

# RES-E Market Integration

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## What is meant by market integration?

- A) RES-E does not get support beyond the market price level**
  
- B) RES-E reacts to short term market signals (market prices, demand, costs of balancing)**

- 1. As opposed to network integration, the “the more the better” principle does not apply to market integration.***

- **Network integration important for the very first plant, market integration is not.**
- **Market integration involves more trade-offs.**
- **No EU legal framework like for network integration**
- **Report does not provide a barrier analysis for market integration (How advanced is market integration, how to improve it?)**

***2. Main rationale for integrating RES-E into electricity markets is to exploit their flexibility potential.***

***This requires a clear understanding of the flexibility potential of RES-E in Europe.***

***Market integration is not about cost reflectivity and choosing between RES-E and other technologies.***

<b>RES-E Characteristics</b>	<b>Possible responses</b>
Variability	Turn down RES-E plants
	Manage maintenance periods taking into account market needs
	Chose locations that provide favourable generation profile
Uncertainty	Improve forecasts
	Provide efficient balancing

**3. *Market integration: Support scheme design  
AND market design.***

***RES-E should not be exposed to market risk  
when markets are not ready yet.***

## **RES-E market integration <-> Market Development**

- **Estonia**
  - Premium support scheme
  - Markets not functioning yet, low liquidity, further integration with other markets needed
- **Slovenia**
  - Premium above 5 MW
  - No Balancing + intraday markets, high concentration
- **UK**
  - Quota scheme
  - Concerns about liquidity



***4. Market integration: Market design MORE IMPORTANT THAN support scheme design.***

***For efficient balancing, functioning balancing markets are arguably more important than exposing RES-E to balancing risk.***

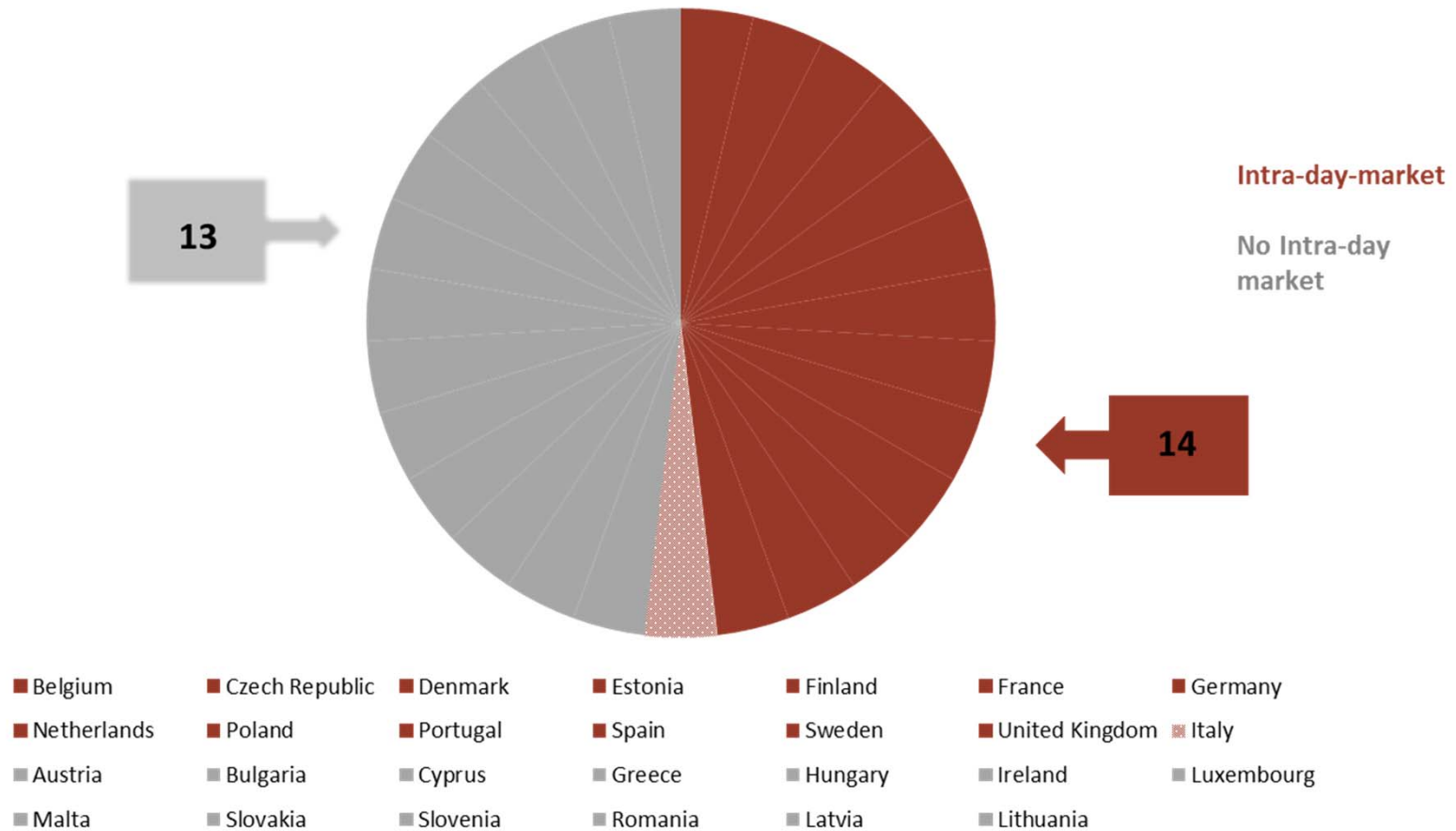
## **RES-E balancing obligation <-> Balancing Market Design**

