

ENERGY STRATEGY OF THE ENERGY COMMUNITY

**25 th PHLG meeting
21 June 2012, Vienna**



- The Strategy was developed by the Task Force with technical assistance sponsored by USAID; ECS provided support .
- It has two phases: (1) A Strategy paper (to be endorsed by the MC in October) and (2) Projects of Energy Community Interest .
- **Phase 1:** The Strategy paper: it is not expected to be a collection of national strategies, nor a technical analysis of each CP energy sector; it should give the regional overview and send the right signals to governments, incumbent companies, IFIs and private investors.
- Objectives and deadlines are set at the Energy Community level and not individually.

- **Scenario analysis was based on the CPs own proposals for new infrastructure, as well as the work of other stakeholders (TSOs, energy planning teams, task forces, etc.). An analytical framework was created for the purpose of the Task Force work by USAID sponsored experts.**
- **The scenario analysis demonstrates the importance of a regional approach for some energy project development efforts (e.g., gas infrastructure).**
- **The scenario analysis also demonstrates the danger associated with business as usual. Without a change in approach going forward, there is the likelihood of growing unmet demand for electricity.**
- **The scenarios indicate the potentially large investment needs required for the region to meet supply adequacy. Between 2012-2020, an estimated 39.1 billion Euros of investments are needed under the scenario that focuses on minimum supply adequacy.**

- **Going forward into the next phase, it is important to focus on identifying those projects of regional importance that would benefit from additional interventions such as:**
 - **Policy and regulatory instruments**
 - **Technical assistance**
 - **Financing mechanisms.**
- **This is NOT intended to replace or supplant each CP's own strategy or project development priorities, but is focused on projects of regional significance that would benefit from additional support.**

This is the challenge for the second phase of work.

- **Content**
- **Objectives of the Energy Community**
- **Actions required to meet the objectives**
- **Current situation and national trends**
- **Energy demand scenarios and investment needs**
- **Regional infrastructure development**
 - **Criteria for identification of projects of Energy Community interest**
- **Conclusions and Recommendations**

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Objectives of the Energy Community

Objective 1: Creating a Competitive Integrated Regional Energy Market

Objective 2: Attracting investments in energy

Objective 3: Providing secure and sustainable energy supply to customers

Actions to meet the objectives:

- ✓ *Actions related to market reforms*
- ✓ *Actions related to price regulation and network tariffs*
- ✓ *Actions related to energy infrastructure*
- ✓ *Actions related to regulatory barriers*
- ✓ *Actions related to security of energy supply*
- ✓ *Action(s) related to energy efficiency*
- ✓ *Action(s) related to renewable energy*
- ✓ *Actions related to environmental protection*
- ✓ *Action related to protection of customers*

I. Methodology and stocktaking

- Based on the CPs inputs, mainly from national strategies
- Significant diversity among national strategies: date, timeframe, units, scenarios, methodologies
- Difficult to obtain fully comparable data for the whole region

II. Brief overview of the energy sectors in the Energy Community - common features:

- Small and fragmented markets, with exception of Ukraine
- Dependent on domestic fossil fuel (coal/lignite) or imported gas and oil
- High potential for renewable energy, especially hydro, biomass, wind, solar
- Power generation based on technologies from 60' and 70' – exceeding their life span, reliability and environment constraints
- Urgent need for major retrofit, and new plants

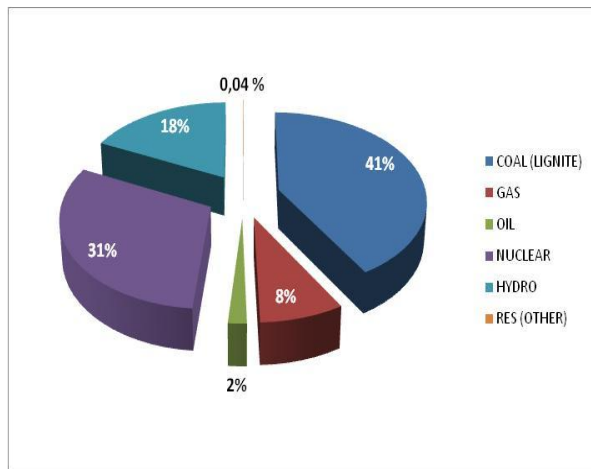
Current situation and trends (2)

