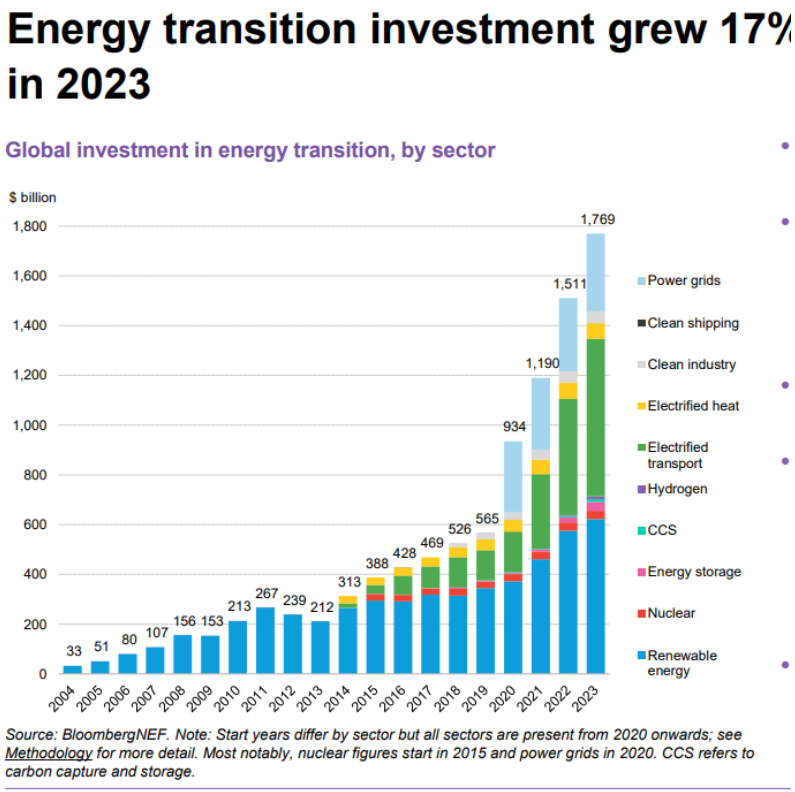
Green Energy Investments Forum

Black Sea Trade & Development Bank

9 October 2024

Energy Transition Outlook

Energy Transition Outlook



- Despite significant progress with government climate ambitions and actions and the rapid growth of investment in low carbon energy, carbon emissions continue to rise.
  - Carbon emissions have continued to increase at about 1% annually (2019-2023), while it was growing about 2% before that (2009-2019).
  - This is primarily driven by increasing prosperity and growth of emerging economies
  - Investment in low carbon is heavily concentrated in developed economies and China, far lower than emerging economies where cost of capital is typically higher
  - Low carbon investment has been concentrated in Global North, whereas the largest potential impact of clean energy investment is in Global South.
  - Strong growth in natural gas demand in emerging Asia combined with the disruptions of Russian pipeline gas, has increased the importance of LNG (liquified natural gas) in past 5 years