- **Hungary**
  - No balancing market
  - No intraday market (planned for the end of 2011)
  - But RES-E plants have been exposed to balancing risk

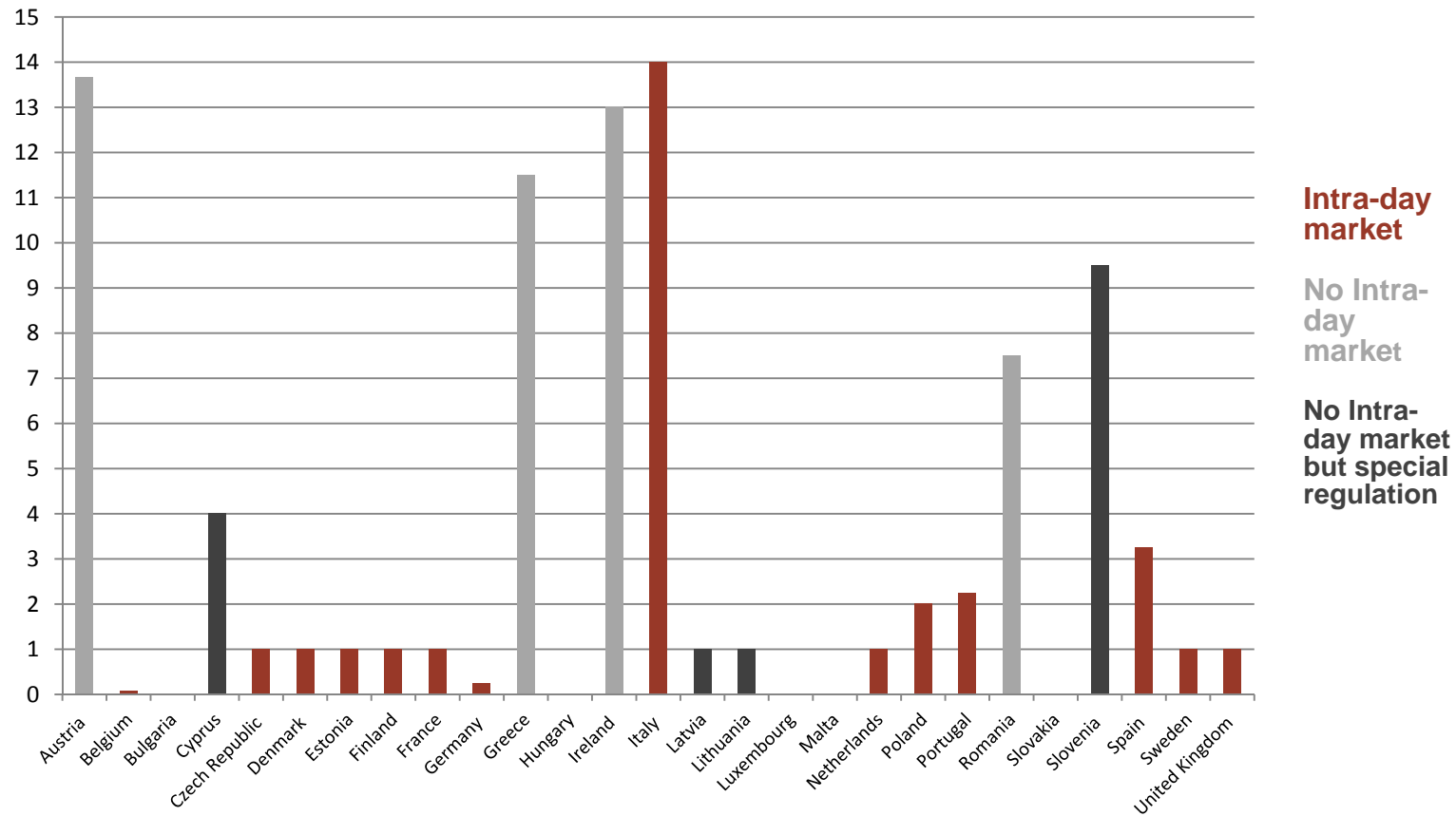
## **5. Market design:**

- ***RES-E integration requires***
  - *functioning markets in general*
  - *more specific mechanisms to deal with the uncertainty of RES-E (intraday markets, short gate closure times)*
- ***Member states generally move into the direction of providing more flexible short-term markets.***
- ***But still large differences in the EU-27.***

# Intraday markets



# Gate closure



**6. Support scheme design:**

***EU-27 review shows a broad range of different regimes that combine various support scheme elements in different ways to exploit RES-E flexibility.***

***There is a broad number of parameters that is critical for fine-tuning these market integration mechanisms.***

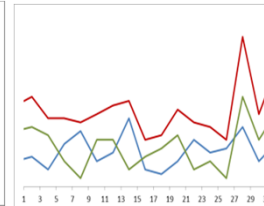
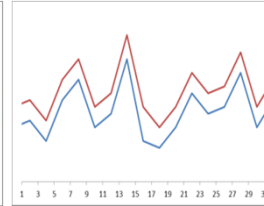
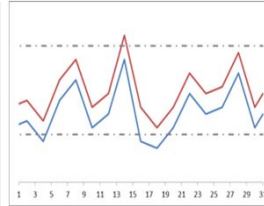
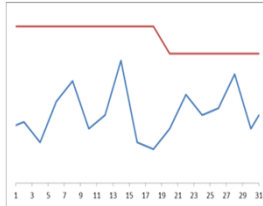
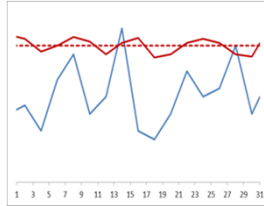
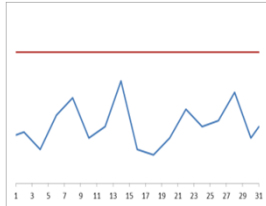
- 7. For evaluating these different schemes:  
Differentiate between price, volume and  
balancing risk.**
- ***RES-E generators should only be exposed to market risk they can manage and where they can provide flexibility to the system.***
  - ***Especially in the case of fluctuating RES-E market integration has to be in line with the variability and uncertainty of their generation profile.***

