



Balkan Energy and Infrastructure Finance Forum

Financing the future of Balkan Energy

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Can Balkan authorities afford
to subsidise renewable energy?

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1. EU energy policy, legislation and recent changes (~5 min)
2. RES legislation development in Bulgaria (~5 min)
3. Feed-in tariffs vs. Green Certificates (~5 min)
4. Effects of regulation on end prices (~3 min)
5. Q&A (~2 min)

“Assumptions”

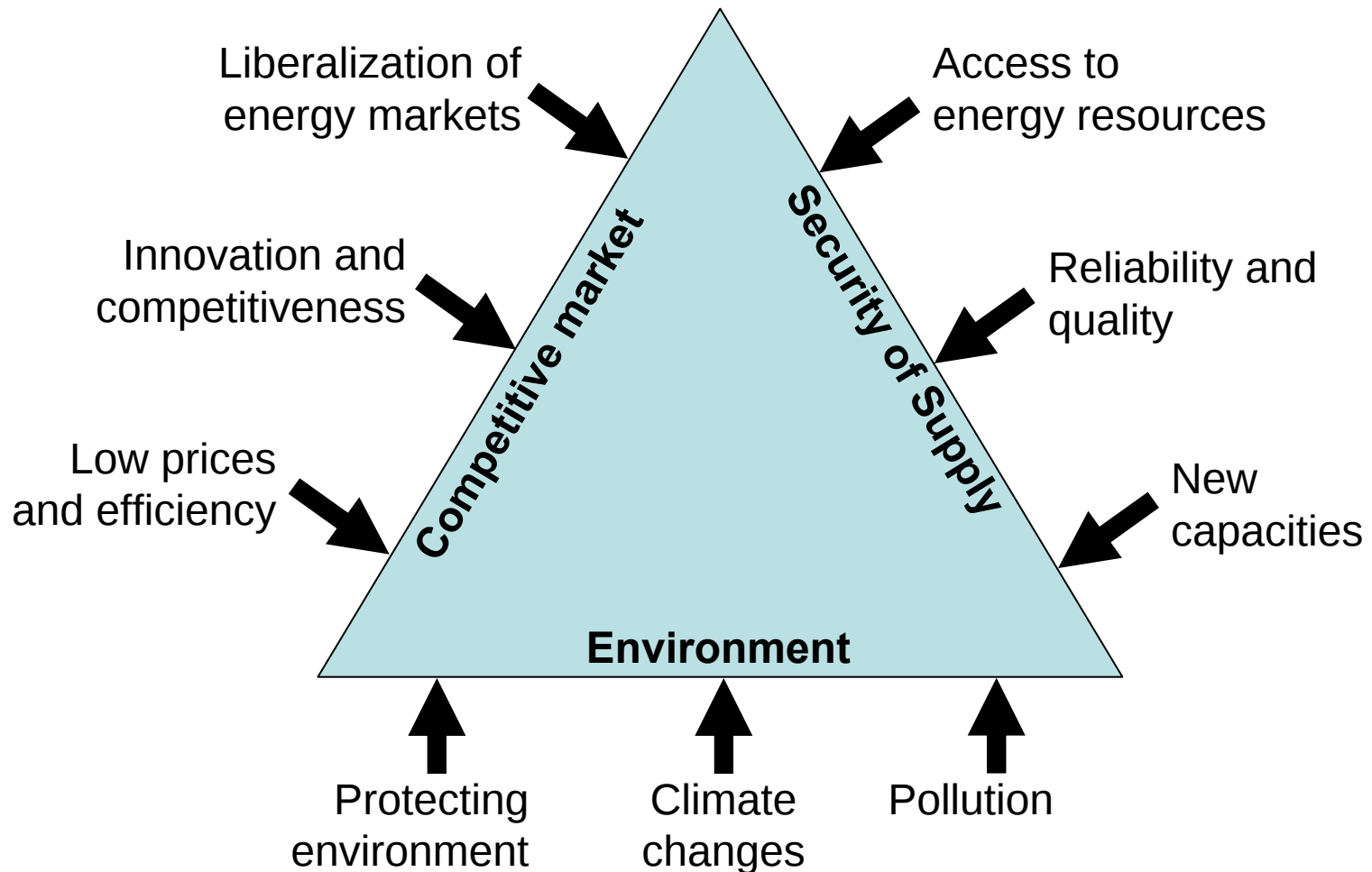
to regulate – “to control an activity, process, or industry officially by using rules”

a regulator – “a person or organization whose job is to be certain that companies, systems, etc. act fairly and follow rules”

to overregulate - to make too many laws and rules that control an activity, especially a type of business or industry