Electricity domestic generation 2009

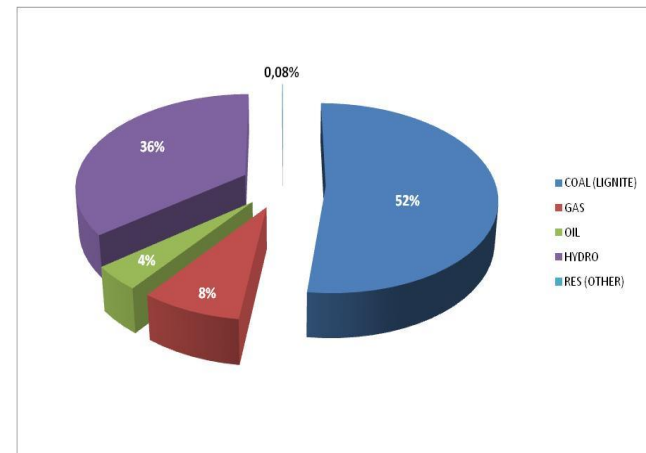
103.5 TWh (without UA)

271 TWh (with UA)

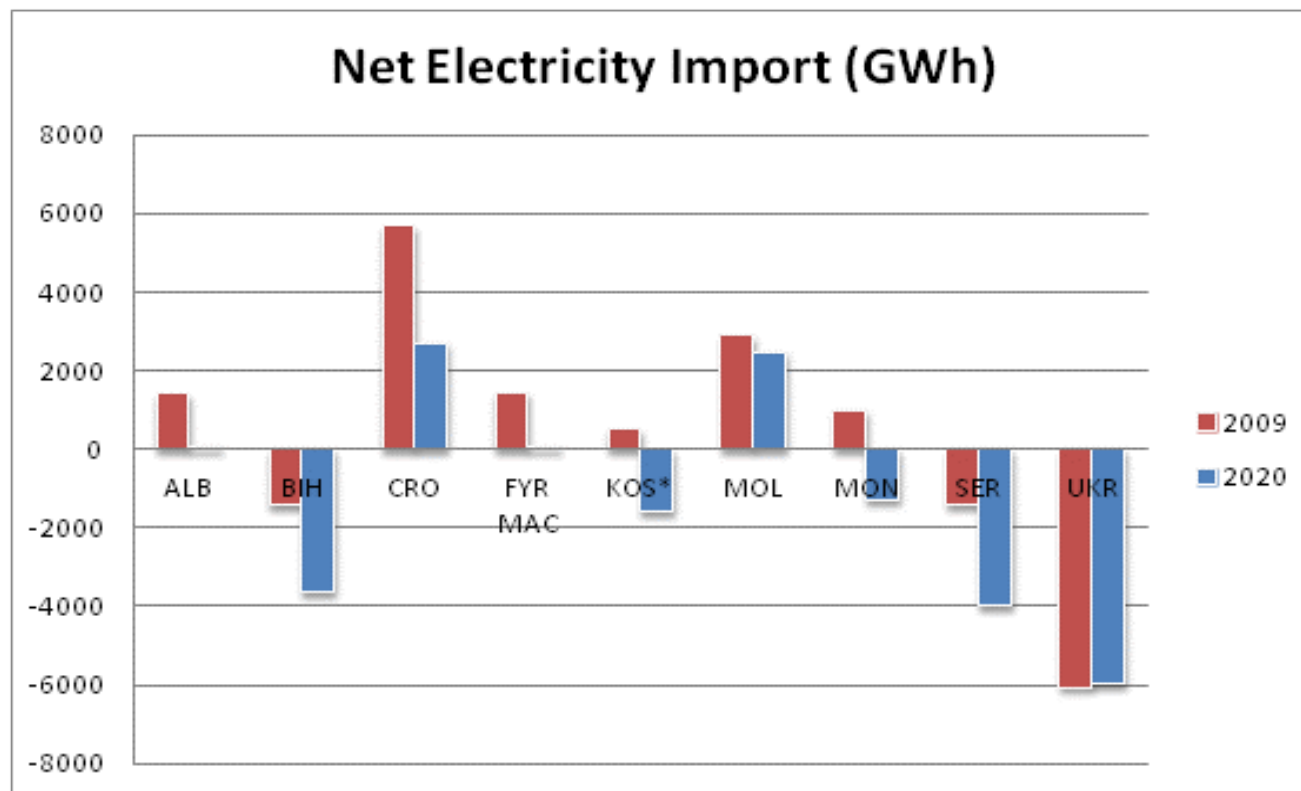
