Integration of Demand Side Management, Distributed Generation, Renewable Energy Sources and Energy Storages
Task XVII
Phase 2

Task XVII expert meeting in Vienna

September 30 - October , 2010

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Operating Agent

Task XVII extension: Phase 2 (1)

Assessment the effects of the penetration of emerging DER technologies to different stakeholders and to the whole electricity system

The emerging DER technologies to be discussed include

- plug-in electric and hybrid electric vehicles (PEV/PHEV)
- different types of heatpumps for heating and cooling
- photovoltaic at customer premises
- micro-CHP at customer premises
- energy storages (thermal/electricity) in the connection of previous technologies
- Other technologies seen feasible in 10 – 20 years period, especially by 2020
  - Smart metering
  - Emerging ICT
  - Wind at customer premises

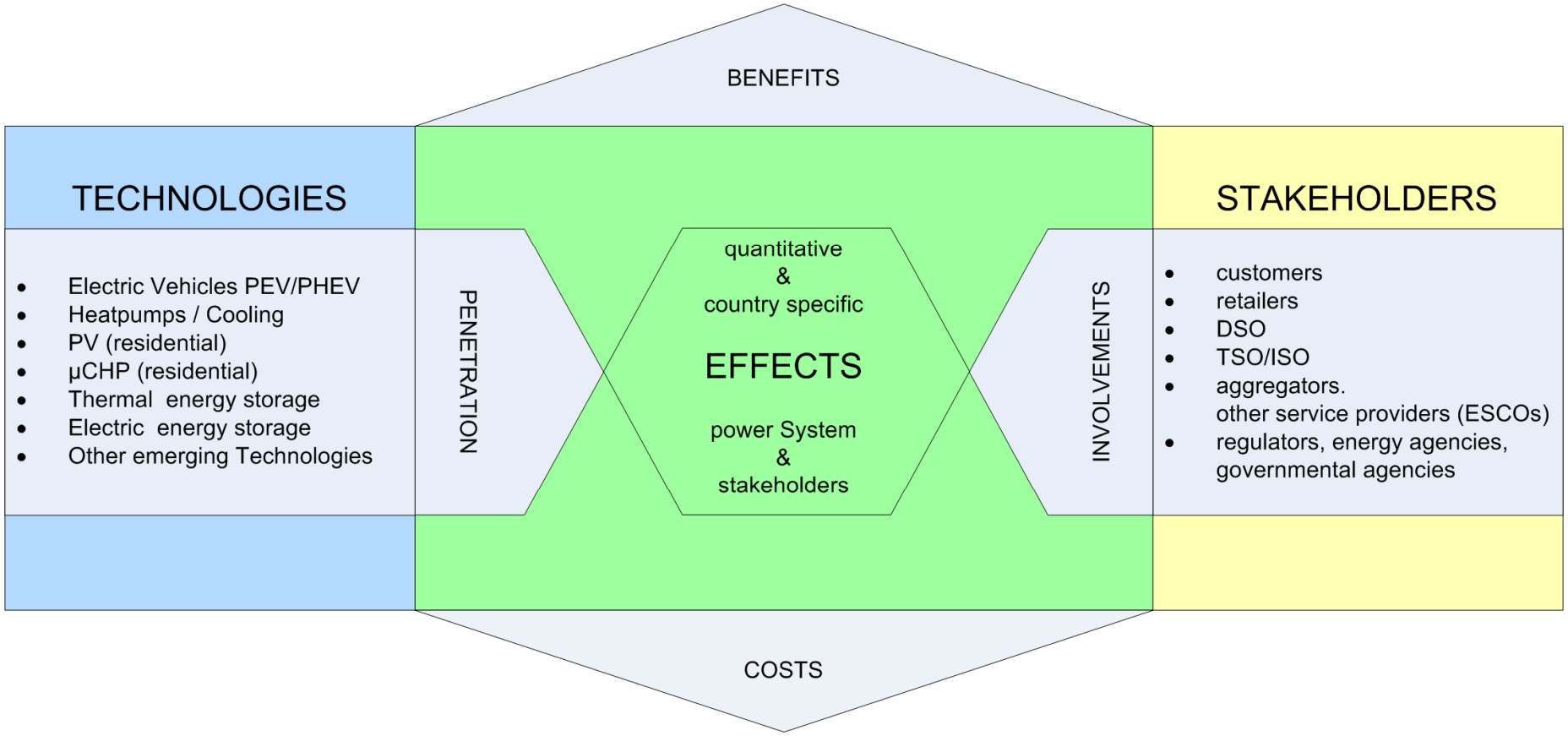
ieadsm energy efficiency

Task XVII extension: Phase 2 (2)