<i>RES-E Characteristics</i>	<i>Possible responses</i>	<i>Policy Instruments</i>
Variability	Turn down RES-E plants	<i>Expose plants to some level of price risk</i>
	Manage maintenance periods taking into account market needs	<i>Requires support mechanisms that expose RES-E to market signals and functioning markets.</i>
	Chose locations that provide favourable generation profile	<i>Or: Direct control, e.g. when prices become negative.</i>
Uncertainty	Improve forecasts	<p><i>But not necessarily by exposing individual RES-E generators to balancing risk:</i></p> <p><i>Smaller systems are more difficult to forecast</i></p> <p><i>Other actors may be better positioned to provide efficient forecasts</i></p>
	Provide efficient balancing	<p><i>Critically depends on a competitive market and flexible market design (intraday market etc.)</i></p> <p><i>Rather than balancing by individual RES-E generators (may even be counterproductive)</i></p> <p><i>Balancing incentives in the support scheme only addresses the smaller part of the problem</i></p>



Low price risk

High price risk



Fixed Feed-in tariff  
(e.g. Germany)

Sliding premium (e.g. NL, Finland)

Feed-in tariff with varying tariffs  
(Hungary, Spain)

Premium with cap and floor  
(Spain)

Fixed premium  
(CZ, Estonia, Denmark)

Quota with Green Certificates  
(e.g. UK)

### Detailed design questions

Additional market integration mechanisms? (e.g. German green electricity privilege)