All Contracting Parties



2009, WBs and Moldova



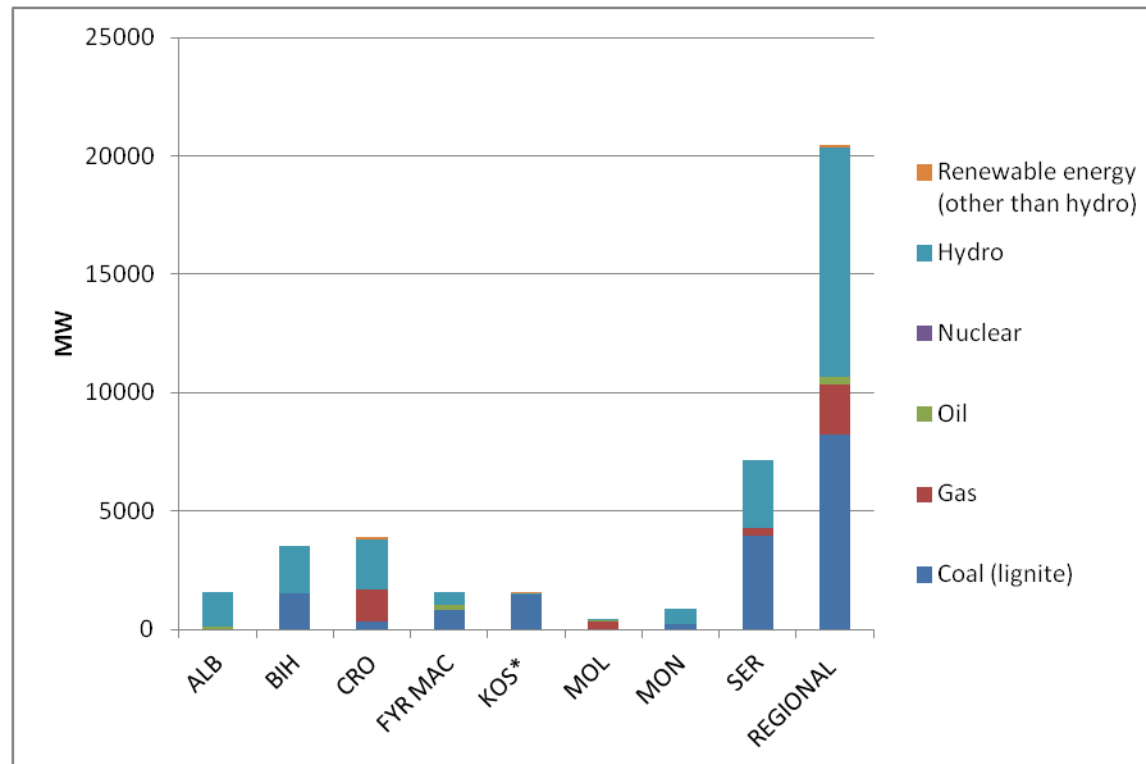
Electricity import/export balance in 2009 and forecasts for 2020