(Source: Macmillan Dictionary)

Pillars of the European energy policy



Game Theory: a “Rock-paper-scissors” game

The best solution for pushing all priorities together: develop infrastructure

European legislation & recent changes (1/4)

- **2009/28/EC – RES Directive (20/20/20)**
 - (14) *“The main purpose of mandatory national targets is to provide certainty for investors and to encourage continuous development of technologies which generate energy from all types of renewable sources.”*
 - Article 2, k) *“‘support scheme’ means any instrument, scheme or mechanism applied by a Member State or a group of Member States, that promotes the use of energy from renewable sources by reducing the cost of that energy, increasing the price at which it can be sold, or increasing, by means of a renewable energy obligation or otherwise, the volume of such energy purchased.”*



European legislation & recent changes (2/4)

- **2009/72/EC – Electricity Market Directive (3rd Package)**
 - (6) “A well-functioning internal market in electricity should provide producers with the appropriate incentives for investing in new power generation, including in electricity from renewable energy sources, paying special attention to the most isolated countries and regions in the Community’s energy market.”
 - Article 25, 4. “A Member State may require the distribution system operator, when dispatching generating installations, to give priority to generating installations using renewable energy sources or waste or producing combined heat and power...”



European legislation & recent changes (3/4)

- **COM(2010) 639 – “Energy 2020. A strategy for competitive, sustainable and secure energy”**
(November 10, 2010)
 - “...The move towards renewable energy use and greater energy efficiency in transport is happening too slowly...”
 - “...The optimum energy mix, including the swift development of renewables, needs a continental market at least. Energy is the market sector where the greatest economic efficiencies can be made on a pan-European scale...”



European legislation & recent changes (4/4)

- **COM(2010) 677 – “Energy infrastructure priorities for 2020 and beyond”** (November 17, 2010)
 - “...The grids must also be urgently extended and upgraded to foster market integration and maintain the existing levels of system's security, but especially to transport and balance electricity generated from renewable sources...”
 - “...At the same time the grids must also become smarter. Reaching the EU's 2020 energy efficiency and renewable targets will not be possible without more innovation and intelligence in the networks at both transmission and distribution level...”



Bulgarian legislation & recent changes (1/7)

- **Energy Strategy of Bulgaria**

- Previous version – voted by Parliament in 2002
- New Energy Strategy for the period until 2020
- Perfect example of the “Rock-paper-scissors” game
- Partisan vs. Consensual document

- 5 main priorities:

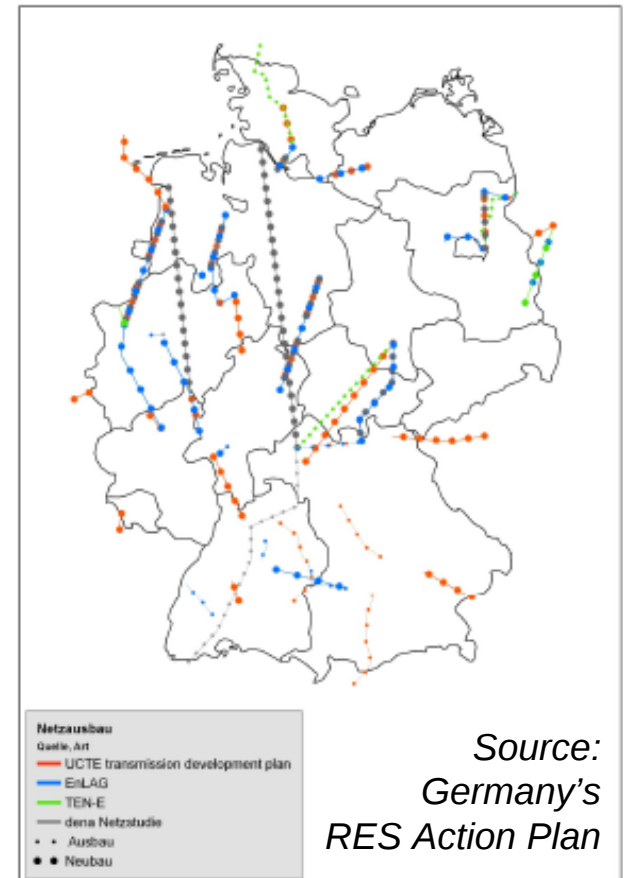
- Security of supply
- Reaching the 2020 target for RES
- Improving energy efficiency
- Developing competitive energy market
- Strengthen social protection (energy poverty)

