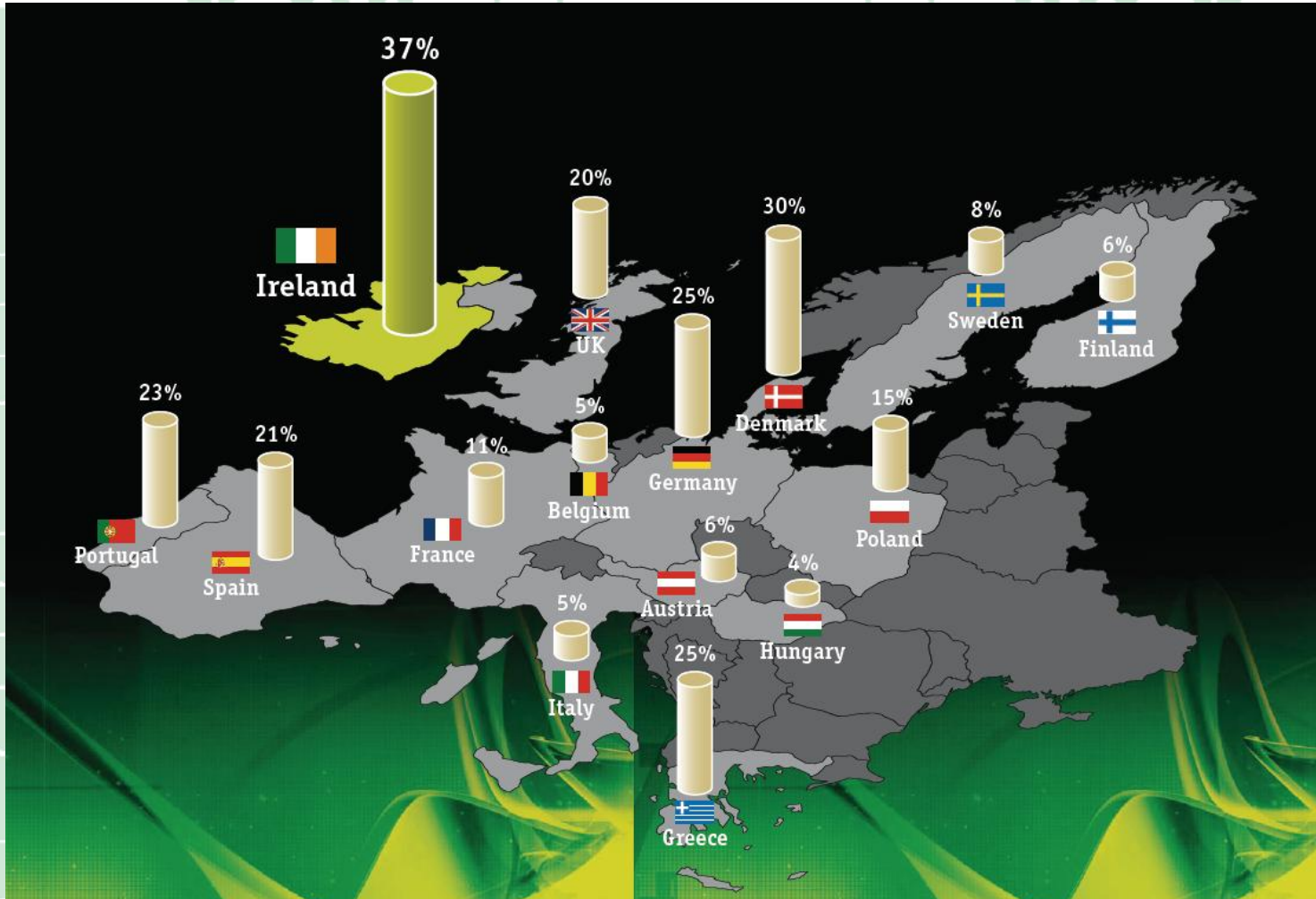


Renewable Integration, The Challenges and the Vision for 2020

October 2010

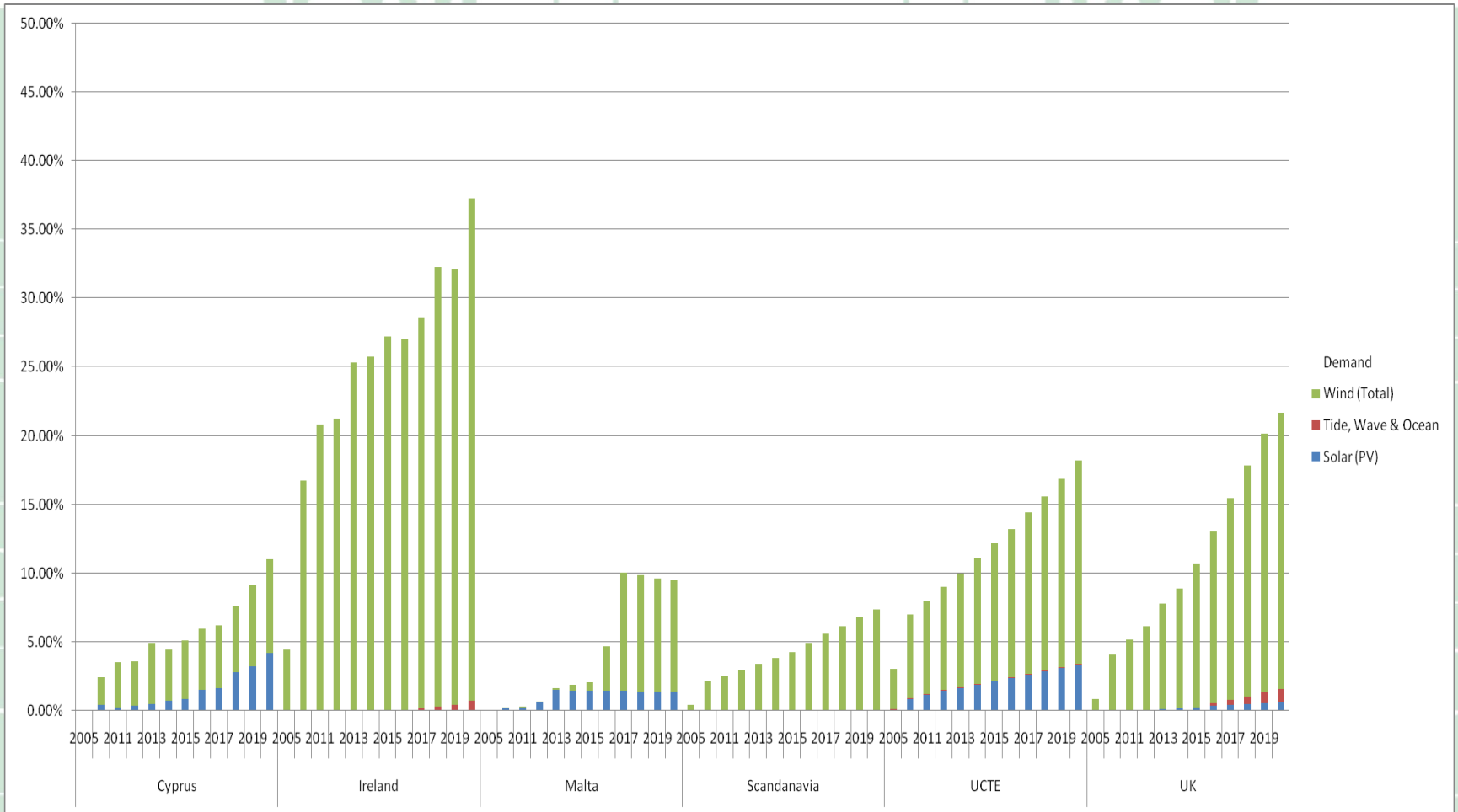
Fintan Slye, EirGrid.

Wind as a % of 2020 RES-E Targets – Select EU Countries





National Renewable Action Plan – European Power Systems Variable Renewable Trajectory



Delivering 40% - The key requirements

- **Grid infrastructure**
- **Innovative and leading system operation**
- **Appropriate market structures**
- **Availability of finance**
- **Coherent planning regime**
- **Certainty over policy**
- **Favourable political and regulatory environment**



Managing the Power System for Large Renewable Deployment

- **Infrastructure**

- Issues that have to be overcome, that act as barriers to generators, network customers, operators and owners in identifying potential projects, understanding their possible returns and constructing their assets in a timely and cost efficient manner

- **Operational**

- Issues that need to be understood and managed that impact safe, secure and reliable operation of the power system
 - In the short to medium term as transition to system with more renewable power
 - In the long term when significant generation from renewable sources

- **Portfolio Performance**

- Issues that need to be overcome to ensure that the necessary mix of generation and demand flexibility capability is provided and continues to behave and be controllable in line with system requirements