Net importers in 2020: Albania, Croatia, Moldova

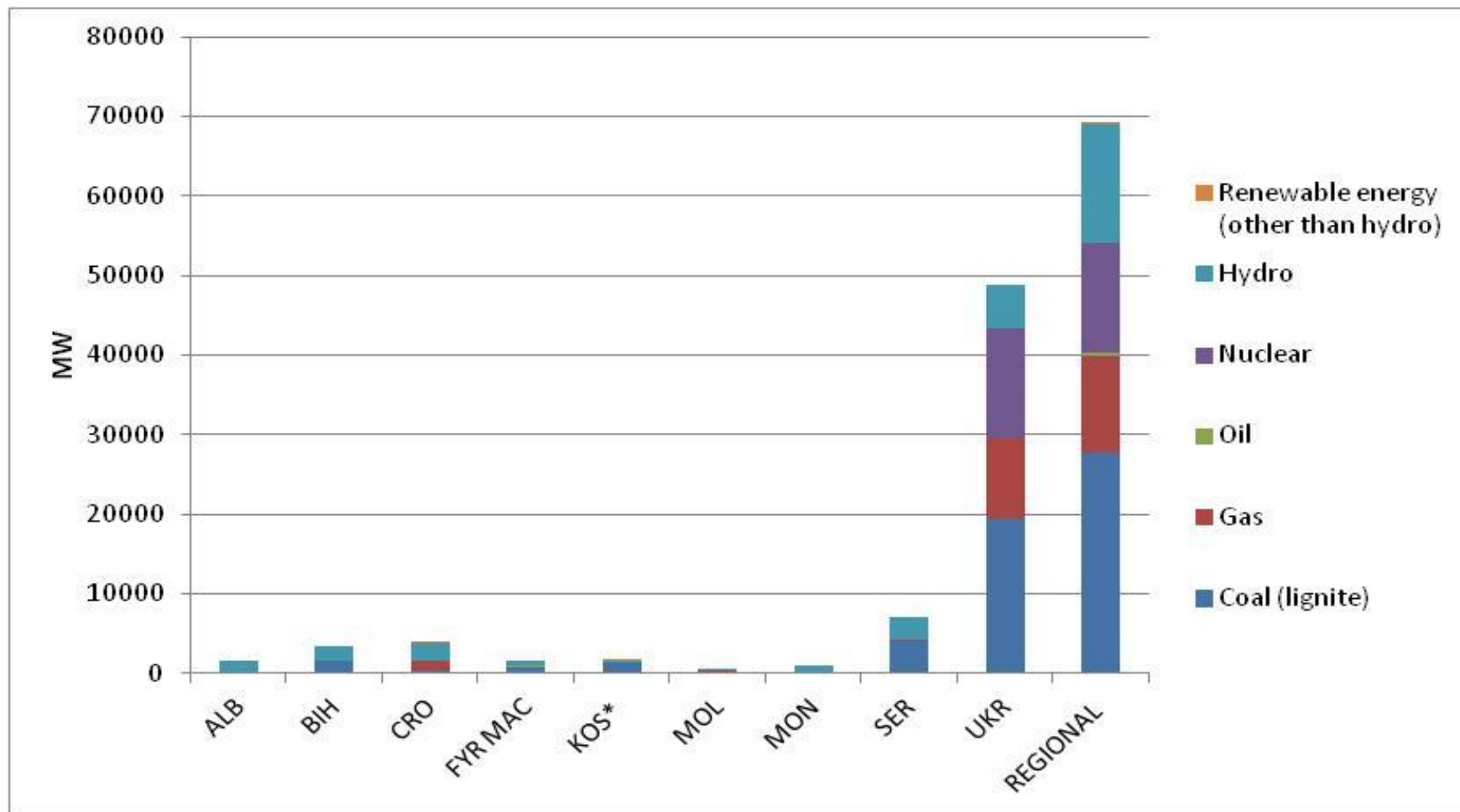
* Throughout the entire document, this designation is without prejudice to positions on status, and is in line with UNSCR 1244 and ICJ Opinion on the Kosovo declaration of independence.