Bulgarian legislation & recent changes (2/7)

- **National RES Action Plan** (published in mid-2010)
 - Followed the Energy Strategy, but preceded the RES law
 - Defines distribution of RES types in the coming 10 years, according to the national target – 16% in 2020
 - Smart Grids and Electric Vehicles support schemes envisaged
 - Downside: non-consensual document, based on one-by-one talks and comments
 - Environmental impact consultations are being conducted now
 - Review by the European Commission

What is missing

“an overview of necessary grid expansion **measures** in the German power grid”



Source:
Germany's
RES Action Plan

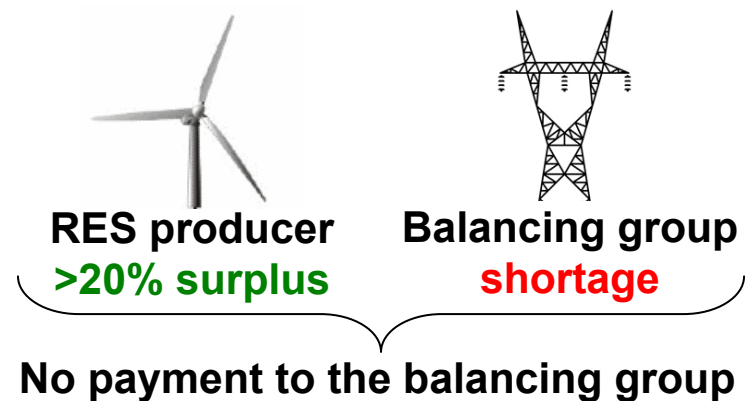
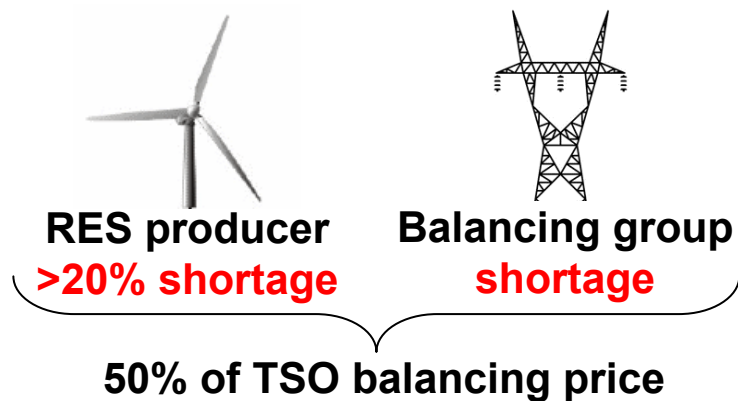
Bulgarian legislation & recent changes (3/7)

- **Electricity Trading Rules** (active since August 2010)
 - Art. 63 (3)&(5): Public Provider and End Suppliers may take responsibility for balancing of RES over 30 kW and make additional contracts with them for balancing mechanisms
 - Art. 70 (2)&(3): **Generators** send day-ahead schedules to the TSO (ESO) until 10:30am; **RES generators** send day-ahead schedules until 12:30pm
 - Art. 198: All RES generators with capacity >30 kW are members of a **special RES balancing group** with a coordinator, appointed by the energy regulator (DKEVR/SEWRC)
 - Art. 199: All RES (>30 kW) should send to the coordinator of the balancing group **annual (for each of the 12 months), monthly (for each week), weekly (for each day) and daily (for the hours in the next day) forecasts** of their production; the coordinator has to send aggregated information to the TSO

