

Cold spell in Europe in the light of winter 2011-2012 review

**Florence Forum
22-23 May 2012**

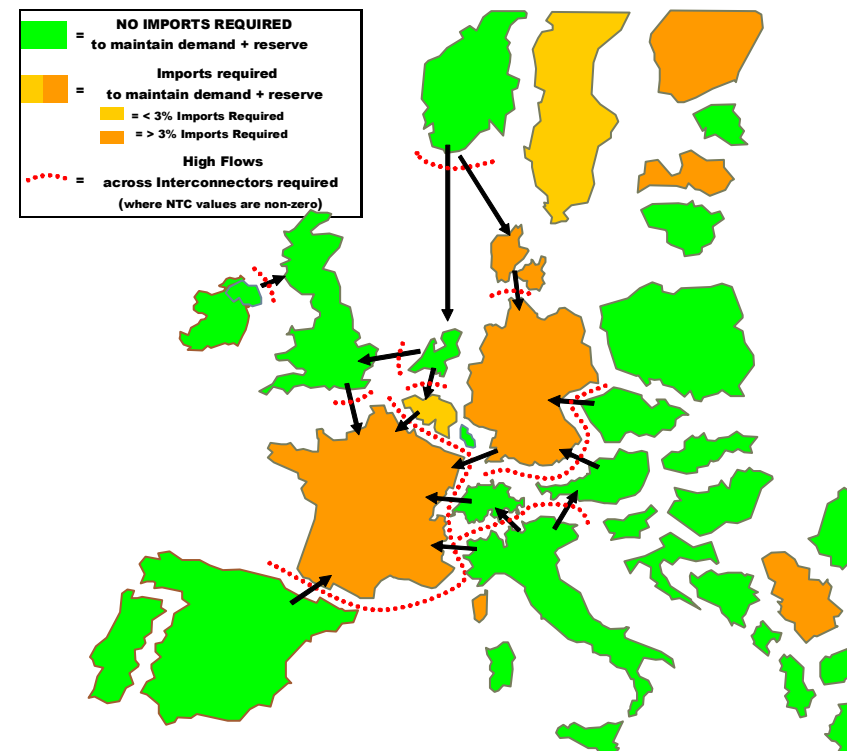
ENTSO-E Winter 2011/12 – Outlook, dated Nov 2011

Analysis prior to winter showed enough power to meet demand under normal and severe conditions at a EU level

Main areas of focus

- German nuclear shutdowns altering power flows in central Europe
- Demand increases under very cold conditions
- Low RES generation at times of peak demand

Winter Outlook report highlighted a requirement for close coordination between TSOs in order to maximise cross border transfer capacities



Source: Winter Outlook Report 2011/2012

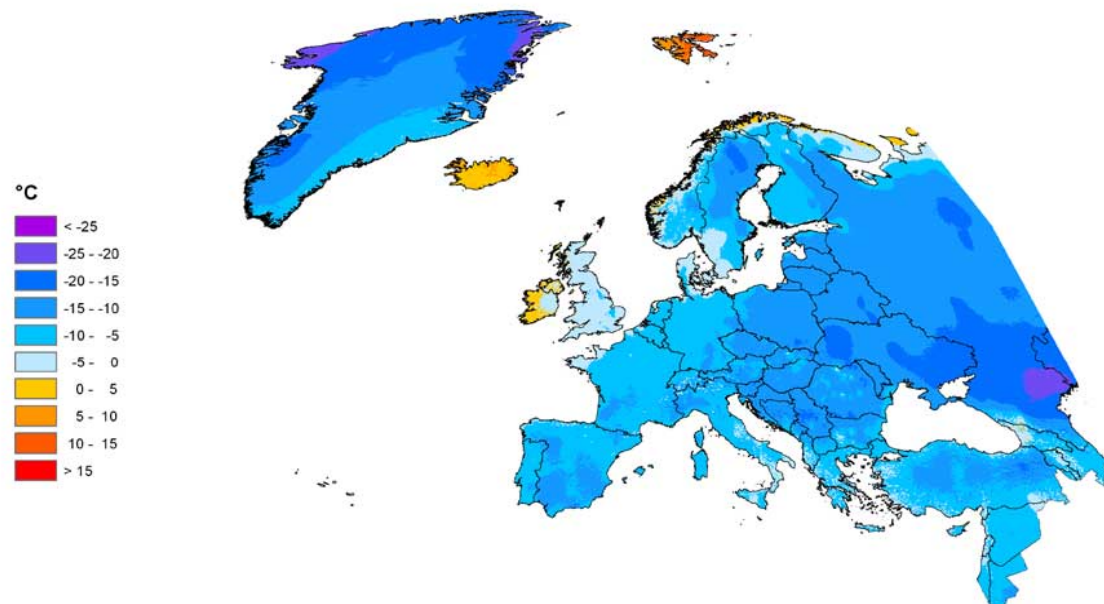
ENTSO-E Winter 2011/12 – Review

Mean daily minimum temperature anomalies 25 January - 16 February 2012
(February 1961-1990 reference)



