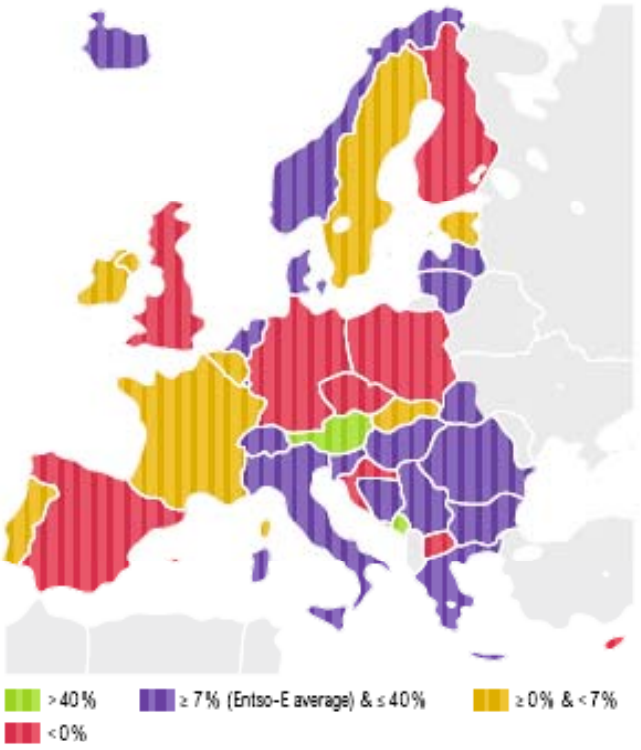


Figure 5.14:
Remaining Capacity minus Adequacy Reference Margin as a part of Reliably Available Capacity per country, January 2020, 7 p.m. Scenario B

Market model-based energy adequacy assessment for Baltic Sea region

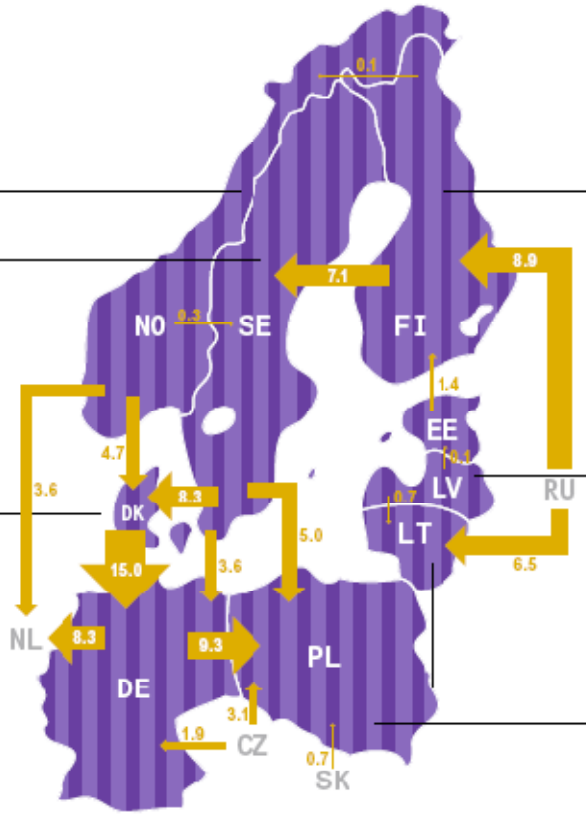
Average

NO – Norway	
P	141.0 TWh
C	132.5 TWh
B	8.5 TWh

SE – Sweden	
P	163.3 TWh
C	153.7 TWh
B	9.6 TWh

DK – Denmark	
P	39.6 TWh
C	37.9 TWh
B	1.7 TWh

DE – Germany	
P	585.5 TWh
C	588.1 TWh
B	-2.6 TWh



FI – Finland	
P	89.0 TWh
C	92.1 TWh
B	-3.2 TWh

EE – Estonia	
P	10.7 TWh
C	9.3 TWh
B	1.4 TWh

LV – Latvia	
P	9.0 TWh
C	8.2 TWh
B	0.8 TWh

LT – Lithuania	
P	3.7 TWh
C	10.9 TWh
B	-7.2 TWh

PL – Poland	
P	147.4 TWh
C	165.6 TWh
B	-18.2 TWh

Average	Area	Balance
	Nordic Countries	16.7 TWh
	Baltic Countries	-5.1 TWh
	Germany + Poland	-20.8 TWh
	Exchanges with neighbouring regions	9.2 TWh
	Total	0.0 TWh