Bulgarian legislation & recent changes (4/7)

- **Electricity Trading Rules (continued)**

- Art. 200 (2): The coordinator of the special RES balancing group may waive the **obligation for balancing** of capacities over 30 kW, but in this case the coordinator is responsible for balancing
- Art. 203: RES capacities will not be punished financially for deviations, which are **up to 20%**; However, if deviations are **higher than 20% and if they are contributing to the balancing group's total deviation**, RES producers will pay 50% of the balancing price that the group will pay to the TSO



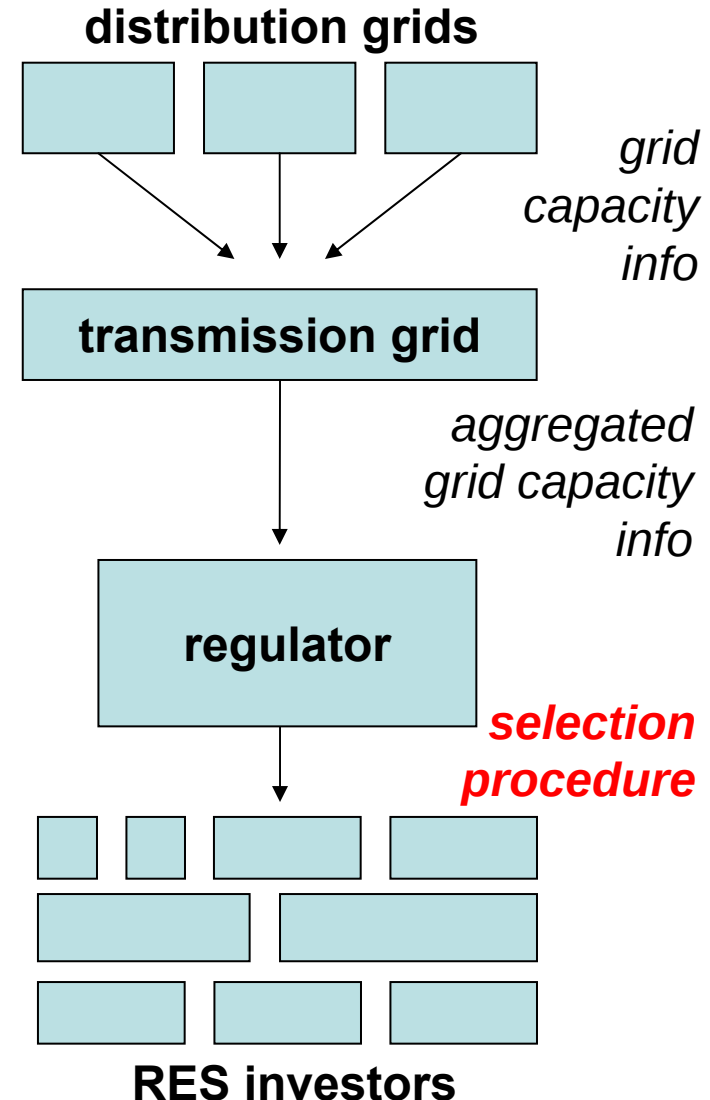
Bulgarian legislation & recent changes (5/7)

- **The effects of the new Balancing Group rules**
 - Better than old balancing rules
 - Setbacks related to individual balancing (and scheduling) of RES, forecasts are complicated for single generators
 - New expenses for RES producers (not included in the calculation of current Feed-in Tariffs)
 - Serving as a deterrent for fast growth of RES in Bulgaria, contradicting to principles in RES law, energy strategy, RES Action Plan, etc.