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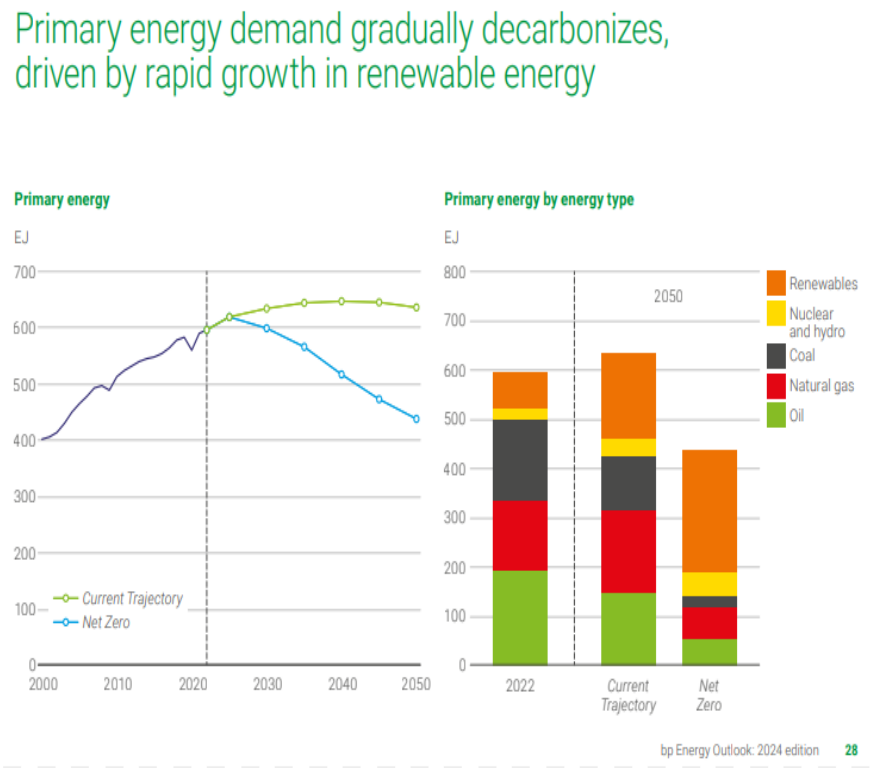

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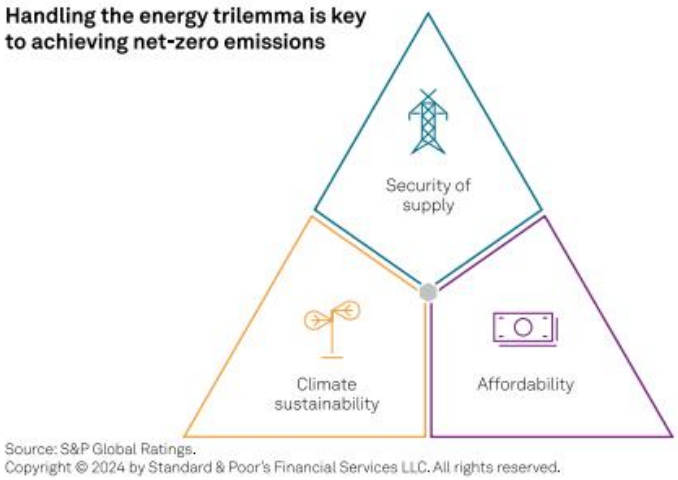

Source: S&P Global Ratings.

- The war in Ukraine and its repercussions on energy disruptions and shortages has highlighted that the transition must also consider the security and affordability of energy.
  - The other elements of Energy Trilemma, particularly Security of Supply and Affordability needs to be more in focus, not only Climate Sustainability
  - The focus on security and affordability will also prompt greater government involvement in design and operation of energy markets.
  - There is increased pressure on the existing infrastructure and governance process supporting power markets, including planning and permitting. Approval times have increased from 2 to 5 years in the US.
  - To bolster resilience to fluctuations in generation, we need: (i) upgrades of grids, and (ii) increasing the system flexibility, storage and reliable spare dispatch capacity.

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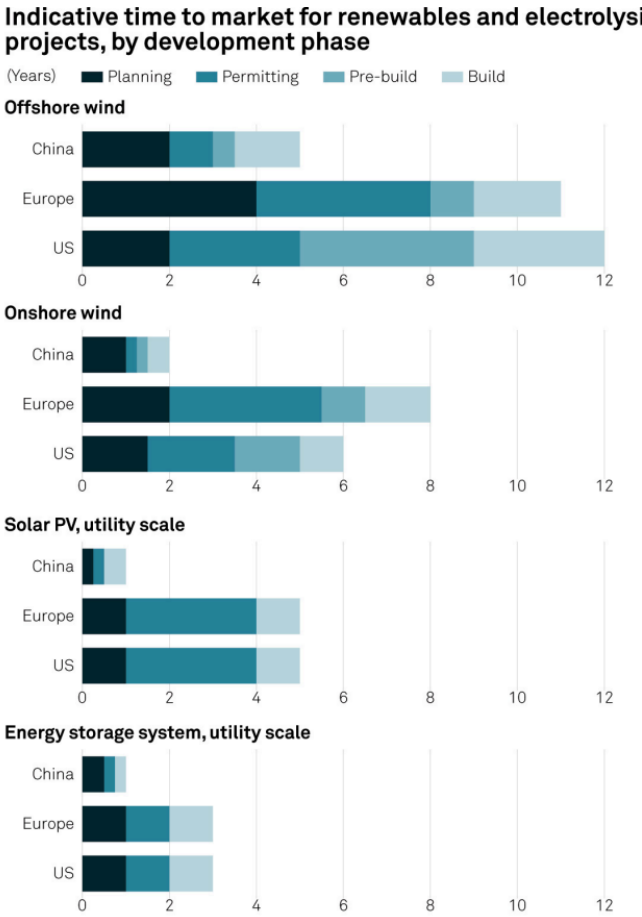