Installed capacity in MW in 2009 (WBs and Moldova) - 20.6 GW



Current situation and trends (5)

Installed capacity in MW in 2009 (All Contracting Parties) - 69.3 GW

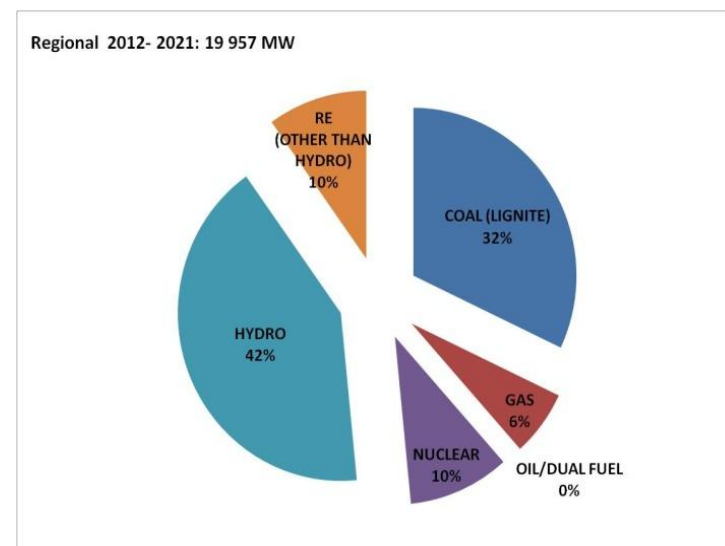
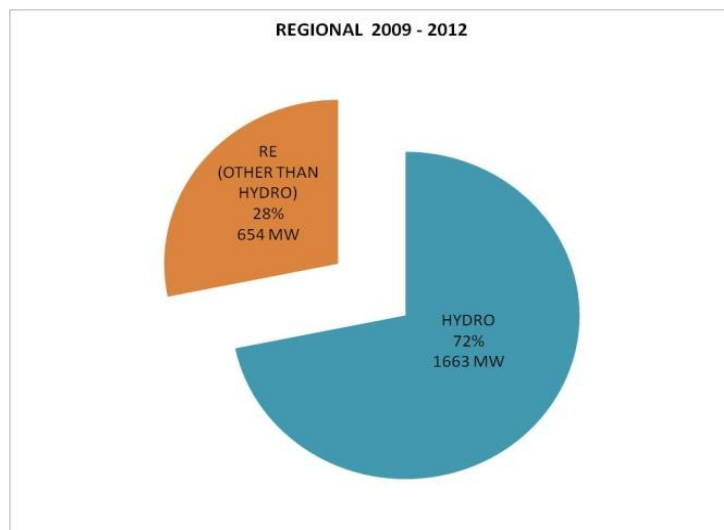


New (planned) installed capacity

The forecasted new power generation capacity:

20 GW, between 2012 and 2020 (or 2021) in total, of which, in Ukraine approx 8.1 GW (2009-2020)!!!!

This represents a total **30% increase, respectively 60.9% in WBs and Moldova**



Current situation and trends (8)

Natural gas supply and consumption

- **Domestic natural gas production** is almost exclusively in Croatia with 2.71bcm/year (in 2009), expected to decline to 2,61 bcm/year in 2020.
- **Consumption in 2009:** 7,342 bcm (without Ukraine)
- **Forecast consumption** in 2015: approximately 11,776 bcm, (+60%) Croatia, the Former Yugoslav Republic of Macedonia, Moldova and Serbia will contribute to this increased demand

Oil and oil products supply and consumption

- **Regional production** (Albania, Bosnia and Herzegovina, Croatia, Moldova and Serbia) 2,763.40 ktoe in 2009; appears that oil production will increase significantly in Bosnia and Herzegovina and Moldova by 2021
- **Imported:** 14,905.17 ktoe
- **Regional consumption of oil and oil products in 2009 was 12,727.46 ktoe**
- **Significant increase of oil and oil products consumption by 2020** (between 35% and 70%) was reported by Albania, Croatia, the Former Yugoslav Republic of Macedonia and Montenegro; however, only Croatia and the Former Yugoslav Republic of Macedonia plans to significantly increase the use of oil for power generation.