Bulgarian legislation & recent changes (6/7)

- **Bulgarian Law for Renewable Energy**

- **Available grid capacities** will be announced by transmission and distribution grids each year
- **Application procedure for new RES capacities**, managed by the regulator with participation from grid companies
- Approved RES investors will have to pay a fixed price for connection of **25 thousand EUR per MW** of installed capacity (for over 5 MW capacity), **12.5 thousand EUR per MW** (for <5 MW capacity)



Bulgarian legislation & recent changes (7/7)

- **Bulgarian Law for Renewable Energy**

- Approved RES investors will receive a **fixed feed-in tariff** which will not be diminished during the period of the long-term contract
- Wind capacities – with a **12-year PPA**
- Hydro (<10 MW) & other RES – with a **15-year PPA**
- Solar, geothermal & biomass capacities – with a **20-year PPA**
- A new Agency for Sustainable Energy Development will issue RES certificates (up to now issued by energy regulator); the agency will form from the basis of the current Energy Efficiency Agency

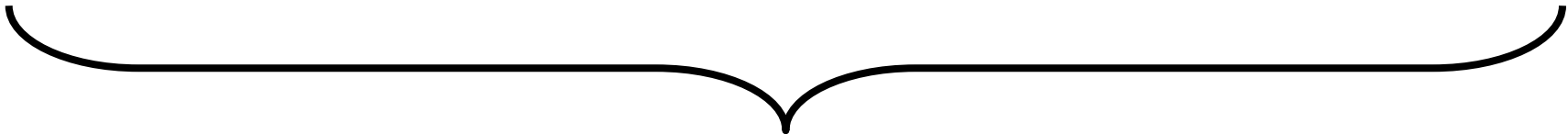
Recapitulate Bulgarian RES legislation

- **National institutions**

- Ministry of Econ. & Energy
- Environment Ministry
- Agriculture Ministry
- Energy Regulator
- New agency for RES
- ...

- **National legislation**

- Energy strategy
- National RES Action plan
- New Law on Energy from RES
- Expected EE Strategy&Law
- New Electricity Trading Rules
- ...



Current trends take us to over-regulation and administrative price-setting **in stead of promoting market principles**

A negative trend: **non-consensual** legislation initiatives

Some aspects that are still not clear

- Long-term (10y, 15y, 20y, etc.) forecasts for the electricity demand in Bulgaria
- Unclear effect of carbon prices on the price of energy from fossil fuels
- Electric vehicles – still not considered in national demand forecasts
- Many questions related to the realization of big energy projects
- The effects of energy efficiency measures may vary greatly

Negative effects:

- Unpredictable environment
- Higher risk for investments
- Bad allocation of RES types
- Higher costs for society
- ...

Thesis, Antithesis, and Synthesis

Thesis:

“Bulgarian energy and RES markets are over-regulated, which takes them far away from market principles.”

Antithesis:

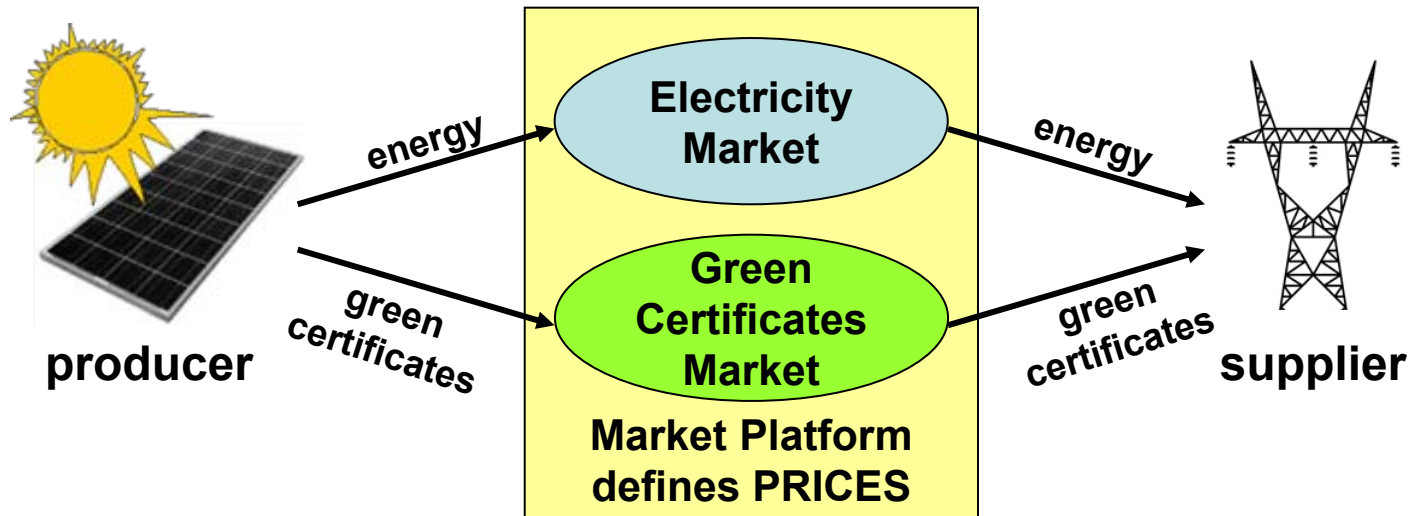
“Market principles will not be able to replace heavy administrative regulatory rules by a magic wand and at once.”

