



### **Global Smart Grid Federation**

"Accelerating the deployment of smart grids around the world."



## **Global Smart Grid Federation**

The Global Smart Grid Federation directly links international smart grid associations thereby facilitating the sharing of best practices on resolutions around barriers to deployment; consumer engagement; innovation and capacity building.

## **GSGF Members**

Smart Grid Australia	Smart Grid Canada	Danish Intelligent Energy Alliance	
CAL.	Smart <b>Grid</b>	K INTELLIGENT ENERGI	
Smart Grid Great Britain	India Smart Grid Forum	Smart Grid Ireland	
Smart GridGB For an intelligent future	सत्यमेव जयते	SQI	
Japan Smart Community Alliance	European Distribution System Operators	GridWise Alliance	
Japan Smart Community Alliance	EDSO for smart grids	GRIDWISE ALUANCE	
Israel Smart Energy Association K		Corea Smart Grid Association	
The Israeli Smart Energy Association		Korea Smart Grid Association	

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## **GSGF Smart Grid Report**

## GL BAL SMART GRID FEDERATION REPORT

Report provides insight and analysis member countries deploying smart grid. The report identifies challenges which must be addressed collaboratively:

1) Speed of Technology versus Regulation

2) Developing Interoperability Standards

3) Gaining Consumer Interest and Support

4) Protecting Intellectual Property Rights

5) Defining Stakeholder Needs

### **GSGF Report Findings**

### At the Global Level; smart grids have become

- a powerful agent of environmental policy by enabling reliable integration efficiency and cleaner sources of power
- a part the economic growth and jobs agenda for many countries looking for domestic employment and new export opportunities

<u>The Business Case for smart grids is positive when factoring societal benefits</u> such as environmental, energy security, and economic development factors

<u>The ratepayer is taking on the role previosly held by the taxpayer in paying</u> *for environmental and energy security policy* 

<u>There is a role for government and industry to convince consumers of the</u> *environmental, security and economic benefits - a role that many utilities have not traditionally been asked to perform* 

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### **Highlighted Projects**

Country	Project	Cost
Australia	<b>Smart Grid Smart City</b> Cross-cutting project focused on demand response and household energy management along with improvements to grid to integrate renewables, storage and EVs.	\$ 243M
Canada	Ontario Smart Metering Initiative Installation of 4.5M smart meters nearing completion with mass deployment of time-of-use rates – the first in the world.	\$ 1,000M
Europe	<b>GREEN eMOTION</b> Integration of regional electric mobility projects complete with billing and bi-directional charging.	\$ 30M
Great Britain	<b>Low Carbon London</b> Four-year demonstration project integrating a number of low carbon technologies.	\$ 46M
Ireland	<b>ECAR Ireland</b> Ambitious program to install charging infrastructure in all towns with more the 1500 people as well as every 60km on inter-urban routes.	\$ 28M
Japan	Hachinohe Microgram Demand-supply control system managing impact of renewable energy with real end user in electrical island.	\$ 42M
Korea	<b>Consumer Smart Place</b> Outfit houses and buildings with integrated energy management services.	\$ 30 M
USA	Houston Smart Grid DoE support large scale smart grid deployment improving reliability in the hurricane prone Gulf of Mexico.	\$ 640 M

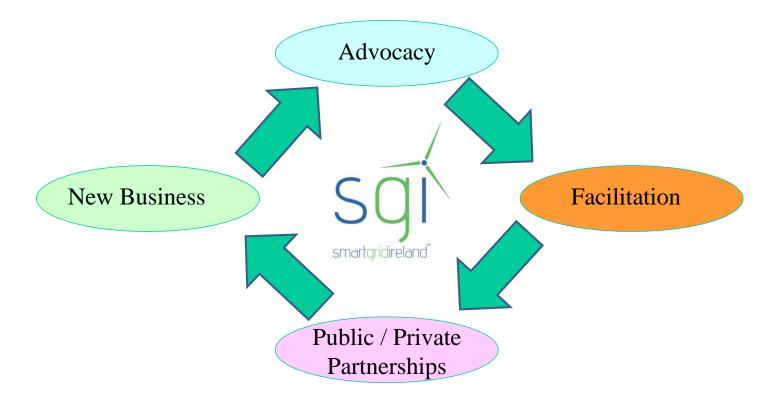


### **GSGF** Collaboration

- Major Economies Forum on Energy and Climate (MEF)
- Clean Energy Ministerial (CEM)
- International Smart Grid Action Network (ISGAN)
- International Energy Agency (IEA)
- Global Green Growth Forum (3GF)
- New collaborative engagements pending



# **SGI Strategic Themes**





### The Three Pillars for successful Smart Grid Transformation

#### Policy and Regulation

Interoperability Standards Cyber Security Data Privacy Smart Grid Statutes Regulatory Frameworks

#### **Deploying Technology**

Smart Meters Data Analytics System Integration Renewables Integration Distribution Automation

#### **Sector Collaboration**

Vendors and Utilities Device Manufacturers Research Universities Electric and Gas Utilities Public and Private Sector

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# Europe and Smart Grid: the "third industrial revolution"

"The transition to the Third Industrial Revolution will necessitate a wholesale reconfiguration of the economic infrastructure of the European Union, creating millions of jobs and countless new business opportunities..." Jeremy Rifkin

#### **JOBS AND GROWTH**

A recent Smart Grid Great Britain report indicated sustained investment results in an annual average of 9,000 jobs per year in manufacturing and installation of smart grid technologies.