Data basis: Synop
Stand/ last update : 27.02.2012

- Majority of TSOs reported a mild start to the Winter period.
- However, **severe cold weather experienced at start of February across many countries and further to a week**



- *Baltic countries, Belarus, North Eastern Poland, Ukraine, Northern Moldova, Southern European Russia experienced minimum temperatures of around -30 °C, places in Northern Sweden, Northern Finland and Northern and Central Russia below -40 °C.*
- *In Eastern Central Europe, minimum temperatures below -20 °C were measured in many places, in Western Central Europe between -10 °C and -20 °C (e.g. Amsterdam -18.7 °C, Zurich -18.1 °C). The cold air extended even to Southern Europe. Minima below -15 °C were recorded around Turin in Northern Italy.*
- *The Balkan Peninsula had minima mostly below -10 °C, locally below -30 °C in highlands of Romania and Turkey and down to around -24 °C in northern Greece and Northern Serbia. However, most of these minimum temperatures were not new records. Local records were broken e.g. in Estonia, Bulgaria and Serbia. **

* Source: WMO Regional Climate Centres: RA II (Asia), RA VI (Europe)

Excerpts from Winter Outlook Report 2011/2012

Under normal and severe conditions the European power system will have an adequate power to meet a demand,

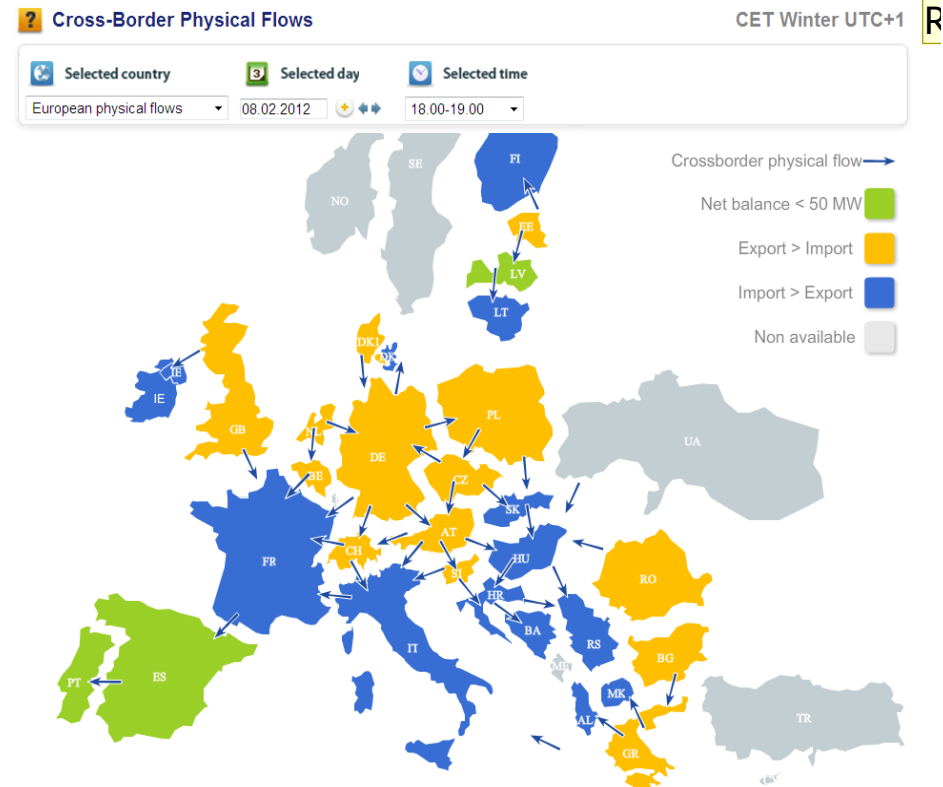
Certain countries will require a significant level of imports from others what will cause significant cross-border flows

The effect of the nuclear phase out in Germany on power system adequacy will also not be negligible in this period, not only on national, but also on the regional ENTSO-E level

WOR 2011/2012 studies underlined tight energy balance and operational constraints

What happened?

