SmartGridIreland (SGI)

Presentation to
Eilat Eilot 2012

Paddy Turnbull – Chairman GSGF
& Growth Strategy Leader GE Energy - European Region

The Role of Regulation in Maintaining the Momentum of Smart Grid Deployment in Europe

Competitive Advantages for a Smart Grid Pilot

- End-to-end proposal

- Rich in natural renewable resource

- 40% renewable energy penetration target

- Meeting challenges earlier

- Single Electricity Market Structure

- Abundant compatible ICT skills-set

- Global leading, highly secure communications infrastructure

A "Smarter" Grid

Evolution, not Revolution
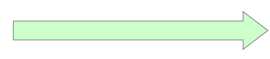
Applications that Manage Operations

| Economic Dispatch | Energy Optimization | Asset Optimization | Demand Optimization | Delivery Optimization |

Enabled Utility Managers

Microelectronics that Controls Flows

| Gen. & Trans. Management | Transmission Automation | Sensors | Distribution Managem | Distribution Automation | Advanced Metering System |

Enabled Consumers

Heavy Metal that Generates & Delivers Power

| Thermal Generation | Lines | Sub Stations | Distribution Equipment | Voltage Control | Renewable Generation |

Old Grid → Smarter Grid

The Grid has worked well in the past - but today the environment is changing.

Carbon reduction

Energy security

Economic competitiveness and affordability

Renewable generation growth (Wind, Solar…)

Electrification of transport and heating (EV, heat pumps…)

Small Distributed Generation, Demand Side Mgmt, Smart Meters

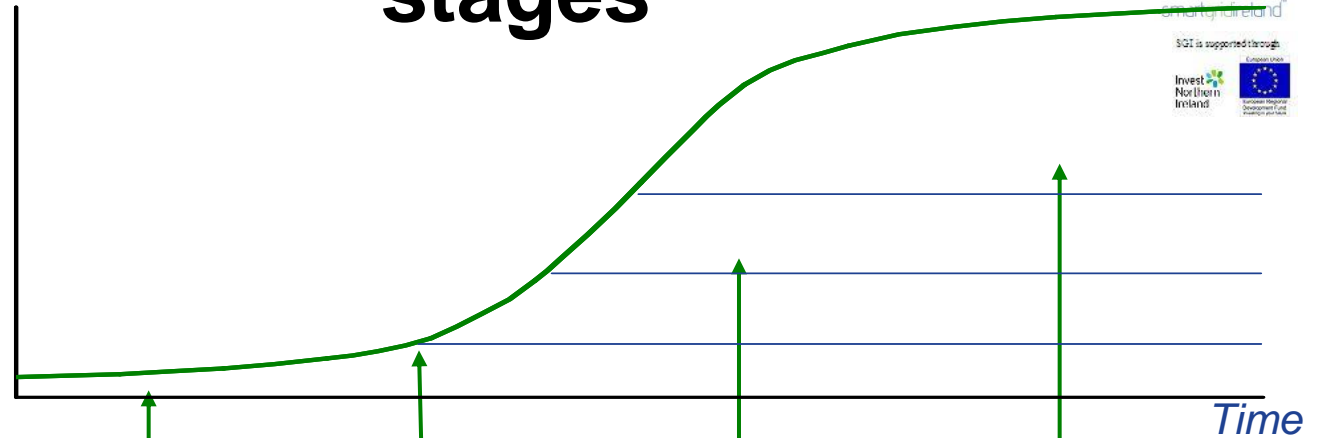**Customer empowering (Residential feed-in, storage, time of use tariffs)**

**Process of political & regulatory changes in energy policy
All these initiatives impact mainly distribution networks**

SG implementation still at early stages
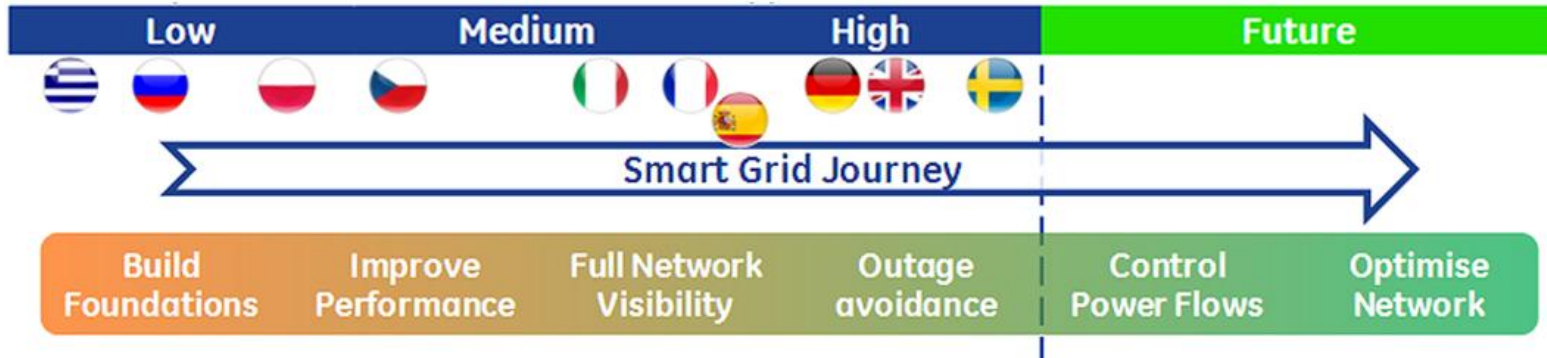

Smart Grid Deployment

Time

Phase:	Demonstrator	Pilot	Early Adoption	Follower
What	Test New Technologies	Evaluate Selected Technologies	Industrialize Successful Technologies	Full Industrialization
Funds	EU Government	EU Stakeholders Government	Stakeholders	
Who	Government Stakeholders Suppliers	Stakeholders Suppliers	Stakeholders Suppliers	Suppliers