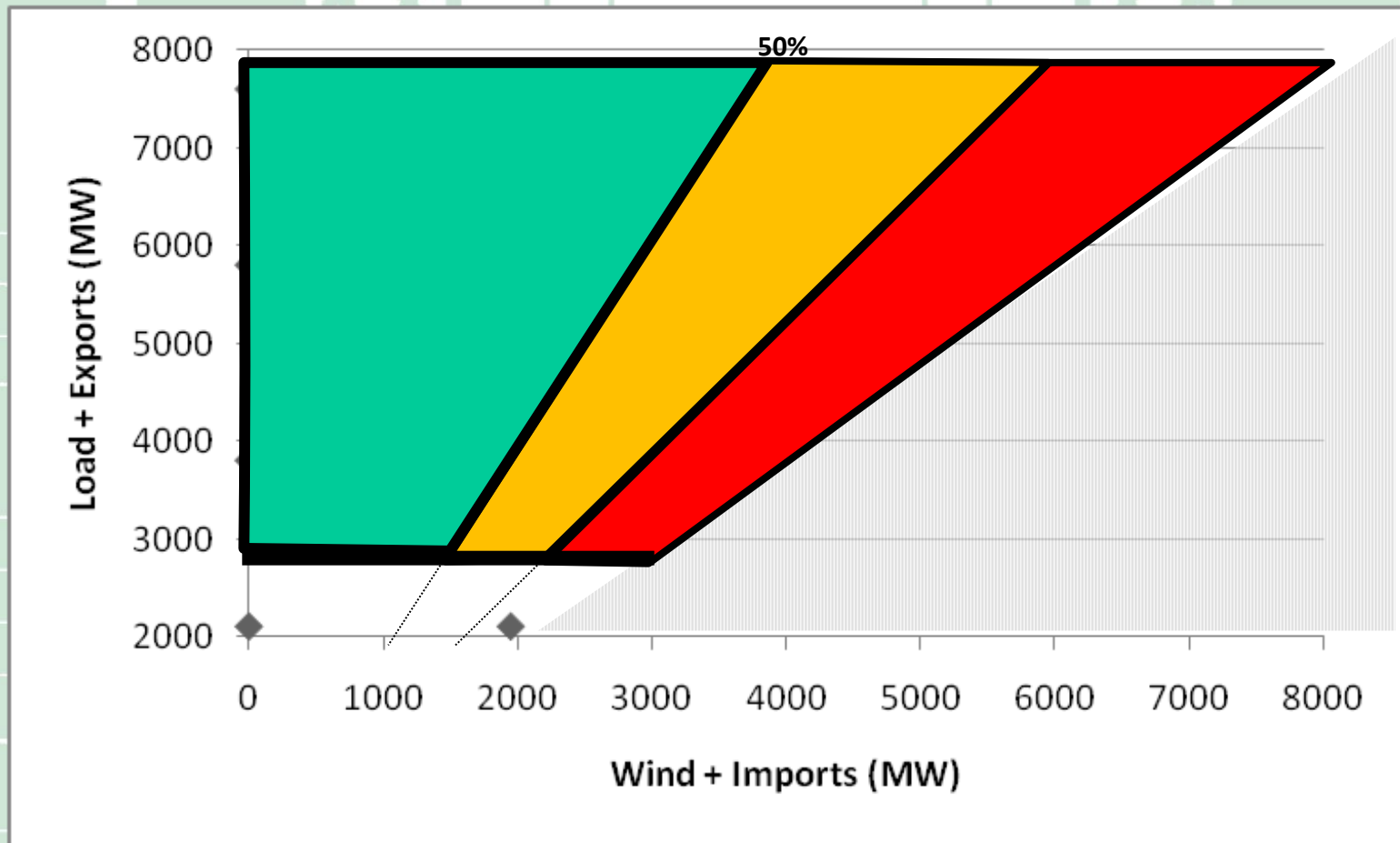
Infrastructure: Grid25 delivery underway