Low inflow	Area	Balance
	Nordic Countries	10.7 TWh
	Baltic Countries	-4.1 TWh
	Germany + Poland	-16.2 TWh
	Exchanges with neighbouring regions	9.6 TWh
	Total	0.0 TWh

Very low inflow	Area	Balance
	Nordic Countries	-0.5 TWh
	Baltic Countries	-3.4 TWh
	Germany + Poland	-7.4 TWh
	Exchanges with neighbouring regions	11.3 TWh
	Total	0.0 TWh

Scenarios for TYNDP and Regional Inv. Plan: Demand forecast

Scenario EU2020

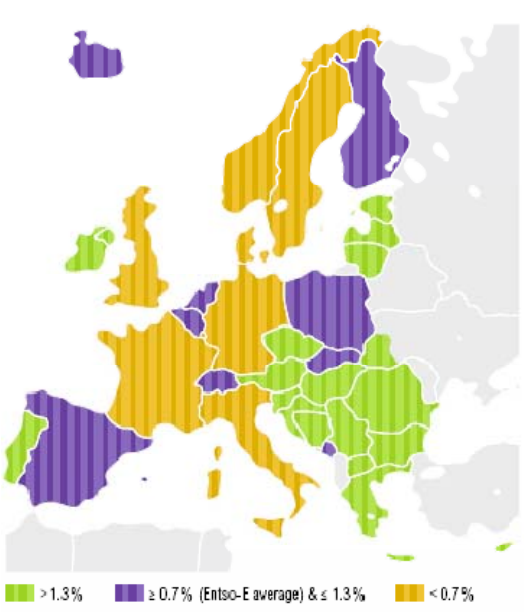


Figure 4.9:
ENTSO-E average annual consumption growth between 2011 and 2020, Scenario EU 2020

Scenario B-2020

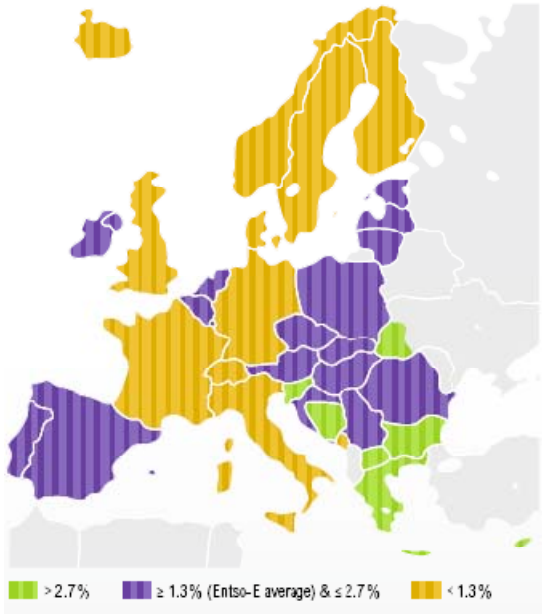


Figure 4.12:
ENTSO-E average annual consumption growth between 2011 and 2020, Scenario B

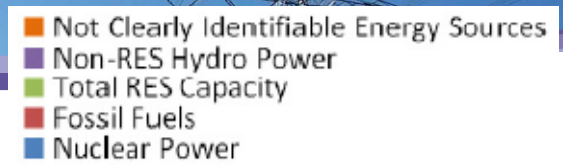
[TWh]	2011	2015	2016	2020	2025
Consumption	3310	3469	3519	3727	3885