Current situation and trends (9)

New infrastructure

Electricity interconnectors: WBIF TA

- Gas interconnectors and “gas ring”, gas storage, LNG ?
- Oil pipelines and oil terminals

SWOT

Main strengths: EU drive; potential for growth; indigenous resources (coal, gas: CR, UA), renewable energy; trained and (still) unexpensive labor force

Main weaknesses: small, fragmented markets (exc. Ukraine); incomplete reforms/market opening; electricity (regulated) tariffs not fully reflecting marginal costs;

Opportunities: potential for investments in gas, renewable energy; renewal of power generation fleet driven by environmental concerns; energy efficient technologies on demand side

Threats: reforms are not finalised; investments are not flowing in; constrained economic growth, due to electricity shortage; competition not encouraged widened gap

The task force decided that scenario analysis should be used, as a way to understand the regional energy outlook and potential value of a regional energy strategy.

Three scenarios were selected:

- ‘*Current trends*’ – if current trends in development of the energy sector continue, what are the implications?
- ‘*Minimal investment cost*’ – what are the minimal costs required to ensure that there is adequate supply of electricity to meet demand?
- ‘*Low Emissions Development/Sustainability*’ - if more aggressive promotion of EE and RE was pursued, what might be the implications?

The specific process used had five elements to create a specific year 'snapshot' for 2020, 2025 and 2030

- Energy demand analysis
- Supply resource assessment for both generation and capacity
- Investment cost analysis
- Fuel price and O&M analysis
- Environmental analysis (quantification of CO2 emissions).

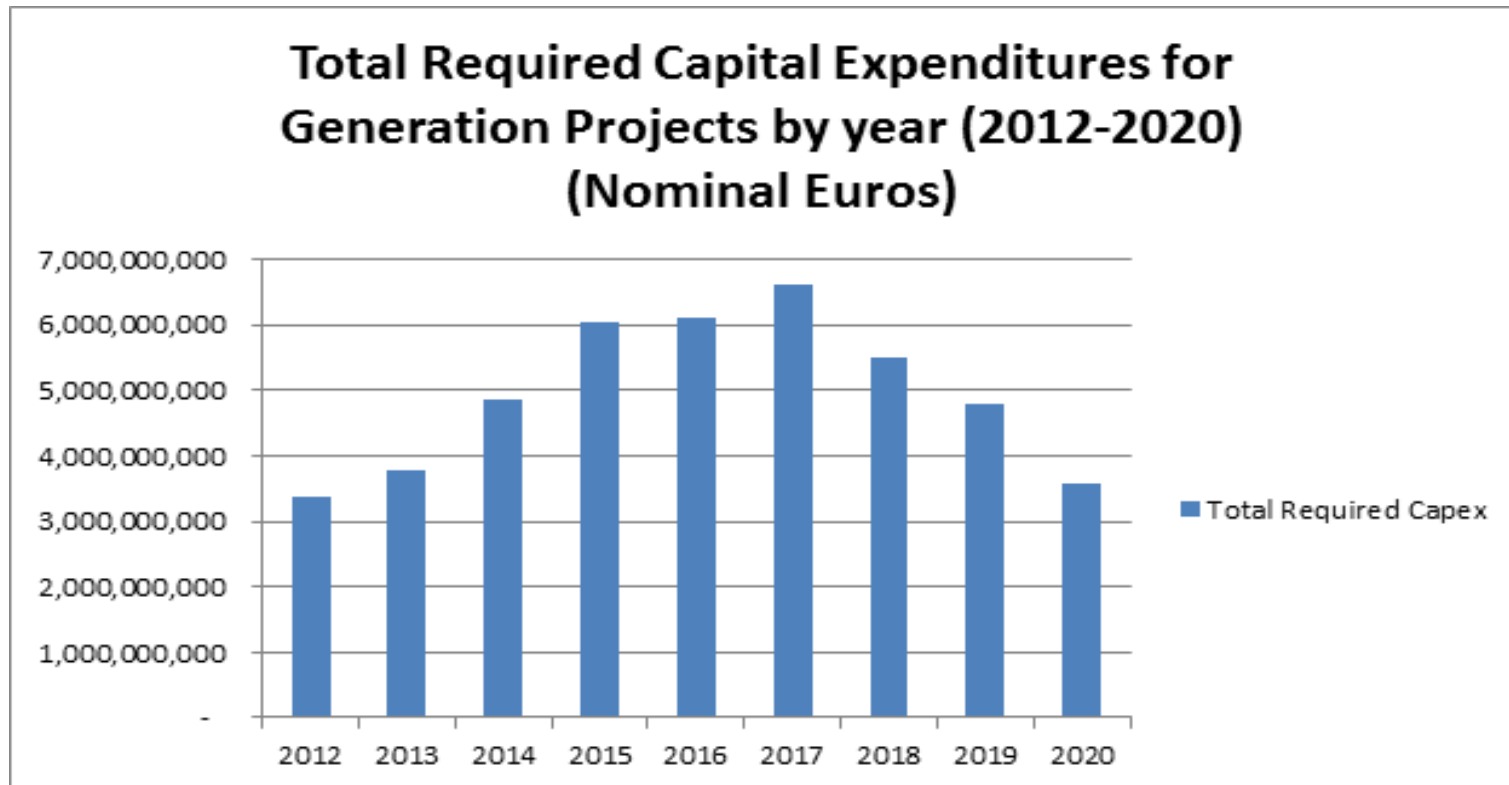
A number of important assumptions:

