



Smart Grid
Case Studies

Project report - Executive Summary

Knowledge Transfer Project on Public Support to Smart Grid research, demonstration and innovation

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Annex 2.

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Introduction

The purpose of this report is to give an account of a collaborative International Smart Grid Action Network (ISGAN) project focusing on public funding and support to smart grid research, demonstration and innovation. This report describes the project and gives a summary of conclusions from an interactive knowledge exchange workshop held in Genk, Belgium on 11 September 2017.

Background

In July 2016, members of ISGAN Annex 2 took the initiative to start a knowledge transfer project (KTP) focused on strategies and practices in regard to public funding and support to smart grid research, innovation and demonstration. The project built on the experiences and lessons learned from the first ISGAN knowledge transfer project that was conducted in August 2016 that focused on development of smart grids in Mexico.

The long-term objective of the *KTP Public Support to Smart Grid RD&I* project is to yield better results from publicly supported projects, by facilitating concrete and practical peer-to-peer guidance between public stakeholders regarding the design and implementation of funding programmes and similar support structures at national or regional level.

Participating countries in the project are Austria, Germany, India, Italy, Netherlands and Sweden. In addition, representatives from the following countries participated in the workshop that was held in Genk, Belgium on 11 September 2017 in conjunction with the ISGAN Executive Committee meeting: Australia, Belgium, Canada, Russia, South Korea and United Arab Emirates.¹



Figure 1: Participating countries in project and workshop

¹ The project was managed by Magnus Olofsson and Helena Lindquist, ISGAN Annex 2, with the invaluable support from Bethany Speer, ISGAN Annex 4.

Project setup

To create the right conditions for a fact-based and informed knowledge exchange between participating countries, a detailed questionnaire was set up (based on inputs from participants) with a large number of questions covering a wide set of aspects related to the topic, i.e. country context, criteria for funding, and issues relating to the pre-project / project execution / post-project phases.

The questionnaire responses were compiled into a pre-workshop report, for all project participants to read ahead of meeting their peers in the knowledge transfer workshop. The country representatives were also asked to prepare a presentation for the workshop to provide an overview of the country context, important smart grid programmes and key statistics.

The purpose of the preparation work described above was to engage the participants and to create a common, structured and fact-based framework for the interactive dialogue to take place in the knowledge transfer workshop in Genk. The workshop was structured to support participants in identifying and achieving deeper understanding of key success factors and challenges in regard to public support of smart grid projects.

After the workshop a post-workshop report was produced, including the background information of the first report, as well as complemented with the results of the workshop.

Representatives from each country are now tasked with spreading the learning from the international knowledge exchange in their respective organizations with a view to maximize impact of future funding programmes and similar initiatives at national and regional level.

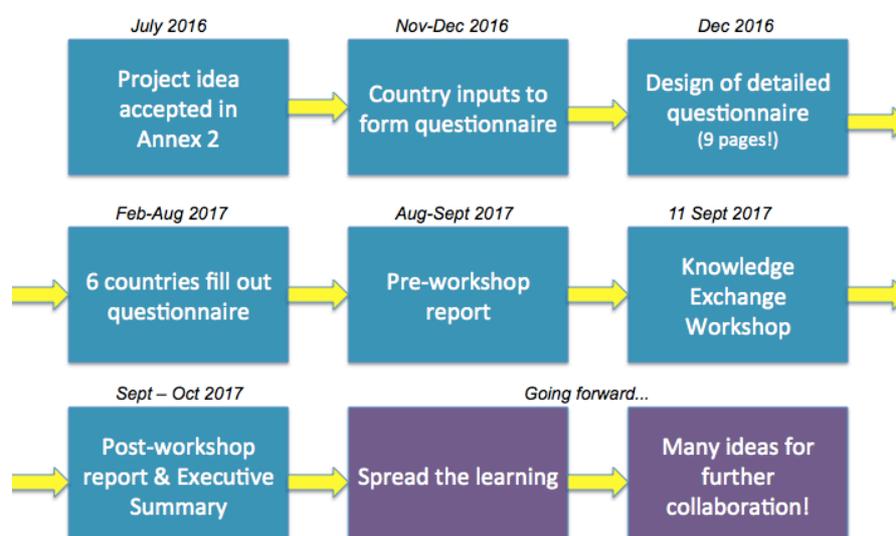


Figure 2: Project setup and time-line

Workshop themes

The following themes were identified as possible topics for interactive dialogue at the workshop. The workshop discussions came to focus on themes 1, 2, 4 and 5 (although issues related to theme 3 were also mentioned).

1. Realizing the full potential of demonstration projects to achieve market uptake.
2. Designing national funding programmes.
3. Utilizing innovative and effective Key Performance Indicators to measure project impacts.
4. Communicating results to the public to create acceptance of technical innovation.
5. Establishing effective international collaboration amongst national funding agencies.



Group picture from the KTP workshop in Genk, Belgium on 11 September 2017.