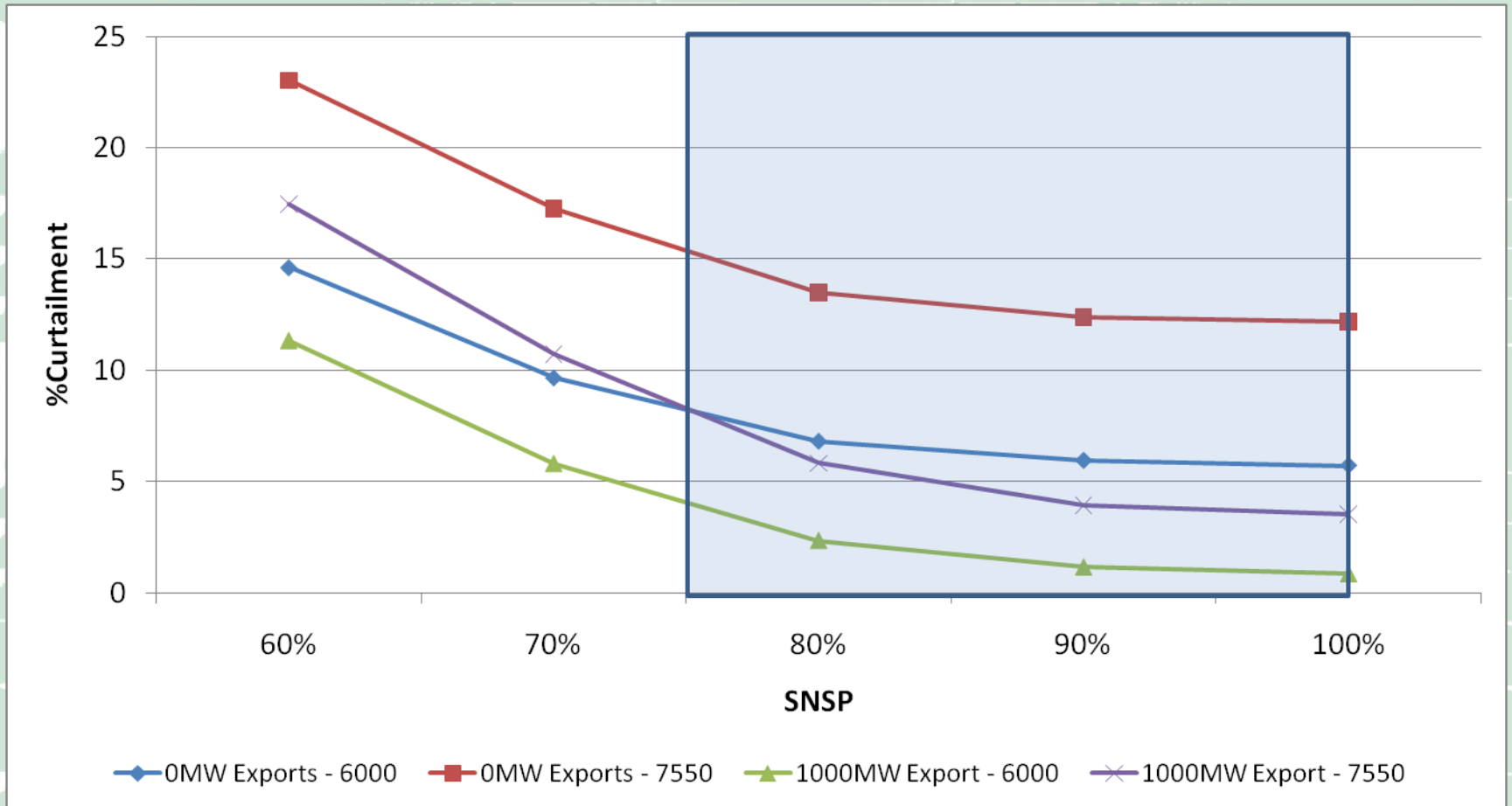
Operational: Key Initiatives

- Managing Increased Complexity
 - Uncertainty - Windfarms, changes in demand, electricification of new loads (car, heat load)
 - Variability - non synchronous renewables (wind, PV, wave)
 - Actors multiple - generator companies, DSU, AGU, customer changes, traders
 - Infrastructure operated closer to limit – Dynamic Line Rating, SPS,
- New Policies
 - Reserve, Reactive Power TSO-DSO, SPS, Remote Control, Forecasting
- New Tools
 - WSAT, Wind Dispatch, Probabilistic Forecast, Security Constrained UC

Facilitation of Renewables (FoR) Studies Operational Boundaries



Requirement for Wind Curtailment



Portfolio Performance: Key Initiatives

- Compliance and monitoring
- Supporting standards for a changing power system
- Identifying the properties of a portfolio capable of supporting renewable targets
- Incentivising and supporting the needs of the system
- Develop a **performance monitoring framework** to ensure all users of the Grid are and remain complaint
- **Develop the Grid Code** to enshrine principles to deal with the changing nature of the power system
- **Facilitation of Renewable study** will quantify levels of flexibility required to support target levels of renewable energy
- **Develop a holistic policy** for the basic financial structures: Energy, Capacity, Ancillary Services and UoS to deliver this necessary portfolio of users

Delivering a power industry enabling large scale renewable deployment

- **Grid infrastructure**
- **Innovative and leading system operation**
- **Appropriate market structures**
- **Availability of finance**
- **Coherent planning regime**
- **Certainty over policy**
- **Favourable political and regulatory environment**