- Median average IEA overnight capital costs for new plant
- Energy demand taken from the RETF
- New facilities in line with what each of the CPs has suggested
- O&M costs based on current plant figures adjusted over time
- IEA fuel price projections with some modifications to account for lignite
- CO2 emission factors based on current plant and end-use emission factors
- Results of earlier extensive studies used throughout.

Results for 2020, 2025, 2030

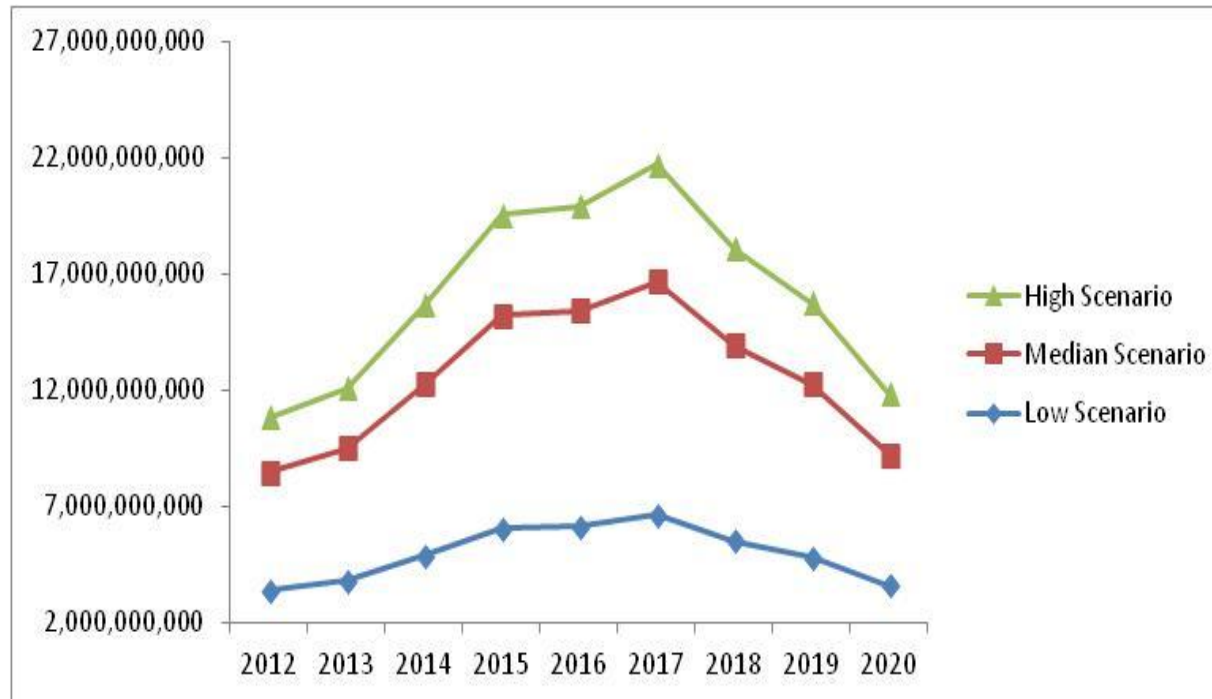
Scenarios and Key Results.	Unmet Demand (TWh)	Total Annualized Investment Costs	Annual Fuel and O&M Costs	Total Annual Costs	CO (Gt)
Current Trends	70 143 220	1.6 2.1 2.5	10.6 12.8 15.9	12.2 14.9 18.4	499,152 584,211 619,813
Minimal Investment Costs	0	3.5 4.3 5.5	11.4 14.4 17.5	14.9 18.7 23.0	421,045 499,433 592,452
Low Emissions/ Sustainability	0	6.5 9.1 11.1	8.8 10.1 12.2	15.3 21.3 23.3	350,499 376,188 414,093