- **Highest ever peak demand** observed in France, Poland, Austria, Croatia and Bulgaria
 - **Stressed situation in the SEE** caused by high demand and **restricted generation** due to low level of water in the HPPs, heavy snow and difficulties to carry fuel to power stations...
- ...resulted in high transit flows from North Germany through Poland, Slovakia, Czech Republic to SEE region.



Source: entso-e.net (cross border physical flows)

TSOs cooperated closely in order to manage the highly stressed system
facing highly loaded cross-border capacities and internal system constraints.

Slide 5

RTE1

would it be possible t harmonize the colors of the maps on slide 2 and 3 (ie importing counitries in orange)

VERSEILLE Jean; 11/05/2012

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How was the situation managed?

Many TSOs used fully all available control reserves to maintain supply to customers, also using all import possibilities

Some TSOs had to use additional measures as:

- ✓ Call for moderation in demand through media
- ✓ Locally voltage regulation down
- ✓ Interruptible load activated
- ✓ Coordination with gas operators so as to mitigate problems with gas supply

Certain TSOs limited export capacities as last resort emergency measure, based on national governmental decisions.

In general markets responded positively, generators responding to higher market prices

Inter-TSO cooperation = key success factor in maintaining overall EU system security

- ✓ Regional Security Coordination Initiatives (RSCIs) such as Coreso, TSC and SSC confirmed their added value

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- The effect of the nuclear phase out in Germany on power system adequacy was significant during winter, not only on national, but also on the regional ENTSO-E level
- Reduced contribution of generation from renewable (wind, solar) during the cold spell
 - ✓ Across other periods, management of high renewable generation required actions by TSOs

What can even more mitigate such situation in the future?

Extended coordination in the framework of ENTSO-E:

Regional Security Coordination Initiatives (RSCIs) such as Coreso, TSC & SSC

- ✓ to be developed in future in all parts of Europe (as a function of NCs for operations) as a framework for still closer coordination amongst TSOs to fulfill their operational responsibilities.

Currently developed and complementary to each other **network codes for operations and market issues** will foster :

- ✓ Enhanced coordination of processes in terms of operational coordination, data exchange and observability of system conditions on all levels of TSOs' cooperation (from pan European to regional or bilateral)
- ✓ Open access for all TSOs to a common grid model, a common methodology to evaluate operational security, capacity allocation, sizing of operational reserves,
- ✓ Joint TSOs' decisions on cross-border remedial actions.

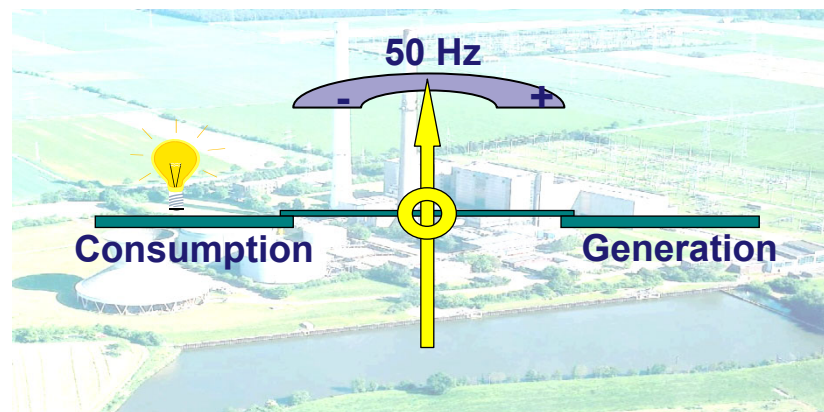
What can even more mitigate such situation in the future?

Smart grid technology contributes to maintaining reliability of the electricity system and security of supply of electricity.

- Demand Response services to quickly and reliably reduce load
- Commercial services able to bid into EU wide, Intraday and Balancing markets responding to price signals,
- Self-selection of unmet demand also in extreme conditions,

RTE2

should be a less blunt and more economic way to balance demand and generation than it is possible today



Slide 9

RTE2

not clear for me

VERSEILLE Jean; 11/05/2012



What can even more mitigate such situation in the future?

However

without appropriate generation and transmission infrastructures, the risks will remain significant in the coming Winter(s)!



Thank you very much for your attention!