#### **ENVIRONMENT**

A strong link exist between carbon and smart grid including; Quicker connections of renewables, connection of distributed generation, managing fluctuating supply and demand over large footprint

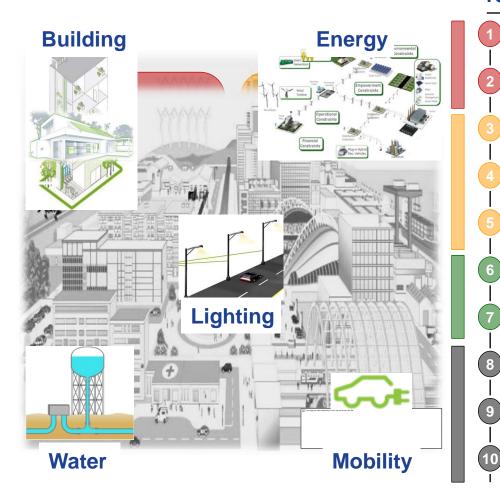
#### **EU INTEGRATION**

A fully integrated EU power market will allow member countries to efficiently trade renewable and conventional power and build a much more resilient system. This can only be realized through and intelligent network.

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## **GE Smart City approach**



#### **10 Value Propositions**

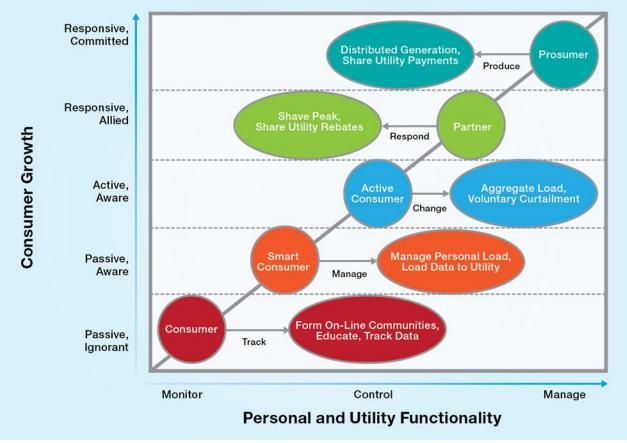
1	<b>Optimize Network Assets</b> Maintenance extension optimum economy
2	Improve Network Efficiency Productivity yield saving value
3	Improve Service Reliability Sustainability regulations control safety
4	Manage Constraints Bottleneck monitoring outage recovery
5	Actively Manage Networks Real time dynamic anticipate control
6	Improve Environmental Footprint Green renewables recycling citizenship
7	Enable New Economy & Technologies Innovation integration communication implementation
9	Ensure Stakeholder Active Engagement Ownership involvement information drive
	Enable Knowledge Management Information involvement connect communication

Increase City Attractiveness Image... advantage... future... value iea

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## A profound change for citizens

Taking energy as an example...



...and multiple across every Network, Service & Amenity

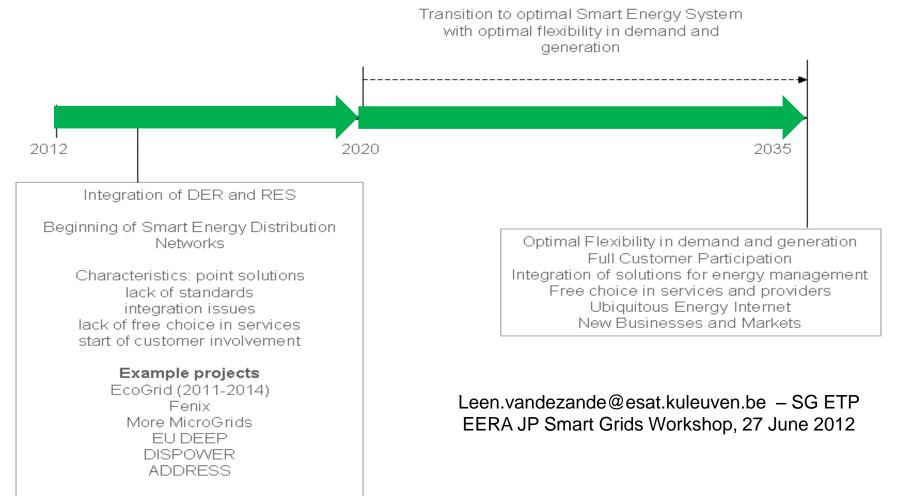
Source: Chapter 7, The Advanced Smart Grid

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# What are the expected fundamental changes between 2020 and 2035 for SmartGrids?

International

Energy Agency



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### To summarize

- Year 2020 ≠ 2035: SRA 2035 describes research for SmartGrids challenges after 2020 towards 2035+
  - EEGI (European Electricity Grid Initiative) will demonstrate solutions to SmartGrids challenges of the year 2020; and then?
  - SRA 2035 assumes strong changes after 2020
    - More renewables, more flexible consumption, more retail and consumer markets, more Electric Vehicles, more HVDC grids, more SmartGrids legislation & regulation
- SRA 2035: Urgent need of new research going beyond previous SRA (of 2007) and beyond EEGI
  - New SmartGrids technology area IS: Integrated Systems of Systems
  - New SmartGrids technology area RC: Retail and Consumer Systems
- SG ETP remains a Technology Platform, but ..
  - Many open Socio-economic and Ecosystem SmartGrids questions



## Thank you!

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