Workshop results

Workshop process

The workshop process is presented in Fig. 3. Following short presentations from each participating country, group exercises were conducted identifying success factors and formulating policy advice. Finally, ideas for enhanced collaboration within ISGAN were generated.



Figure 1. Workshop set-up

Insights and challenges

Theme 1. Realizing the full potential of demonstration projects to achieve market uptake.

Challenges

- Legislation is improving but progress is too slow to support the energy transition.
- Commitment within grid operators' top management.
- Cooperation between small and large companies.
- Lack of private entrepreneurs and investors leading to few marketable demo results.
- Lessons learned and how to draw conclusions from negative project results.
- High cost of smart grid tools, e.g. smart meters for research and innovation.
- Given the urgency of the energy transition there is a lack of products and services on the market, e.g. for flexibility.

Insights

- The need for identifying proper regulation is a stimulus for demo projects and

eventually for market uptake (regulation will be ready after demos). E.g. hosting capacity for distributed generation.

- Project owner and industry partners should be funding the project jointly.
- Dissemination of information and knowledge transfer is key to development.
- Importance of legal and regulatory framework to achieve market uptake of demo results.
- Presenting a credible value proposition to stakeholders is essential.
- Important to involve the private sector in demonstration projects.
- It is advisable to “keep it simple” in regards to many aspects, e.g. communication, legislation and technological interfaces.

Theme 2. Designing national funding programmes.

Challenges

- Cost-sharing across research/development/innovation/demonstration spectrum.
- How to handle big data, e.g. standardization, security and privacy.
- Sometimes there is a lack of coordination among smart grid stakeholders and also among funding bodies/ministries in the fields of smart grid, wider energy sector and related fields.
- How to engage self-sustaining private utilities for funding support of demo smart grid projects.
- Benefit sharing when funding support is provided to private stakeholders.
- Selection of topics and projects to ensure they are in line with strategy/goals of funding programme.
- Time aspects, e.g. reasonable time from submission of application until funding decision.
- Alignment with stakeholders.
- Drafting roadmap for funding and keeping it updated in relation to wider objectives.

Insights

- It is sometimes good if the same funding programme can allow projects at all Technology Readiness Levels (TRLs) as innovation can happen anywhere along the spectrum.
- It is important to take a broader view of smart grids and have an integrated energy system approach.

- Involve industry and other stakeholders into research projects to achieve real impact.
- Design the programme as to ensure industrial participation in projects.
- Research communities (networks) enable new ideas and consortia.
- Important to design objective evaluation criteria for scoring and ranking of applicants.
- Important to have an interdisciplinary focus and enable exchange of information across traditional sector boundaries in the design and execution of funding programmes.

Theme 3. Utilizing innovative and effective Key Performance Indicators to measure project impacts.

Challenges

- Measurement of KPI.
- KPIs relating to green house gases/low carbon.
- Find adequate evaluation criteria to better understand what result the investment in the project will render.

Insights

- Trade-off between achievable value and investments.
- The KPIs for evaluating smart grid demonstration projects should be designed in advance with participation from the project owner/utility.
- Effective KPIs can push projects to not consider public funding as “given for granted” and to aim at achieving the most useful results for their sector (e.g. in EU projects).

Theme 4. Communicating results to the public to create acceptance of technical innovation.

Challenges

- To reach out to and communicate results to appropriate key stakeholders in a targeted way (policy makers, cities, regulators, chambers...).
- Publicly available documentation for RD&I efforts is not sufficient for effective dissemination of project results – it may need to be disseminated more effectively, the material may be too technical and it is often not available in English.

Insights

- The way forward is to involve stakeholders more, being part of the energy transition, not

merely one-way communication.

- Important to see smart grid in its context – from smart grids to smart energy systems. It needs to be communicated in a more holistic way to enable a credible vision for the energy transition.
- Involve the whole chain of stakeholders, including (end) users.

Success factors in the form of "tweets"

Participants were divided into three groups, based on their own prioritization of the themes. Each group was tasked with presenting their three key success factors (resulting from the preceding discussion) in short concise sentences (“tweets”). Below are some examples:

Theme 1. Realizing the full potential of demonstration projects to achieve market uptake.

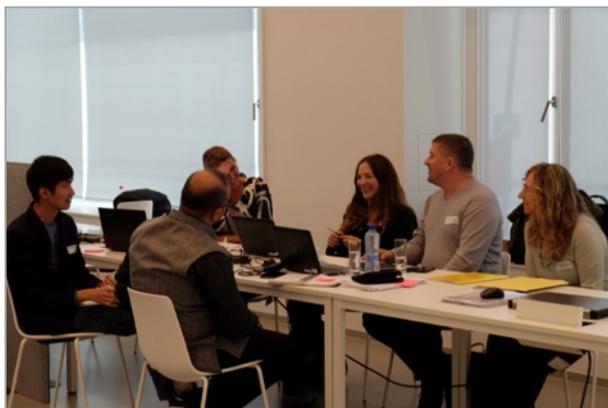
- Synergy between electrical, transport & telecom is a must for success of smart grid demo projects to achieve market uptake #KeySuccessFactor.
- Consumers need to be at the centre of SG projects to achieve a successful market #KeySuccessFactor.
- Adaptive regulation is the key to success for achieving smart grid solutions market uptake #KeySuccessFactor.