Table 4.7b:
ENTSO-E load for Scenario B

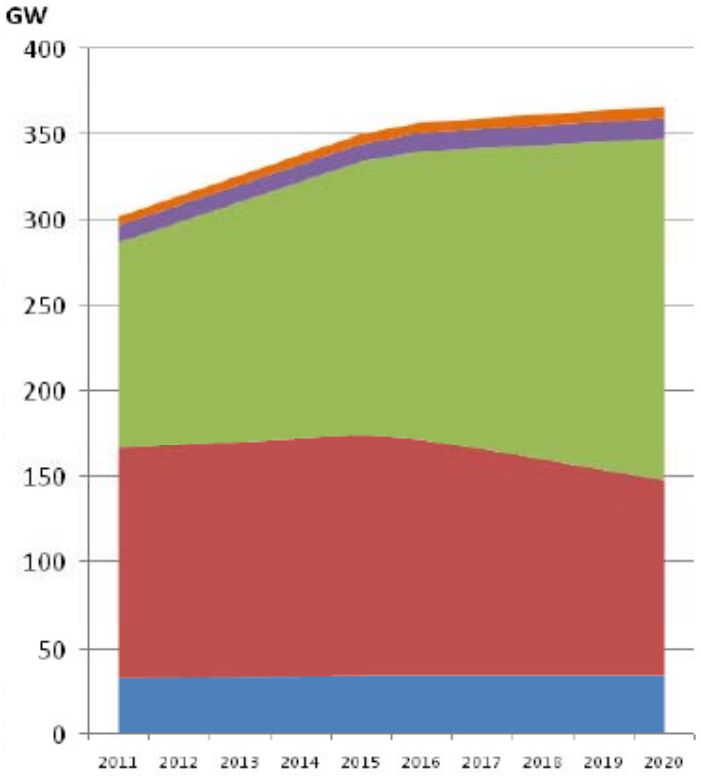
[TWh]	2011	2015	2016	2020
Consumption	3345	3425	3450	3552

Table 4.6b:
ENTSO-E consumption, Scenario EU 2020

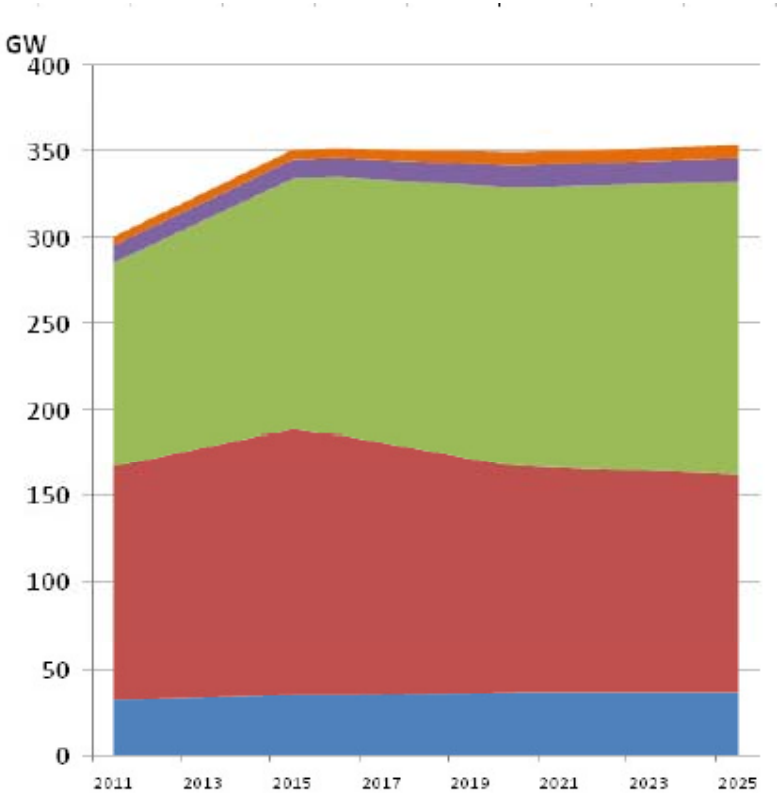
Scenarios for TYNDP and Regional Inv. Plan: Generation forecast Baltic Sea region