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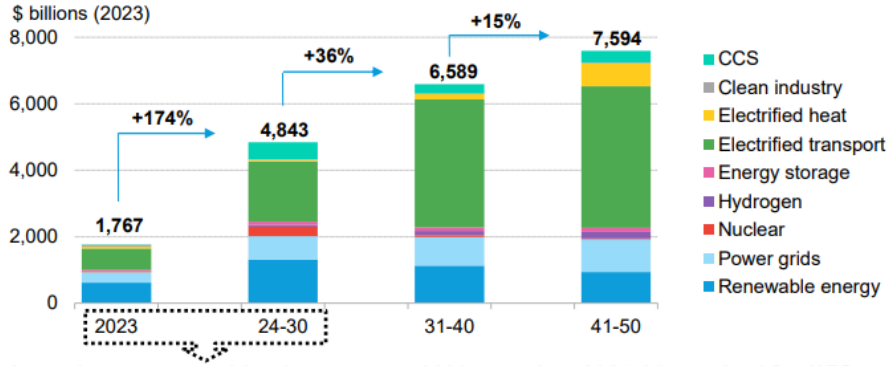
Comparison: 2023 energy transition investment versus required annualized levels in NEO 2022 Net Zero Scenario



Annual energy transition investment, 2023 actual vs 2024-30 required for NZS

$ billion (2023)	2023 actual	2024-30 annualized	Multiplier
Clean industry	49	21	*x0.4*
Electrified heat	63	50	*x0.8*
Renewable energy	623	1,317	*x2.1*
Grids	310	700	*x2.3*
Energy storage	36	93	*x2.6*
Electrified transport	632	1,805	*X2.9*
Hydrogen	10	62	*x6.0*
Nuclear	33	284	*x8.7*
CCS	11	510	*X45.9*

Source: BloombergNEF. Note: NZS = Net Zero Scenario. Future values are obtained from the New Energy Outlook 2022, except electrified transport, which is from the Electric Vehicle Outlook 2023 Net Zero Scenario.

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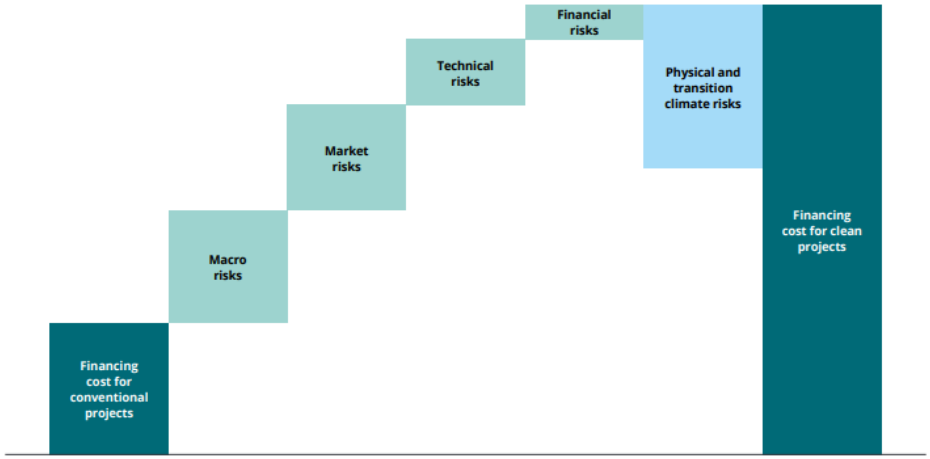
Figure 1. Risk premium components associated with clean energy projects