Theme 2. Designing national funding programmes.

- Clear objectives prioritized by the government considering also knowledge transfer within the funding agency and other stakeholders.
- Find the right stakeholders and include them at design stage (customers, regulators, industry, government etc.) and consider their feedback.
- Long-term program planning and continuous evaluation of SMART KPIs and corrective actions. Different KPIs for different TRLs.

Theme 4. Communicating results to the public to create acceptance of technical innovation (end users)

- Communicate smart grid success stories. Make it simple and fashionable!
- Monitor, deliver and communicate measurable improvements in terms of reaching sustainability goals over time.



Pictures from the KTP workshop.

Ideas for enhanced international collaboration

In the concluding part of the workshop the participants discussed ideas for how funding agencies in ISGAN countries may continue collaborating on the topic of more effective public support to smart grid RD&I. The discussion was documented in the form of a mind-map (see Fig. 4).

Summary of discussion

- ISGAN should arrange regular KTPs on this topic to allow more deep-dive into key challenges and opportunities. One example mentioned could be on life cycle cost (LCA) analysis of smart grid projects. In part, such KTPs could be facilitated online, to complement physical meetings in conjunction with ExCo meetings.
- Success stories on good funding practices in individual countries/regions as well as important learning (incl. mistakes that should not be repeated) could be elaborated on further within Annex 2 through the publication of case books.

- Idea to create a joint funding programme based on *common* ISGAN priorities where all interested countries could contribute funds and help deliver results.
- It would be useful to enable more ready access to information (abstracts and keywords) about key projects in individual countries, e.g. this could be done through the ISGAN website.
- The participating funding agencies could help facilitate contacts and create networks between stakeholders in different countries, e.g. enabling PhD student exchanges and similar.

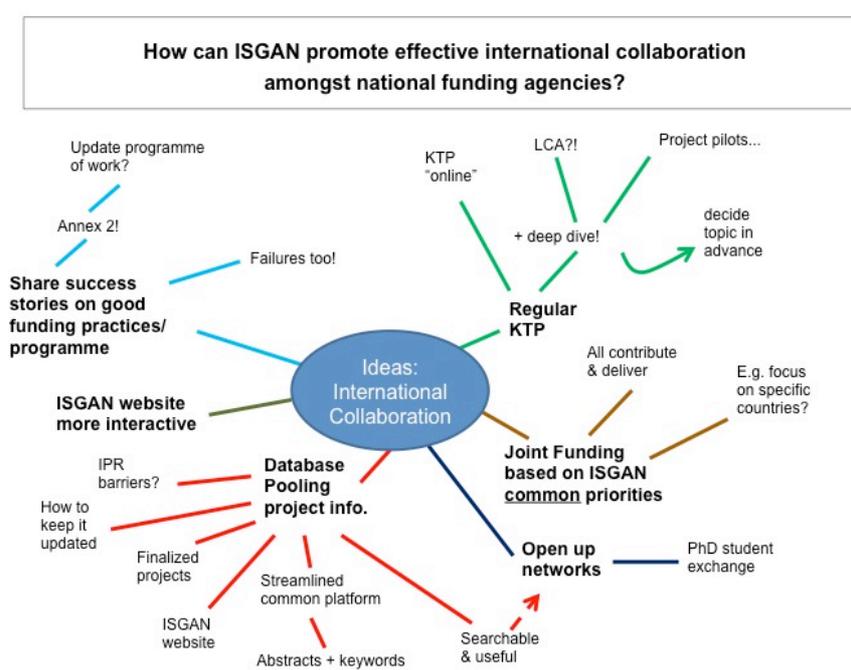


Figure 4: Mind-map from concluding discussion on international collaboration.

CONCLUSION

The *KTP Public Support to Smart Grid RD&I* project engaged 13 member countries, 6 of which participated in all parts of the project. Feedback suggests that the project was successful in creating a fact-based, structured and interactive dialogue between key stakeholders working with various aspects of public support to smart grid development.

The method of doing considerable preparatory work in each country and having the opportunity to get background knowledge about other countries' practices and experiences before meeting in a workshop format created the conditions for having focused discussions on matters of relevance to each participant. Careful documentation throughout the project was also an important aspect, not least for enabling further dissemination of knowledge within each country after project completion.

Several participants have expressed interest in continuing the dialogue in follow-up projects, in which exchange between ISGAN countries on key topics related to public support to smart grid research, innovation and demonstration could take place.