The main Subtasks in the Task extension are

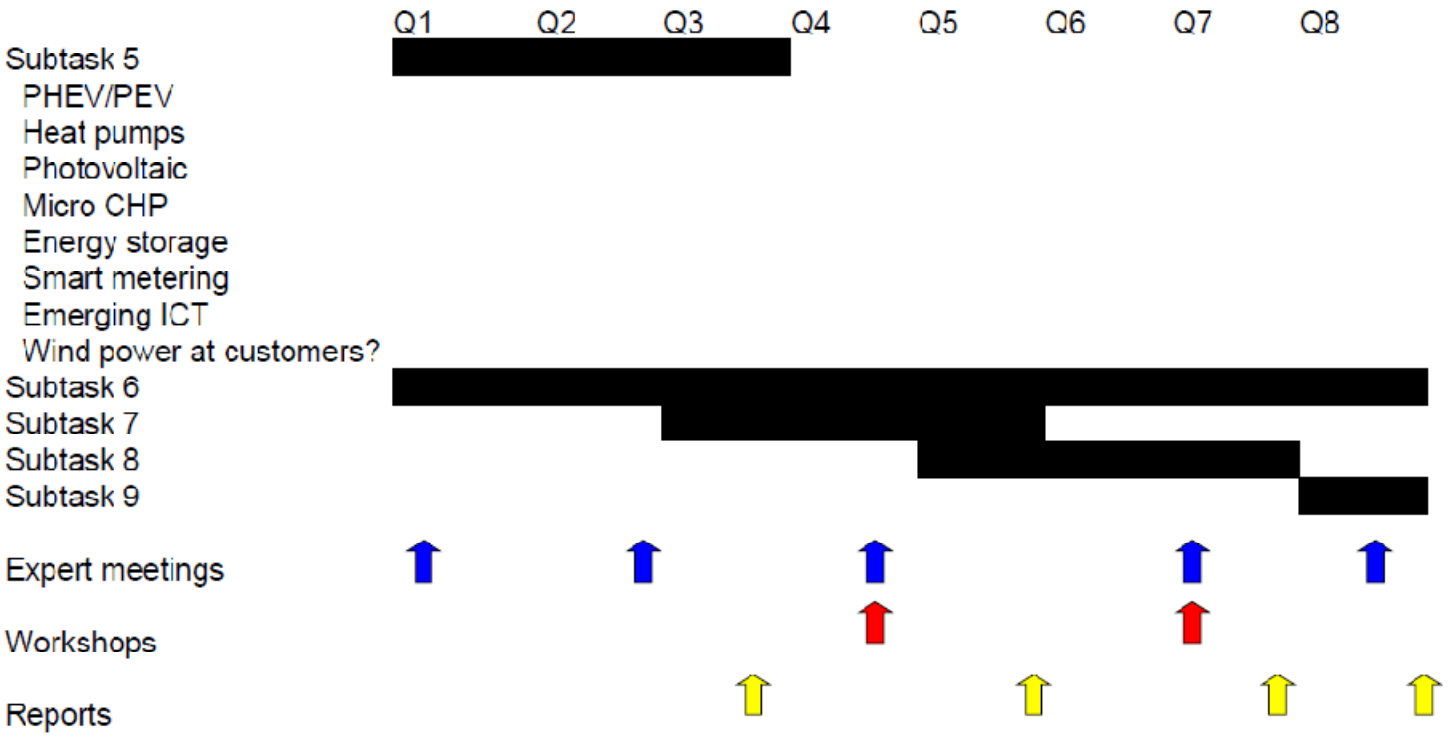
- Assessment of technologies and their penetration in participating countries
- Pilots, demonstrations, case studies
- Stakeholders involved in the penetration and effects on the stakeholders
- Assessment of the quantitative effects on the power systems and stakeholders
- Conclusions and recommendations

Work continuation



Time schedule: the total length of the Task is about 2 years starting 1st of March 2010

Time schedule :
1st of March 2010 - 28th of February 2012



Estimated resources needed (1)

Operating Agent:

Personnel costs (12 person months)	174000 €
Travels and workshops	21000 €
Total	**195000 €**

The costs are divided into 2 years evenly.

Estimated resources needed (2)

Costs are divided evenly between participating countries. Costs per country depend on the number of participants according the table below.

Annual costs per country (€)	**2010**	**2011**	**Total**
4 countries	16250	32500	48750
5 countries	16250	22750	39000
6 countries	16250	16250	32500
7 countries	16250	11607	27857
8 countries	16250	8125	24375

Country experts:

Estimated input of the country experts is 2 person months

Interests in Chester meeting, October 2009

Five countries expressed the strong interest in the Task extension:

- Australia (ICLEI)
- Austria
- Finland
- France
- the Netherlands and
- Spain

In addition to that several countries and organisations had some interest (Norway, Denmark, Eurelectric …)

General planning (1)

Deliverables

- 4 subtask reports
  - technologies including state-of the art in participating countries (present situation) and future penetration scenarios
  - stakeholder involvement and effects (including regulation, business opportunities etc.),
  - assessment of the effects on the system and stakeholders including methodologies and cost-benefit analysis
  - Summary, conclusions and recommendations
- 2 workshops
- Case studies and pilots data base + summary report?
- Country descriptions ?
- Conference presentations
- 2 updated Task flyers (in the beginning and end of the Task)

Subtask 5: Assessment of technologies and their penetration in participating countries (1)

Assessment of technologies:

What technologies will be included and in which order to analyse them?