Source: Deloitte analysis based on Glemarec (2023),[3] Blended Finance Taskforce (2018)[7] and United Nations Development Program (2013)[8]

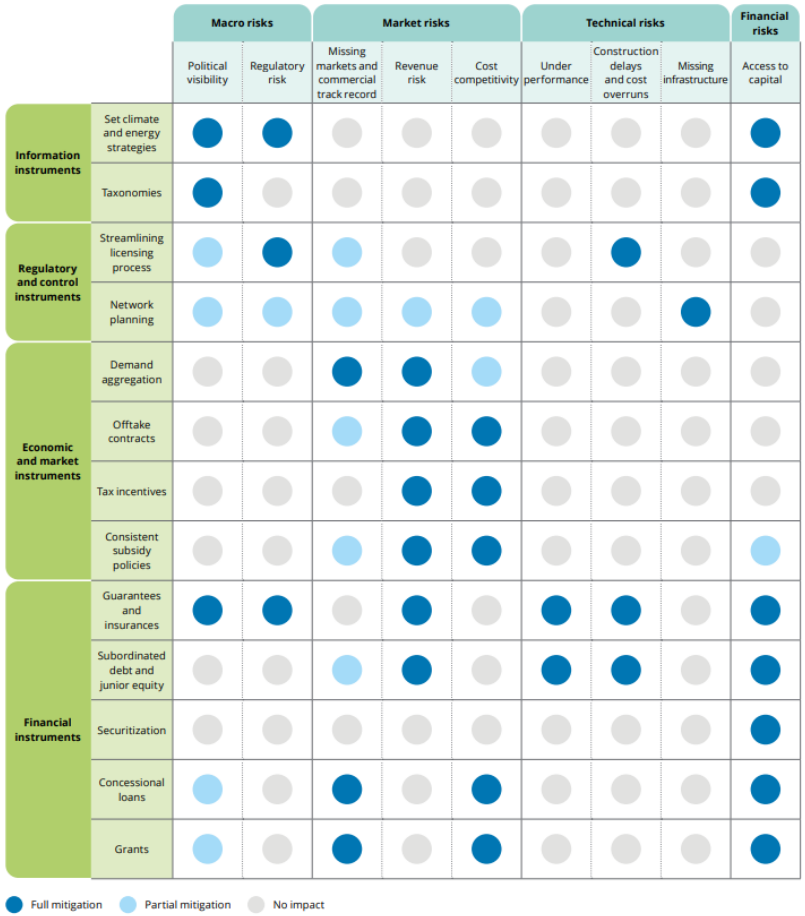
- Ongoing Energy Transition depends on:
  - Demand for natural gas over the medium term (e.g. 25 years)
  - The use of biofuels and biomethane
  - The full commercialization of Carbon Capture

Energy Transition Risks

- Macro risks (e.g. political and regulatory) – this makes up 45-90% of the cost of capital
- Market risks (e.g. revenue and competitiveness) – contribute about 20% of cost of capital
- Technical risks – much less
- Financial – the remainder

Energy Transition Outlook

Figure 3. De-risking tools and their risk effectiveness



Source: Deloitte analysis based on Deloitte (2023),[1] Blended Finance Taskforce (2018)[2] and Green Climate Fund (2021)[3]