Scenario EU2020



Scenario B-2020



Scenarios for TYNDP and Regional Inv. Plan: Renewable energy sources

Scenario EU2020

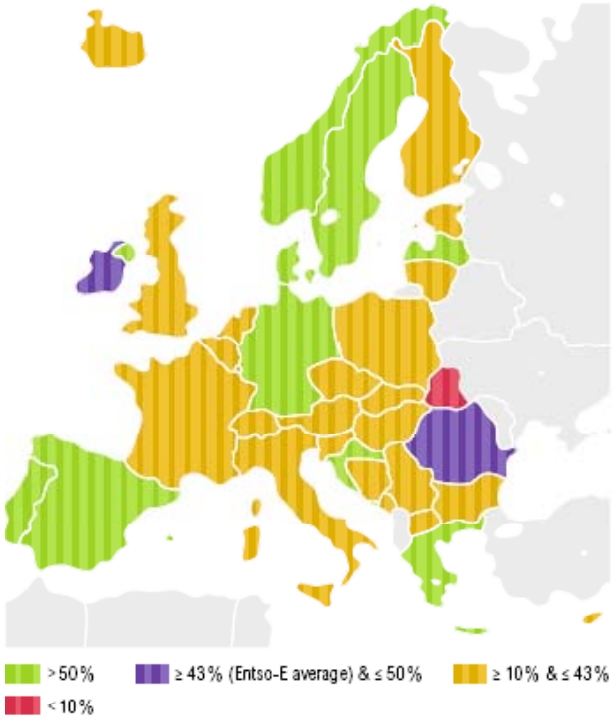


Figure 4.51:
Share of total RES in net generating capacity per country in 2020, Scenario EU 2020

Scenario B-2020

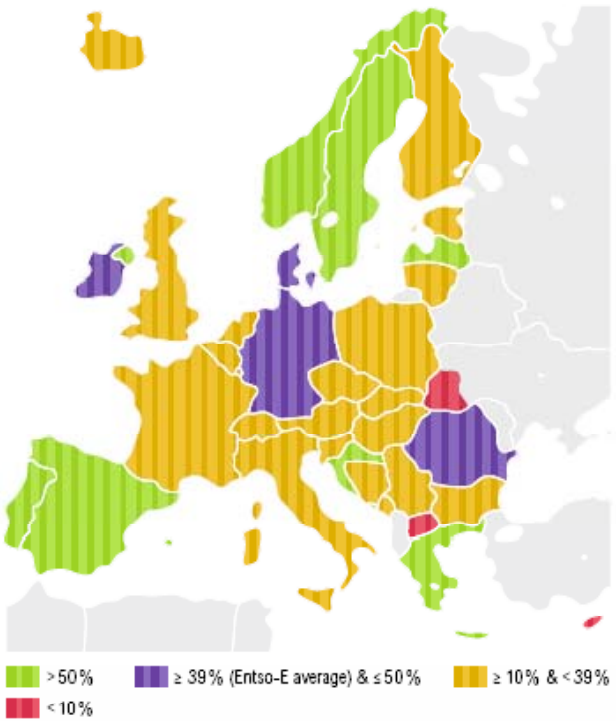


Figure 4.58:
Share of total RES in net generating capacity per country in 2020, Scenario B

Examples from the scenarios in the Baltic Sea region

- Increase in demand varies from country to country. The expected demands depend mainly on expected economic developement and changes in energy efficiencies.
- For units based on fossil fuels both some decommitioning and some new units are expected.
- Change in Estonian production pattern – more wind and biomass, less oil shale.
- Two new nuclear units in Finland (one is under construction). Also production capacity of wind power and biomass are increasing in Finland.
- 15 TWh additional energy production in Norway by 2020 (hydro and wind)
- A new nuclear unit (1450 MW) in Lithuania in scenario B, but not in scenario EU2020.
- Increased production capacity in Sweden (wind, biomass and improved effficiency of nuclear units).

Summary on scenarios

Two scenarios has been developed under ENTSO-E and data collected.

Both scenarios for all of ENTSO-E will be analyzed in RG Baltic Sea

- Bottom-up scenario B
- Top-down scenario EU2020

The collected data is the foundation for adequacy analyses and analyses for TYNDP and regional investment plans.

A SO&AF report will be published every year

- Separate SO&AF report in odd years (2011, 2013,…)
- Embedded in the TYNDP in even years (2012, 2014,…)

Ideas for discussion – but any topic is welcome

- Main year in analysis for TYNDP and Regional investment plan is 2020 – comments?
- Suggestions and comments regarding the choice of scenarios?
- Involvement of stakeholders – how, when, enough?
- Importance of regional and European analysis (compared to national analysis). Also, for TYNDP-2012 the focus is on regional analysis – are you missing something at European level?
- Comments on energy adequacy assessments? In RGBS, constraints from hydro-sitatuation are analyzed. Other things you would find relevant to analyse?