Synthesis:

“Normal levels of regulation and real market conditions can be achieved step-by-step, but only if the steps are in the right direction.”

An alternative to over-regulation

- **Current Feed-in Tariffs formed by:**
 - A **fixed base price** (80% of average end price in “Year-1”)
 - A **fixed green component**, depending on the RES technology
- **Alternative RES support schemes:**
 - Base price formed by **market price of electricity**
 - Green component, based on **market price of green certificates**



Feed-in Tariffs vs. Green Certificates

Green Certificates

Positive features:

- Promoting efficient use of capital
- Reaching 20/20/20 by setting targets for suppliers
- Defining the real price of consumers' "green energy" demand

Negative features:

- Green certificates markets are complicated
- No GC market is possible without an electricity market (power market exchange)
- Still no single EU-wide scheme for trading GC is present

Feed-in Tariffs

Positive features:

- Long-term guarantees diminish investment risks and financing costs
- Most of the EU countries use FiT and their effect is well known
- Economic efficiency if prices are set wisely

Negative features

- Long-term contracts
- Uncontrolled growth of RES and high costs for society
- Risk of over-regulation - too much administratively-set prices

Case Study: Green Certificates in Romania

- National target for RES (2020) – 38%
- Green Certificates since 2005
- Market operator: OPCOM
- Participants: 73 suppliers and 44 producers
- Electricity is traded separately from Green Certificates
- Quota requirements for suppliers – up to 20% in 2020
- Price floor & ceiling: 27-55 EUR