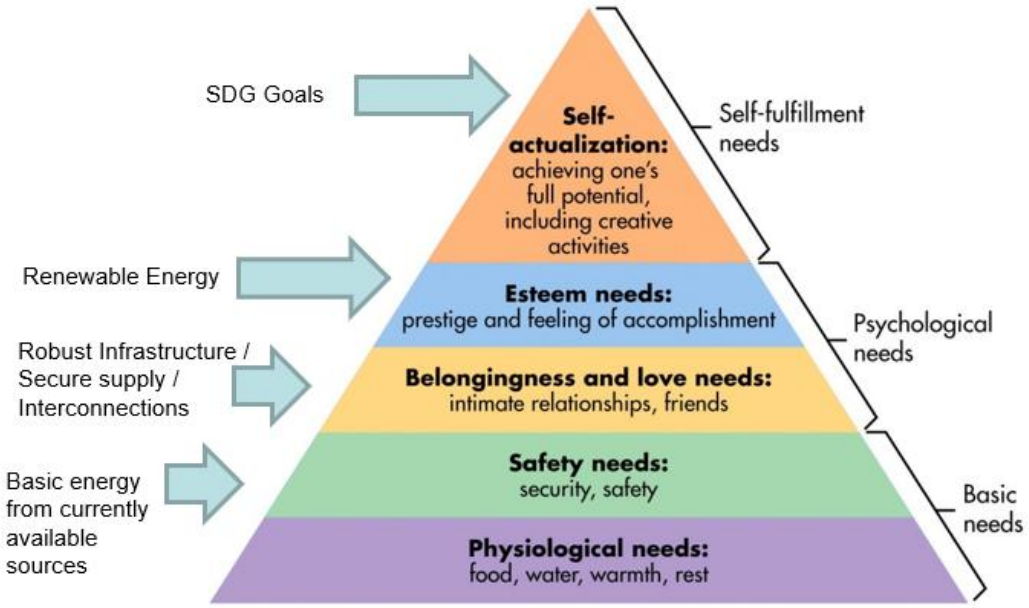
- Financial de-risking instrument can include:
  - Guarantees and Insurances
  - Subordinated debt and junior equity
  - Securitisation
  - Concessional loans
  - Grants
- The development of a commercial track record drastically reduces the uncertainties associated with clean energy assets in nascent markets

- Role of MDBs:
  - Critical source of affordable long-term finance
  - MDBs in unique position to accelerate investment in energy transition
  - MDBs are better aligning their lending / business practices with SDGs & energy transition.
  - Need for closer cooperation across MDBs and PDB to strengthen development system

Energy Transition Outlook

Applying Maslow's Hierarchy to Energy:

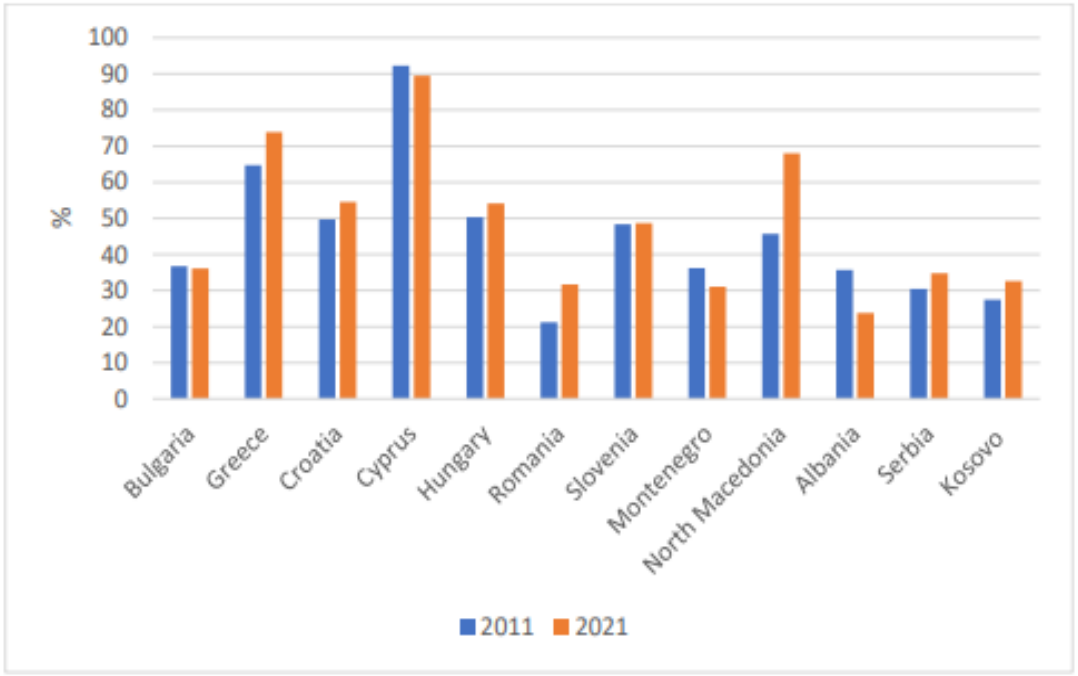
1. *Developing Countries still fulfilling basic needs*
2. *As more developed increase focus on Renewables*
3. *Only most developed can focus on SDGs*