... where the role of Government is most important

Smart Grid progress in Europe

Sophistication of networks / Smart Grid applications

| Low | Medium | High | Future |

Smart Grid Journey

| Build Foundations | Improve Performance | Full Network Visibility | Outage avoidance | Control Power Flows | Optimise Network |

Countries at different stages

Electricity System Markets and Regulation

Expert Views

- "Regulatory and market models addressing system investment, prices and customer participation must evolve as technologies offer new options"

  Source: International Energy Agency

- "Plan for evolution in regulation along with technology development — new technologies will offer new regulatory options"

  Source: International Energy Agency

- New business cases that change the relationship between DSO and suppliers will be enabled by a two-way, reconfigurable grid, allowing more multi-dimensional opportunity for revenues

  Source: Energy Research Centre of the Netherlands

- One of the most urgent issues is the need for "the development of an EU legislative framework that would boost investment in Smart Grids and support a quick deployment of the new technology through regulatory incentives"

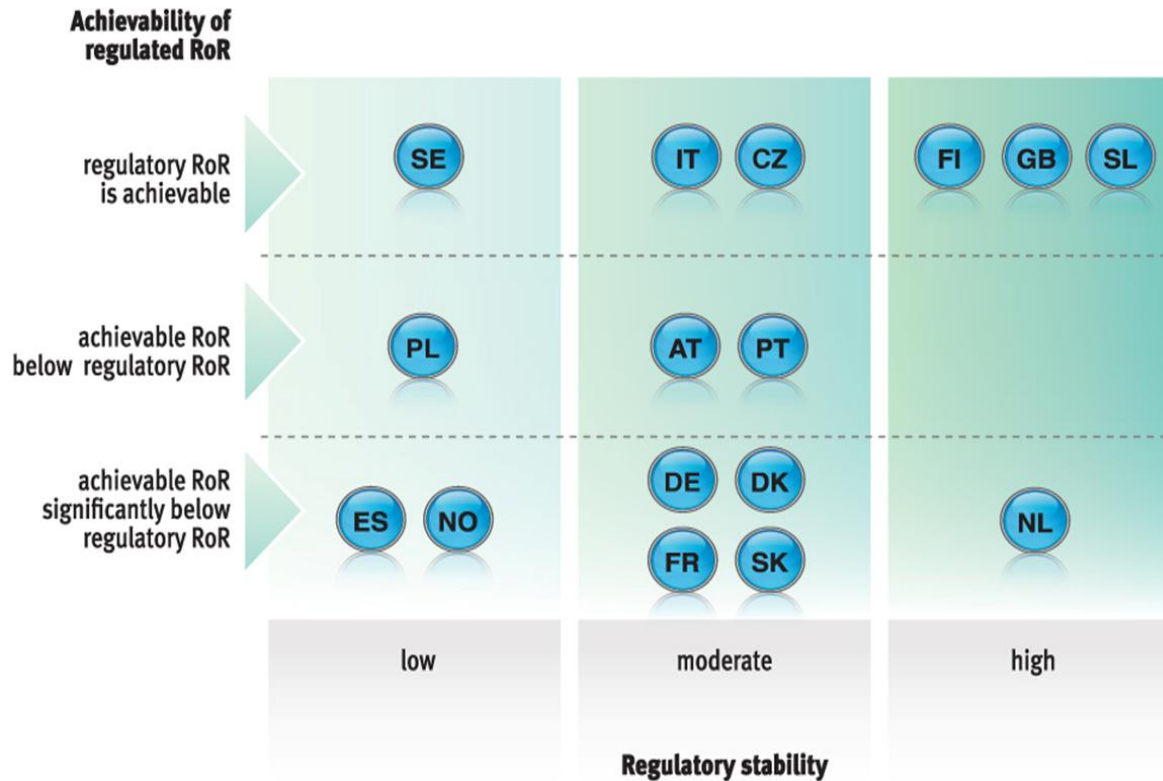 *Source: EC Energy Commissioner, Günther Oettinger*

Why SG needs the Support of Regulators

- Current focus of regional regulation is cost efficiency.

- Prices are set partially according to projections of infrastructure maintenance cost – not Smart Grid implementation costs.

- Cost reduction can lead to better margins but does not incentivize investment in infrastructure.

- New business cases will change the relationship between DSO and suppliers

- Business cases will be enabled by a two-way, reconfigurable grid, allowing a higher degree of multi-dimensional opportunity for new sources of revenues.

Incentives for Smart Gird Investments

Achievability of regulated RoR

	low	moderate	high
regulatory RoR is achievable	SE	IT CZ	FI GB SL
achievable RoR below regulatory RoR	PL	AT PT	
achievable RoR significantly below regulatory RoR	ES NO	DE DK FR SK	NL

Regulatory stability

Evaluation criteria:

RoR achievability
- CAPEX time shift
- efficiency requirements

Regulatory stability
- system stability
- legal certainty
- understandability

Source: Eurelectric

➡ Only DSOs in the upper right quartile have strong incentives to investments.

Today's challenges …
... for Regulators, Utilities and Suppliers

- Improve distribution system reliability and efficiency.
- Enable increased renewables, reduce costs and CO_2.

- Increase effective transmission system capacity and reliability.
- Improve observability of entire transmission system.

- Extend life of assets and reduce CapEx and OpEx.
- Improve overall system utilization.

- Improve planning, operations and maintenance.
- Enable various strategic objectives.

- Provide improved customer information.
- Increase consumer satisfaction & new program participation.