



General Overview & Annex 1: Global Smart Grid Inventory

**2nd EU-US Workshop on Smart Grid Assessment Methodologies
Washington DC, 7th November 2011**

*Michele de Nigris, RSE, ISGAN Chair
Russ Conklin, U.S. DOE, ISGAN Vice Chair*



What and why is ISGAN?

A mechanism for bringing high-level government attention and action to accelerate the development and deployment of smarter electricity grids around the world.

ISGAN...

- Fulfills a key recommendation in the Smart Grids Technology Action Plan (released by Major Economies Forum Global Partnership, 2009)
- Was launched as one of 11 initiatives under the Clean Energy Ministerial (in 2010)
- Is organized as an IEA Implementing Agreement (in 2011, under the IEA EUWP and CERT)
- Sponsors activities that build a global understanding of smart grids, address gaps in knowledge and tools, and accelerate smart grid deployment
- Builds on the momentum of and knowledge created by the substantial smart grid investments being made globally
- Will leverage cooperation with the Global Smart Grid Federation, and other interested organizations

ISGAN Participants

<i>Australia</i>		<i>India</i>		<i>Russia*</i>	
<i>Austria</i>		<i>Italy</i>		<i>Sweden</i>	
<i>Belgium</i>		<i>Japan*</i>		<i>Switzerland</i>	
<i>Canada</i>		<i>Korea</i>		<i>United Kingdom</i>	
<i>China*</i>		<i>Mexico</i>		<i>United States</i>	
<i>France</i>		<i>Norway</i>		<i>European Commission*</i>	
<i>Germany</i>		<i>Netherlands</i>		<i>Ireland</i>	
<i>Finland</i>		<div> <p>Plus five other countries invited to join: Brazil, Denmark, South Africa, Spain, and Turkey</p> </div>			

**Participate through the CEM, but have not yet signed the Implementing Agreement*

Clean Energy Ministerial initiatives

**International
Smart Grid
Action Network**

**Super-Efficient
Equipment and
Appliance
Deployment
Initiative**

**Electric Vehicles
Initiative**

**Bioenergy
Working Group**

**Carbon Capture
Use and Storage
Action Group**

**Clean Energy
Education and
Empowerment
Women's
Initiative**

**Clean Energy
Solutions
Centers**

**Global Superior
Energy
Performance
Partnership**

**Multilateral
Solar and Wind
Working Group**

**Solar and LED
Energy Access
Program**

**Sustainable
Development of
Hydropower
Initiative**



Clean Energy Ministerial meetings (CEM1, CEM2...)

CEM1 took place on 19-20 July 2010 in Washington, DC, USA.

CEM2 took place on 6-7 April 2011 in Abu Dhabi, UAE.

CEM3, CEM 4, and CEM5 will take place in 2012, 2013, and 2014 in the UK, India, and Korea

>90% of Global Clean Energy Investment

> 80% of Global GHG Emissions



Australia



European Commission



Brazil



Canada



China



Denmark



Finland



France



Germany



Hungary



India



Indonesia



Italy



Japan



Korea



Mexico



Norway



Russia



South Africa



Sweden



Spain



United Arab Emirates



United Kingdom



United States

Annex 1:
Global Smart Grid Inventory

Annex 2:
Smart Grid Case Studies

Annex 3:
Benefit-Cost Analyses & Toolkits

Annex 4:
Synthesis of Insights for
Decision Makers



- Identify countries' specific motivating drivers for pursuing smart grids
- Catalogue the wide range of smart grid activities underway
- Collect and organize the wealth of experience currently being generated into a resource available first to ISGAN Participants and then a broader, global audience.
- *We expect all ISGAN IA signatories to contribute data and information to this Annex.*

- Develop a unified ISGAN framework for assessing smart grid features and technologies
- Ask each participating country to prioritize the list of features and technologies according to their national interests
- Map these prioritized frameworks against existing inventories, surveys, and assessments
- Identify gaps, opportunities, synergies, and inconsistencies and make recommendations, if appropriate
- Gather additional data as needed
- Expand the initial framework to take in account key metrics and performance indicators
- Develop appropriate tools for disseminating results, complementing and augmenting existing efforts and initiatives.

Australia



Italy



Austria



Korea



Belgium



Netherlands



Canada



Switzerland



France



United Kingdom



India



United States



Ireland



Operating Agent



➤ ***Deliverables***

Year One*

1. Framework for Assessment report
2. Collection of existing survey material (including white paper summary, perhaps)

Year Two and Thereafter

1. Agreements on KPIs with relevant organizations
2. Collection of additional qualitative data and initial quantitative data
3. Report on initial quantitative analysis