- Implications for Region of SEE / South Caucasus / Turkey
  - Countries are at different stages of energy transition, some more advanced while some others quite nascent.
  - The region also has different levels of current dependence on energy imports
  - Thus, the Energy Transition will be uneven in our region, but with the help of MDBs, we can help make this transition more consistent

Energy Transition Outlook

Figure 8: Energy Dependence (%) in SE Europe, 2011 and 2021



Sources: Eurostat, IENE

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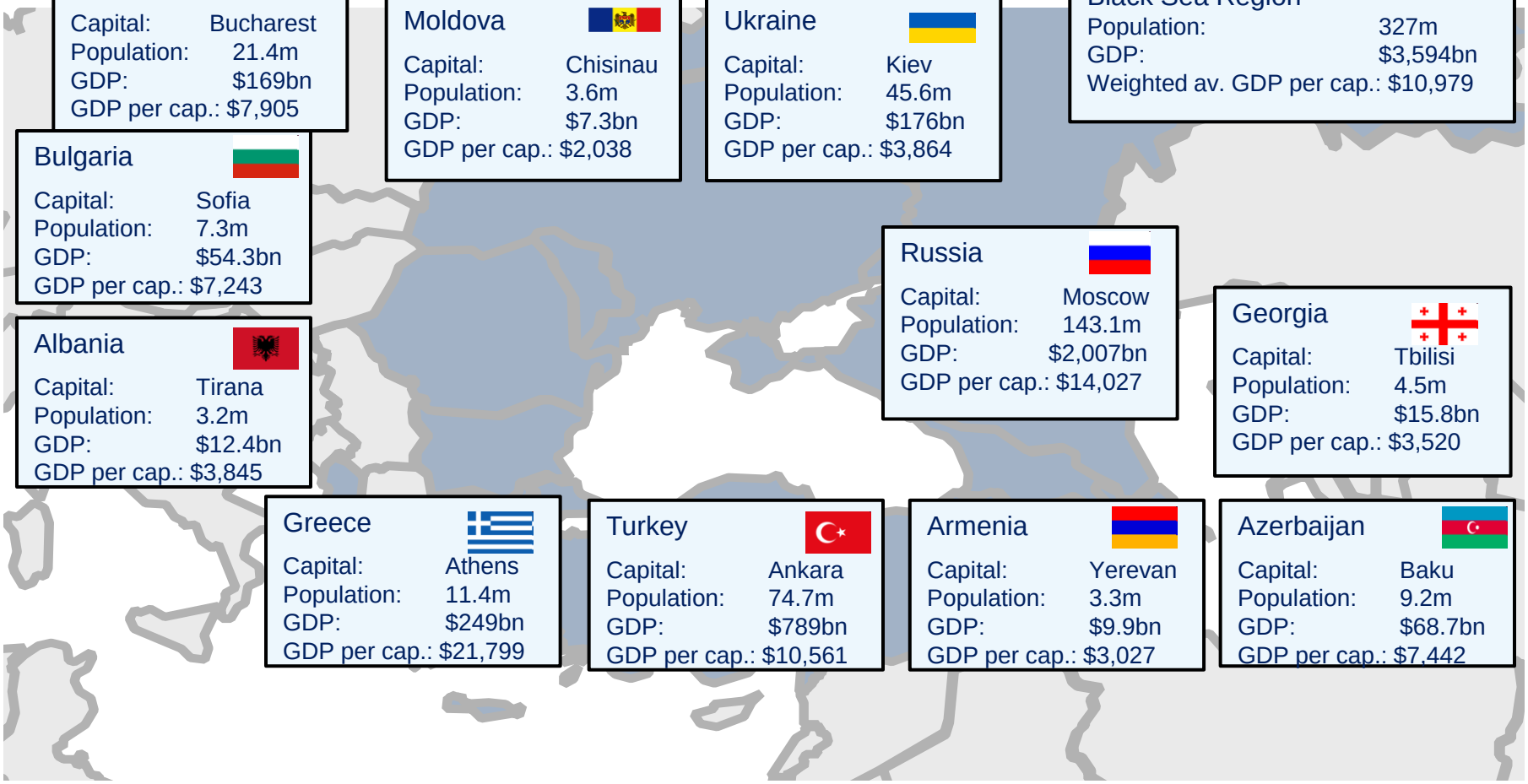
The BSTDB and Activities in Energy