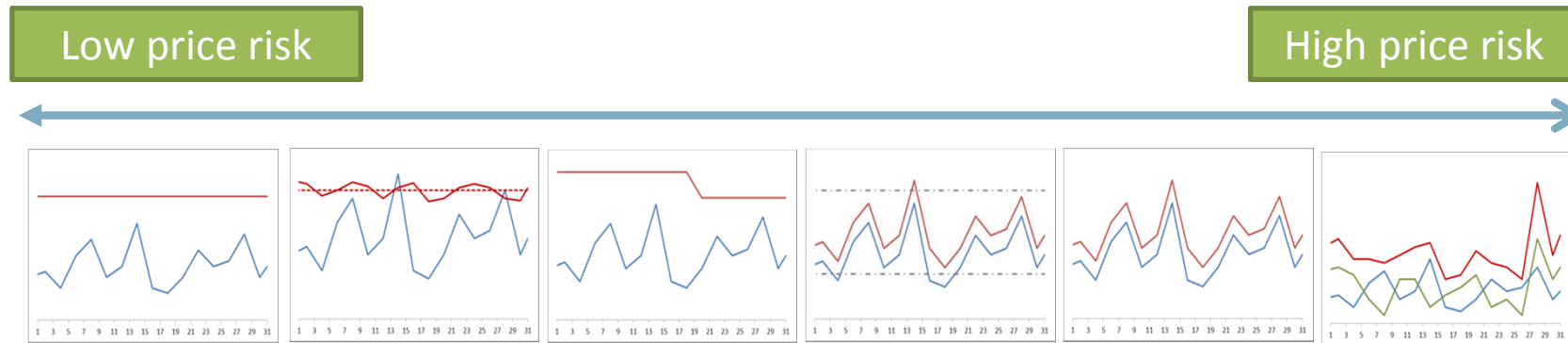
How is the reference price defined (e.g. discussion in Finland)?

What drives the variation?

How are cap and floor set and adapted?

What happens when prices become negative (e.g. Denmark offshore)?

Minimum prices (e.g. Poland)? Are RES-E exposed to short-term signals?



## Risk distribution through combination of different schemes

- Different schemes for different technologies
  - Depending on size
    - e.g. ROC and FiT in the UK
- Option to choose between schemes
  - e.g. between FiT and Premium (e.g. Czech Republic)
  - Opting out rules (e.g. France: opt out, but can't get back)
- Provide a market integration option!

- 8. The review has shown some examples where feed-in schemes have been adapted to introduce an element of price risk.***

## Varying Feed-in Tariffs

- **Hungary**
  - Tariffs vary by time, weekday, summer/winter
  - Weather dependent RES-E are exempted
- **Portugal**
  - Payment calculated each month
  - Including time-of-day optional
- **Spain**
  - Optional time-of-use tariff, except wind, PV, CSP
- **General problem: Variations based on pre-defined demand profiles**

- 9. Different examples in the EU-27 where RES-E generators are provided with an incentive for forecasting and balancing, without being exposed to the full market balancing risk.***

No balancing risk

Full balancing risk



Typically no balancing risk under FiT. Exceptions e.g. Latvia, Spain

Forecast obligation with positive incentive (e.g. Italy)

Forecast obligation (e.g. Bulgaria, no penalty in practice)

Balancing obligation with fixed balancing prices (e.g. Latvia, Denmark on-shore, Hungary) or percentage of market price (e.g. Spain)

Balancing obligation for plants above a certain size (e.g. Estonia, FiT Spain, Latvia, Romania, Slovenia)

Balancing risk above a tolerance band (e.g. in theory under the Bulgarian FiT; for offshore wind in Belgium, FiT Spain, Hungary)

Balancing obligation with bounded balancing prices and symmetric risk distribution (e.g. offshore Belgium)

Shorter gate closure for wind (e.g. Poland)

Full balancing responsibility (e.g. UK, Finland, Sweden)

## Summary

- **Clarify the flexibility potential RES-E can contribute to the EU electricity system.**
  - What are the effects of market integration?
- **Focus on market design, rather than support scheme design to deal with fluctuating RES-E.**
  - Intraday markets
  - Balancing markets
  - Short gate closure
  - How to further improve market design for RES-E?

## Summary

- **Provide a market integration *option***
- **Exposing RES-E to balancing risk should not be a priority.**
  - Efficient market design to provide flexibility is more relevant.
- **It does not need to be the full balancing risk.**
  - There are several options already being tested in member states that expose RES-E only to limited balancing risk.



## RES Integration: Market integration



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