**Note: "Year One" ends in April 2012!*

Tasks, Timetable, and Resource Estimates

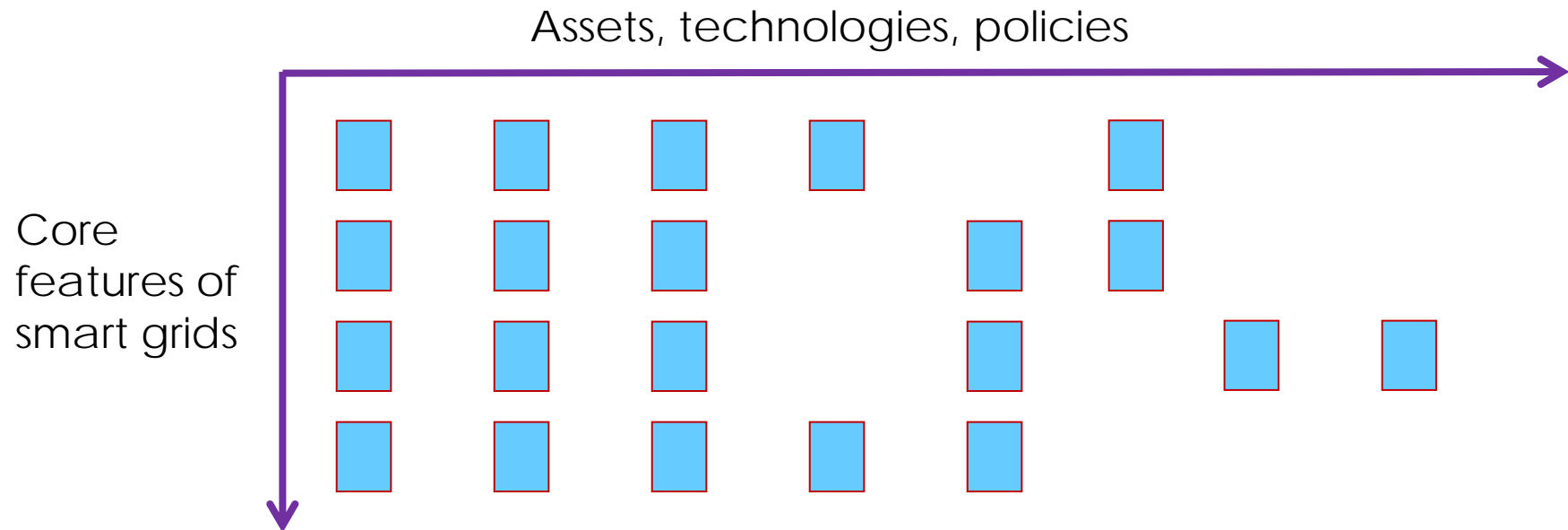
➤ Tasks and Subtasks	Task Lead, Participant
Task 1: Framework for Assessment	US/Italy, Netherlands
➤ Subtask 1.1: Defining smart grid features and technologies	↓
➤ Subtask 1.2: Applying the multi-criteria approach	<i>All ISGAN signatories</i>
Task 2: Phase One Inventory – Drivers & Opportunities	TBD, Belgium, Netherlands, Ireland, Switzerland, UK
➤ Subtask 2.1: Collection of existing survey material	↓
➤ Subtask 2.2: Gathering of additional data & synthesis of ...data	↓
➤ Subtask 2.3: Qualitative analysis of smart grids initiatives	↓
Task 3: Phase Two Inventory – Initial Quant. Analysis Using KPIs	TBD, TBD (later)
➤ Subtask 3.1: Selection of suitable KPIs	↓
➤ Subtask 3.2: Quantitative analysis using KPIs	

Tasks, Timetable, and Resource Estimates

➤ Tasks and Subtasks	Timetable
Task 1: Framework for Assessment	
➤ Subtask 1.1: Defining smart grid features and technologies	<u>NOW!</u>
➤ Subtask 1.2: Applying the multi-criteria approach	Nov 2011 – Dec 2011
Task 2: Phase One Inventory – Drivers & Opportunities	
➤ Subtask 2.1: Collection of existing survey material	Oct 2011 – Sept 2013
➤ Subtask 2.2: Gathering of additional data & synthesis of ...data	April 2012 – Sept2013
➤ Subtask 2.3: Qualitative analysis of smart grids initiatives	April 2012 – Sept 2013
Task 3: Phase Two Inventory – Initial Quant. Analysis Using KPIs	
➤ Subtask 3.1: Selection of suitable KPIs	June 2012 - Sept2013
➤ Subtask 3.2: Quantitative analysis using KPIs	Oct 2012 - Sept2013

Task 1: Framework for Assessment

- Objective: Analyze relationships between core features of smart grids and corresponding enabling assets and technologies, evaluated against the motivating drivers



CHALLENGE: Framework must work for developed and emerging economies.

- *Based on outcomes of meeting in Vienna, May 2011...*
 - ...**Emphasis on existing sources** rather than new survey
- Sources likely to include:
 - Joint Research Centre
 - Grid4EU
 - U.S. ARRA projects (smartgrid.gov)
 - APEC Survey of Smart Grid Status and Potential
 - Major National Projects – e.g. Jeju Test Bed, Smart Grid Smart City (Aus.)
 - Other databases – e.g. FINSENY

- **Framework of ENARD Annex 5:**

- To learn from international demonstration projects what actually works, for whom, and under which circumstances
- Workpackages
 1. Visions, drivers and roadmaps
 2. Cost and power allocation mechanisms
 3. Room for investments, experiments and tariffs
 4. Smart meters, dataflows and business models
 5. Architectures and components
 6. Standards and compatibility issues
- Annex 5 looks at diversity & uniformity on one hand, and changes & continuity on the other. Combine them for an evolutionary framework.
- The definition of smart grids is not fixed, but one of end results.

- **We are here today to listen!**
 - How might ISGAN structure its Annex 1 framework to complement or augment the US-EU dialogue (i.e., nest them)?
 - What sources should we draw from (beyond those listed)?
 - How do we move from qualitative to quantitative analysis?
- **NEXT WEEK:**

IEA Experts' Group on R&D will be hosting a workshop on clean energy metrics, including smart grid metrics, in Paris.