BSTDB Members Countries

Black Sea Trade & Development Bank

Overview of Greater Black Sea Region



Romania
Capital: Bucharest
Population: 21.4m
GDP: $169bn
GDP per cap.: $7,905

Moldova
Capital: Chisinau
Population: 3.6m
GDP: $7.3bn
GDP per cap.: $2,038

Ukraine
Capital: Kiev
Population: 45.6m
GDP: $176bn
GDP per cap.: $3,864

Black Sea Region
Population: 327m
GDP: $3,594bn
Weighted av. GDP per cap.: $10,979

Bulgaria
Capital: Sofia
Population: 7.3m
GDP: $54.3bn
GDP per cap.: $7,243

Russia
Capital: Moscow
Population: 143.1m
GDP: $2,007bn
GDP per cap.: $14,027

Albania
Capital: Tirana
Population: 3.2m
GDP: $12.4bn
GDP per cap.: $3,845

Georgia
Capital: Tbilisi
Population: 4.5m
GDP: $15.8bn
GDP per cap.: $3,520

Greece
Capital: Athens
Population: 11.4m
GDP: $249bn
GDP per cap.: $21,799

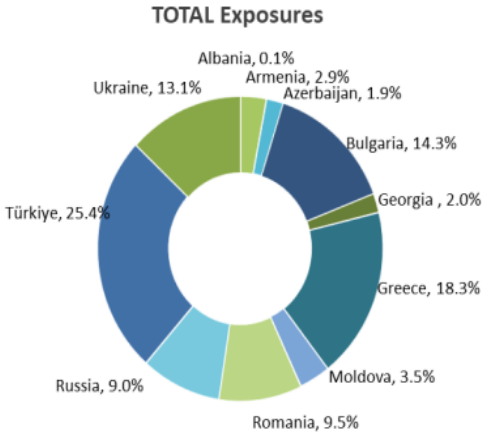
Turkey
Capital: Ankara
Population: 74.7m
GDP: $789bn
GDP per cap.: $10,561

Armenia
Capital: Yerevan
Population: 3.3m
GDP: $9.9bn
GDP per cap.: $3,027

Azerbaijan
Capital: Baku
Population: 9.2m
GDP: $68.7bn
GDP per cap.: $7,442

Portfolio Across Countries and Sectors

Portfolio by Country



Portfolio by Sector

BSTDB Energy Portfolio

Bulgaria Energy Holding (Bulgaria)

Project Cost	**BSTDB: EUR 80 m**
Borrower	**Bulgarian Energy Holding**
Term	**5 years**
Sector	**Utilities**
Summary	**Participation in two separate Eurobond issues. The funds will be used for their ongoing capital investment program.**

EnergoPro (Bulgaria)

Project Cost	**Total: EUR 370 m BSTDB: EUR 42 m**
Borrower	**EnergoPro**
Term	**5 years**
Sector	**Utilities**
Summary	**Participation in the primary bond issue as an anchor investor to finance the ongoing improvement and developments of the electricity grid and metering system and of the other markets of EnergoPro operations.**