Total Capex by 2020: 44.6 billion Euro



This represents only those projects identified by the CPs, that are expected to be on line by 2020.

Sensitivity by 2020, based on IEA Overnight costs by Fuel Type



Using the high end of the IEA projection leads to an increase in capital investment costs to 68.3 billion Euros, an increase of 53%; the low end, reduces the investment costs to 32.5 billion, a decrease from the 44.6 billion median case by 27%.

Interest (1)

This work will be undertaken during the second phase. Preliminary work has been initiated during the first phase.

Electricity: Priority infrastructure axes

According to the ENTSO E Regional Investment Plan, RG Continental South Europe (CSE), the predominant power flow directions are East–West and North–South;

Main drivers for future development of the transmission grid in the Energy Community and its EU neighbours include:

- Contribution to market integration in the region;
- Connection of new conventional generation and future renewable energy production;
- Enhancement of security of supply; and,
- Extension and further reinforcement of the synchronous zone to the East.

Gas: Closely linked to the opening of the Southern Gas Corridor which aims at linking directly the EU gas market to the Caspian/Middle East.

Interest (2)

Power generation:

- New generation capacities over 300 MW installed (including adding new units to existing facilities)
- Modernization, retrofitting of existing power plants, allowing for more efficient and environmentally safe production

Electricity transmission:

- High-voltage lines: OHL minimum 220 kV; and underground and submarine transmission cables, minimum 150 kV or more
- Electricity storage facilities
- Smart meters and ancillary equipment
- Equipment *for the safe, secure and efficient operation of the system*

Gas transmission:

- Gas transmission pipelines (bi-directional capacity)
- Underground storage facilities
- LNG and CNG terminals
- Equipment for the safe, secure and efficient operation of the system

Oil:

- Refinery improvements for facilitating improved fuel quality
- Storage facilities to contribute to the security stockholding obligations
- Pipelines used to transport crude oil

Criteria:

- *Contribution to the implementation of Regional Energy Strategy's objectives*
- *Contribution to regional market integration, and enhanced competition*
- *Security of supply (i.e. through diversification of supply sources, supplying counterparts and routes)*
- *Contribution to sustainable energy development*
- *Maturity of the project*
- *Commercial strength of the project*

Conclusions

- Energy investments in the order of € 44.6 billion of which € 28.8 billion in the WBs and Moldova are expected before 2020, based on CPs own projections and plans
- Investment decisions and choices will have a long term impact
- Both private and public investment in energy infrastructure needed to be mobilised
- Barriers still exists

Recommendations

- Pursue actively the regional initiatives
 - Coordinated Action Office
 - Gas to Power Initiative
 - Rehabilitation and modernisation of Ukraine gas transport system
 - Projects of Energy Community Interest
- Implement the Actions required to meet the Energy Community objectives in a timely and coordinated manner
- Take policy measures at regional level that would bring additional benefits to the high-ranking PECIs

THANK YOU !