InnoGrid2020+

The European Research & Development Dissemination Seminar

23 - 24 February 2012

REALISEGRID

REseArch, methodoLogIes and technologieS for the effective development of pan-European key GRID infrastructures to support the achievement of a reliable, competitive and sustainable electricity supply

Ultimate goal is providing a methodological background supporting the implementation of the Energy Infrastructure Package of the European Commission

Research centers and universities

- RSE (I), Coordinator & WP3
- Politecnico di Torino (I), WP2
- Technische Universiteit Delft (NL)
- Technische Universität Dortmund (D)
- Technische Universität Dresden (D)
- EC Joint Research Centre - Inst. Energy
- Univerza v Ljubljani (SL)
- The University of Manchester (UK)
- Observatoire Méditerranéen Energie (F)
- R&D Center for Power Engineering (RU)
- Vienna University of Technology, EEG (A)

TSOs

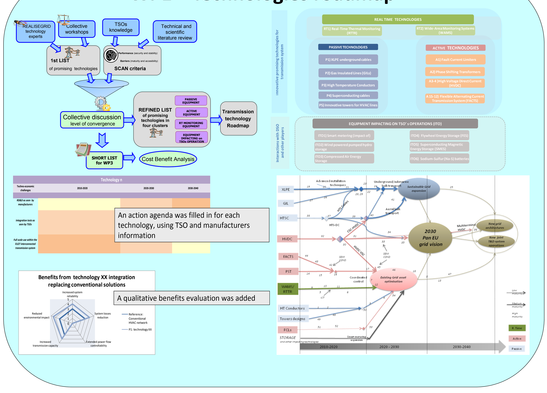
- RTE (F)
- APG (A)
- Terna (I)
- TenneT (NL)

Industry

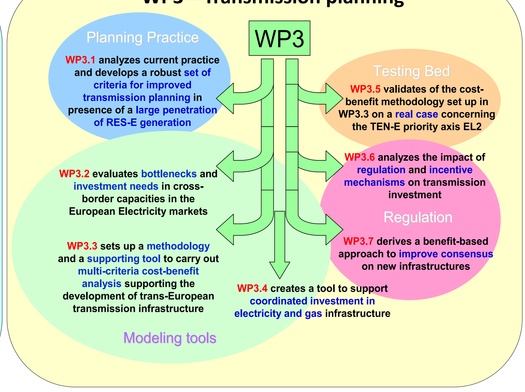
- Technofi (F), WP1
- ASATREM (I)
- KANLO (F)
- Prysmian (I)
- RIECADO (A)

- Identification of technical performances, economic benefits and costs of novel **technologies** aimed at increasing capacity, reliability and flexibility of the transmission infrastructure
- Definition of long term **scenarios** for the European power sector, characterized by different evolutions of demand and supply, such as the integration of a large amount of intermittent RES
- Implementation of a framework to facilitate harmonisation of pan-European approaches to electricity infrastructure evolution and to evaluate benefits of **transmission investments**

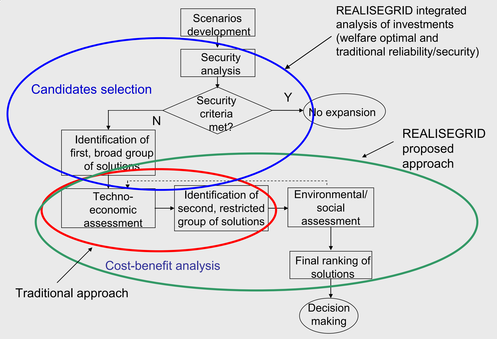
WP1—Technologies roadmap

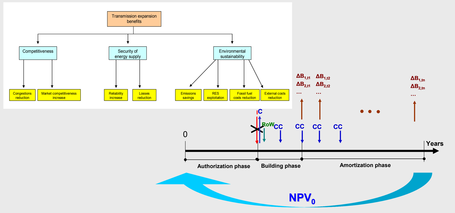


WP3—Transmission planning



WP3.3/WP3.5 — Multi-criteria cost-benefit analysis and test bed

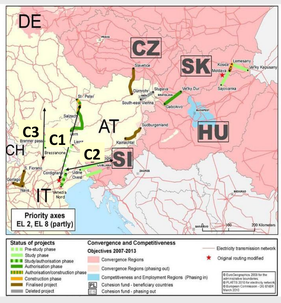


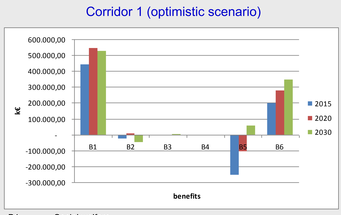


Utility function ⇒ translation into monetary terms

Weighted sum ⇒ translation a mono-dimensional ranking

Sensitivity analysis on weighing factors needed





B1 Social welfare
B2 Losses
B3 Load curtailment
B4 Wind overproduction
B5 CO2 emissions
B6 extra-EU fuel import

Benefits-costs [M€]

With benefits B1+B6

Optimistic case

	Corridor C1	Corridor C2	Corridor C3
NPV	3223	2533	4682
NPV/IC	15	12	5

Pessimistic case

	Corridor C1	Corridor C2	Corridor C3
NPV	3658	2882	4845
NPV/IC	18	13	6

With benefits B1+B5

Optimistic case

	Corridor C1	Corridor C2	Corridor C3
NPV	1728	1342	2208 M€
NPV/IC	8	6	3

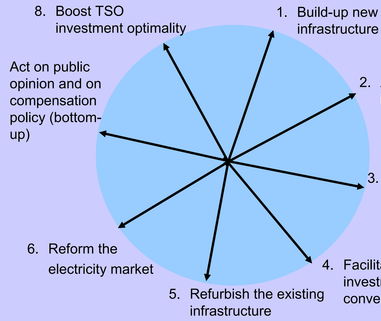
Pessimistic case

	Corridor C1	Corridor C2	Corridor C3
NPV	2105	1470	2099
NPV/IC	10	7	2

WP3.7 — Consensus and speed-up of authorization

How to speed-up grid development and increase consensus?

Problems	Actions
Social acceptance	• "serious" information to the public opinion • clear information of inaction costs • reflect on compensation policies
Duration of authorization procedures	• institute a "facilitator" (ENTSO-E, ACER) • streamline role of all institutions in approval • introduce maximum time for approval • make a binding pre-approval possible
Lag between transmission and generation development times	• entice TSOs to anticipate on the basis of a cost-benefit analysis • discourage generators from initiating procedure if not sure this will be realized • favor merchant investment if convenient
Choice of innovative technologies	• mature technologies should be used to: ☐ extend usage existing infrastructure ☐ reduce impact and realization time
Lack of harmonized legal framework	• harmonizing legal framework in Europe • incentivize transited TSOs



This analysis has been specifically carried out in support of the creation of the Infrastructure package by EC (Interim Report).

Gianluigi Migliavacca, Angelo L'Abbate

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