Energean Oil & Gas (Greece)

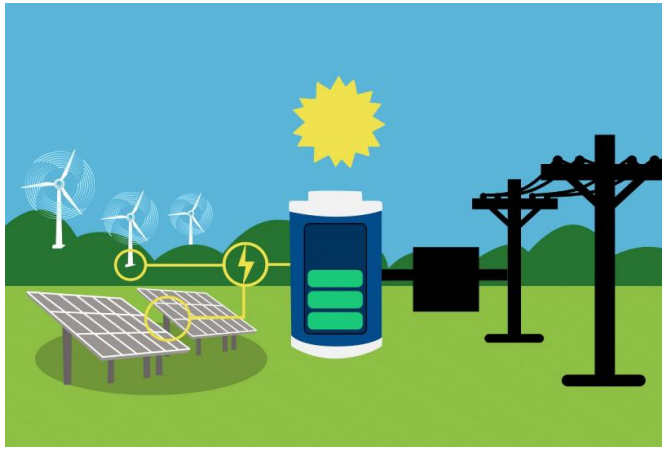
Project Cost	**BSTDB: EUR 90m**
Borrower	**Energean Oil & Gas**
Term	**8 years**
Sector	**Natural Resources**
Summary	**Support the company's existing oil development programme to access additional oil reserves in the Prinos, Prinos North and Epsilon operating oil fields, located offshore Greece (Prinos-Kavala Basin).**

Eurohold (Bulgaria)

Project Cost	**Total: EUR 360 m** **BSTDB: EUR 50 m**
Borrower	**Eurohold**
Term	**5 years**
Sector	**Utilities**
Summary	**BSTDB participated in an investment regarding the acquisition of CEZ's assets in Bulgaria and/or refinancing of the existing debt. It has recently been fully repaid.**

GREEK RES (Greece)

VARIOUS GREEK RES DEVELOPERS



Term	**5 years**
Sector	**Utilities**
Summary	**Unfunded Risk Guarantees on behalf of the companies to RAE.**

Gurmat Geothermal Power Plant (Turkey)

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Project Cost	**BSTDB: USD 1b**
Borrower	**Gurmat Electric Uretim**
Term	**15 years**
Sector	**Energy**
Summary	**Financing of the construction and operation of 170MW geothermal power plant southwestern Turkey**

Galnaftogaz (Ukraine)

Project Cost	**BSTDB: USD 20 m**
Borrower	**Concern Galnaftogaz**
Term	**7 years**
Sector	**Utilities**
Summary	**Trade Finance Facility to support the import of fuels into Ukraine**

Ingulets Solar PV (Ukraine)

Project Cost	**Total: EUR 56 m BSTDB: EUR 19.5 m**
Borrower	**Ingulets Solar PV**
Term	**10 years**
Sector	**Renewable Energy**
Summary	**Development, construction and operation of an up to 58 MW solar power plant project Ingulets, to be located in the Mykolvyiv region in Southern part of Ukraine. The loan has been fully repaid recently.**

PPC S.A (Greece)

Public Power Corporation S.A.-Hellas
Always by your side

Project Cost	**Total: EUR 1.7 b** **BSTDB: EUR 160 m**
Beneficiary	**PPC**
Term	**5 years**
Sector	**Energy / Utility**
Summary	**Corporate Loan for financing PPC's capital expenditure program for the period 2019-2020 which is expected for its electricity distribution networks. The loan has been fully repaid recently.**

Rengy Bioenergy Solar PV (Ukraine)

Project Cost	**Total: EUR 53 m BSTDB: EUR 18.5 m**
Borrower	**Rengy Bioenergy Solar PV**
Term	**10 Years**
Sector	**Renewable Energy**
Summary	**Development, construction and operation of three solar parks of total capacity of 47 MW: (i) Afanasievka of 14 MW, (ii) Taborovka of 16 MW and (iii) Tokarivka of 17 MW, located in the Mykolaiv region in Southern part of Ukraine**

Thank you

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