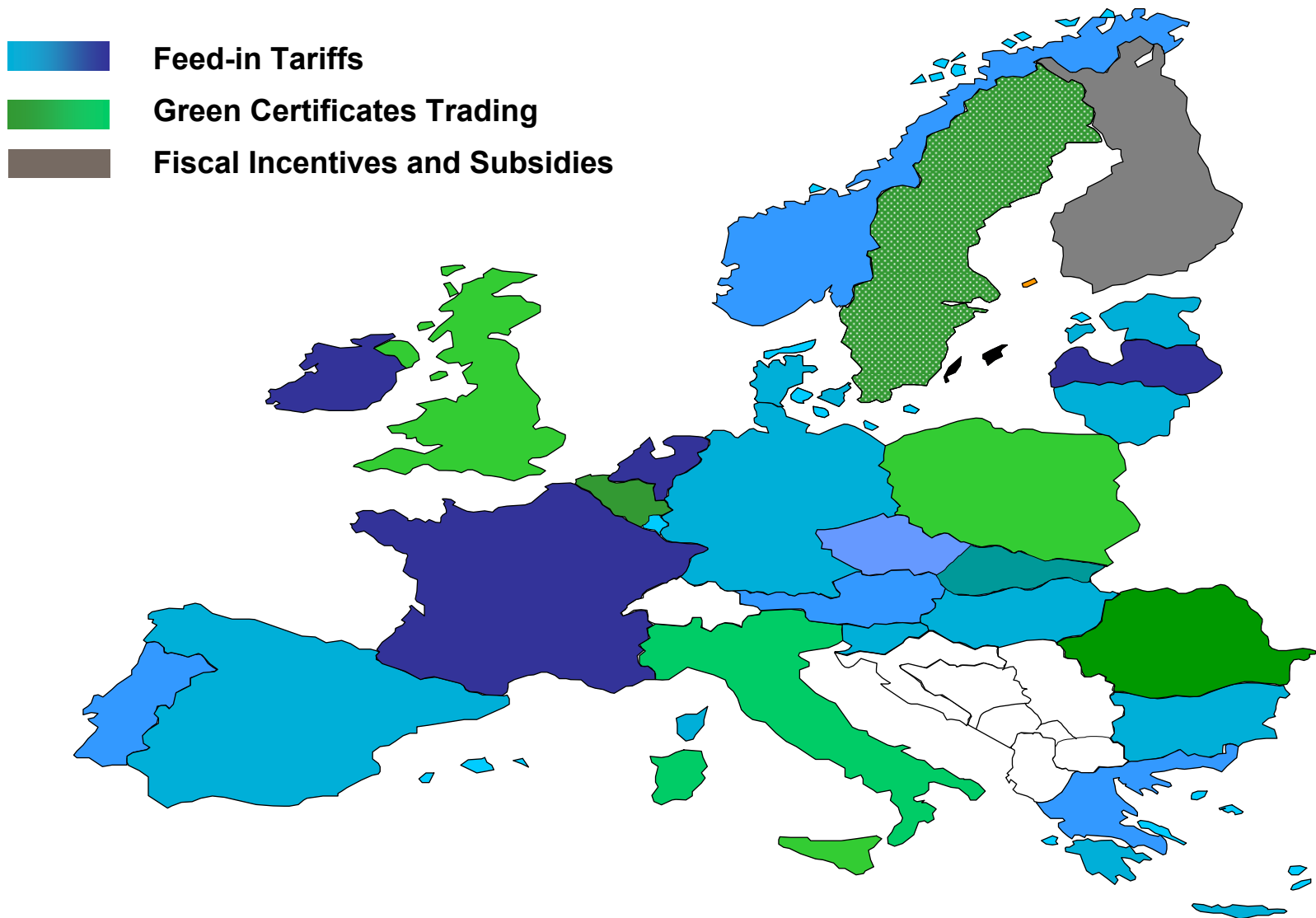
- **Fine tuning instruments:**

- Number of GCs per MWh
- Quotas
- Price floor & ceiling

Prioritizing RES (GC per MWh)

- | | |
|------------------|---------------|
| - Wind | 1-2 |
| - Biomass/Biogas | 3-4 |
| - Photovoltaic | 6 (up from 4) |

RES support schemes in the EU



Source: Statkraft

Towards common RES regulation

“...guaranteed payments have become more or less harmonised in the different jurisdictions without regulative interference from the EU...”

Source: the study “Comparative study on the main renewable energy support mechanisms in European jurisdictions” conducted by CMS Cameron McKenna LLP (<http://bit.ly/RES-support>).

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- An additional incentive for common EU RES support schemes – transfer of RES obligations from “leaders” to “followers” (and the 90 EUR/MWh fine for non-compliance)

Effects of RES regulation on end prices

- Several price aspects to be considered (2011-2020)
 - CO2 quotas prices for TPPs
 - Nuclear phase-out in some countries?
 - Fossil fuel prices (oil => gas => coal pricing)
 - Natural gas - from long-term contracts to spot prices
 - Smart Grids investments
 - Technological development for RES (diminishing costs)
- Onshore wind – closest to grid parity

The global road to grid parity

- In 2009, 62% of newly installed electricity generation capacity in the EU was from renewable sources, mainly wind and solar (a total of 17 GW)
- China builds half of the global new wind capacities per year
- Wind-focused companies experienced more challenging environment; solar-focused companies appear to have turned the corner
- Concentrated Solar Power (CSP) technologies moving ahead, parabolic trough being the most mature one (94% of CSP capacities)



Source:
*Renewable Energy Country
Attractiveness Indices,
Issue Nov. 2010
by Ernst & Young*

The Bulgarian road to grid parity

- Improve legislation on a systematic basis, considering separate documents (strategies, plans, laws, ordinances, etc.) simultaneously;
- Coordinate institutional actions (ministries, regulator, other agencies);
- Improve infrastructure – through public review of the 10-year transmission & distribution grid development plans;
- Introduce market principles to both electricity and RES markets in order to achieve better efficiency.

Thank you for your kind attention!

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