- plug-in electric and hybrid electric vehicles (PEV/PHEV)
- different types of heatpumps for heating and cooling
- photovoltaic at customer premises
- micro-CHP at customer premises
- energy storages (thermal/electricity) in the connection of previous technologies
- smart metering
- emerging ICT
- small wind at customer premises?

Subtask 5: Assessment of technologies and their penetration in participating countries (2)

Operating Agent produces a general description of each technology and the foreseen technological development. The specific features related to each technology will be described like

- typical load/generation curves
- control possibilities and flexibility related to consumption/generation
- metering technologies
- what kind of services the technology can produce to different stakeholders (ancillary services etc)

Subtask 5: Assessment of technologies and their penetration in participating countries (3)

Country experts review and add country-specific features like

- what kind of heating and cooling systems are used in existing and new buildings with heat pumps,
- what kind of control technologies can be used
- what kind of infrastructures are planned/available for charging of electric vehicles (at homes and at public places, oneway-twoway systems, metering and billing, restrictions at networks/network connections etc)
- what kind of DG technologies are seen feasible at customer side in 10 – 20 years.

Subtask 5: Assessment of technologies and their penetration in participating countries (4)

Penetration of technologies

Each country expert produces scenarios on the penetration and market shares of technologies in their market/networks in 10 – 20 years and especially by 2020. This is mainly based on the work already done in countries

OA produces template for the schenarios and comparisons and general views.

Output of Subtask 5: technology and penetration report

Subtask 5: Assessment of technologies and their penetration in participating countries (5)

Actions and time schedule

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Subtask 6: Pilots and case studies

- To add new pilots and case studies to the database of the phase one
- To use the same template as in phase one with some modifications
- Country experts produce the inputs from their own countries (and give hints on case studies in other countries or international projects)
- OA add case studies outside the participating countries and produce a synthesis report

Time schedule: parallel to other subtasks during the whole Task

Subtask 7: Stakeholders involved in the penetration and effects on the stakeholders (1)

Involvement of different stakeholders

Description of stakeholders involved in the penetration of technologies.
Stakeholders include at least

- customers
- retailers
- DSO
- TSO/ISO
- aggregators and other service providers like ESCOs
- regulators/energy agencies/governmental agencies

What kind of incentives, pricing, market rules and regulation are used?
What kind of business models can be used and what are the transactions between stakeholders? Country experts produce the country-specific descriptions and OA synthesis and generic descriptions.

Subtask 7: Stakeholders involved in the penetration and effects on the stakeholders (2)

Effects on the stakeholders

Description of the effects of the penetration of technologies on the stakeholders (both qualitative and quantitative (measurable) effects

- costs (operational and investment costs), what are the main factors effecting on the costs like load curves, penetration levels etc.
- benefits: income, business possibilities etc.
- what are the alternatives to increase benefits/decrease costs (like intelligent charging of PHEVs, selling services to system balancing etc.)

Stakeholder workshop will be arranged in the connection of expert meeting to get feedback from the stakeholders

Output of Subtask 7: report and workshop presentations with summary

Subtask 7: Stakeholders involved in the penetration and effects on the stakeholders (3)

Actions and time schedule

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Subtask 8: Assessment of the quantitative effects on the power systems and stakeholders

Assessment tools and methods

Collection of tools and methods used for quantitative analyses (done by OA and experts). Assessment of tools and methods. Examples from the literature

Country specific case studies

Country experts collect information on the case studies on the analysis of the effects of the penetration of technologies and on the main findings how these technologies can help to decrease problems caused by variable output generation in power systems. Comparison of the results with the penetration scenarios of Subtask 5.

Open workshop with stakeholders will be arranged on case studies and to get feedback on the preliminary findings of the Task

Subtask 9: Conclusions and recommendations

Summary report with conclusions and recommendations

- OA produces with the help of country experts
- feedback of the stakeholder workshop taken into account

Expert meetings and workshops

Second expert meeting:
- end of September 2010: 30.9 – 1.10 (23.-24.9)
- place: Vienna

Third expert meeting and the workshop
- end of February 2011: 24.-25.2
- place: France

Fourth expert meeting and workshop
- end of September 2011: 29-30.9
- place: Helsinki

Final expert meeting:
- End of January 2012: 26-27.1
- place: Petten

Final reports: end of February 2012