

Decarbonisation: How fast? Where to?

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Political Context – a global ambition

Green Deal – climate neutrality until 2050

EU Climate Law (amended proposal for EU Regulation submitted by European Commission to the European Parliament, the European Council etc. on 17.09.2020):

- legally binding target of **net zero greenhouse gas emissions by 2050**.
- **new EU target for 2030** of reducing GHG emissions by at least **55%** compared to levels in 1990 vs. current obligation, as per Revised EU ETS Directive 2018/410 of **40%** (until 2019 the EU has reduced its GHG emissions by 24% vs. 20% target for 2020).
- adoption of a **2030-2050 EU-wide trajectory** for GHG emission reductions,
- by September 2023, and every five years thereafter, the Commission will assess the consistency of EU and national measures with the climate-neutrality objective and the 2030-2050 trajectory and be empowered to issue recommendations to MS whose actions are inconsistent with the climate-neutrality objective, and Member States will be obliged to take due account of these recommendations or to explain their reasoning if they fail to do so.
- MS will also be required to develop and implement **adaptation strategies to strengthen resilience** and reduce vulnerability to the effects of climate change.

Also, the negotiating mandate adopted by the European Parliament in early October on the EU climate law also stipulated that:

- EU and member states must also **phase out all direct and indirect fossil fuel subsidies by 31 December 2025** at the latest
- rejecting the Commission's proposal to rely on carbon sinks like forests and grasslands to meet the 2030 climate target.
- EU objective for 2030 should rely only on domestic emission cuts (and not on carbon-cutting projects in developing countries).

Given energy production and use accounts for 75% of the EU's emissions, energy will continue to play a central role.

Romania 2030 Climate Change Action Plan

Romania submitted its final plan in April 2020, which provided the following inter alia:

- **2030 binding -44% target cut in ETS covered GHG** compared to 2005 levels for Romania (total GHG (excl. LULUCF) 118 mio tCO₂e vs. 114 mio tCO₂e in 2017).
- **2030 binding 30.7%** (vs. 24% target for 2020 vs. 24.5% actual in 2017) target **renewable energy** in total gross energy consumption (intermediary targets of +1.2% in 2022, +2.9% in 2025 and +4.4% in 2027).
- **2030 binding 14%** in the **transportation fuels sector**, out of which a max. of 7% first generation biofuel from food crops and min. 1% second generation biofuel by 2025 and 3.5% by 2030)
- **2030 binding 45.1% energy efficiency target** in total primary energy consumption vs. PRIMES forecast
- **2030 interconnection target of 15.4%** (10% target for 2020) – app. 5000MW (currently 2800MW of interconnection capacity)
- continue process of intra-day and day-ahead market coupling + demand response + storage capacities + prosumers
- gradual decommissioning of coal power plants from 3570MW currently to 1640MW in 2026, as per CE Oltenia Development and Decarbonisation Plan + 1325MW of new gas power replacing old coal plants in Tuceni and Isalnita + 725MW of PV plants
- Retechnologisation of existing 2*650MW nuclear reactors and development of 2 new reactors (each 675MW for 2030 and 2031).

- 600-700MW additional Transelectrica grid capacity
- development of national gas transport system and facilitation of investments in the Black Sea's natural gas perimeters

Targets to be revised upwards in 2023, as per new GHG target for 2030.

Tip sursă	Noi capacități producție (2021-2030)	Capacitate (Producție Energie Electrică MWe / Producție Energie Termică MWt)	SACET (MWe) (MWt)	Clienți industriali (MWe) (MWt)
Nuclear	CANDU	675		
Gaze naturale	CCGT	1.600 / -		
Gaze naturale	CHP	1.302 / 1.214	952 / 914	350 / 300
Hidro (firul apei/lac de acumulare)	Unități > 10MW	1.088		
SRE	Eolian	2.302		
SRE	Fotovoltaic	3.692		

Sursă: Calcule Deloitte pe baza informațiilor transmise de Grupul de lucru interinstituțional PNIESC și a recomandărilor COM

Current status

75% of global emissions generated by energy sector

- EU greenhouse gas emissions were **reduced by 24% between 1990 and 2019**, while the economy grew by around 60% over the same period.
- The most significant decline was in sectors covered by the EU ETS, in particular power plants. Emissions from stationary installations in all countries covered by the system fell sharply by 9.1% between 2018 and 2019.
- Emissions not covered by the ETS (such as emissions from non-ETS industry, transport, buildings, agriculture and waste) remained unchanged between 2018 and 2019. The year before, these emissions had seen a slight drop; however, overall, emissions from this aggregate of economic sectors have been stable for several years.
- CO₂ emissions from international aviation continued to increase in 2019, rising by 3% compared to the previous year, continuing the increasing trend. Aviation emissions are covered by the ETS, but currently only for flights within the European Economic Area (EEA)

Global Emissions (50 bln tCO ₂ e) by Source		%	
Energy	Energy in Industry	12.1	24.2%
	<i>out of which Iron&Steel</i>	3.6	7.2%
	Energy in Transport	8.1	16.2%
	<i>out of which Road</i>	5.95	11.9%
	Energy Buildings	8.75	17.5%
	Fossil Fuel Extraction	2.9	5.8%
	Other energy use	4.75	9.5%
	TOTAL ENERGY	36.6	73.2%
Industry	Cement Production	1.5	3.0%
	Chemicals&Petrochemicals	1.1	2.2%
	TOTAL INDUSTRY	2.6	5.2%
Waste	Wastewater	0.65	1.3%
	Landfills	0.95	1.9%
	TOTAL WASTE	1.6	3.2%
Agriculture	Agriculture	9.2	18.4%
	<i>out of which Livestock</i>	2.9	5.8%
	TOTAL AGRICULTURE	9.2	18.4%
TOTAL		50.0	100.0%

Global By Fuel Type (bln tCO ₂ e)		
Coal	14.4	29%
Oil	12.4	25%
Gas	7.6	15%
Other	2.3	5%
TOTAL	36.6	73%

RO Emissions (mio. tCO ₂ e)		
Energy	75.2	66%
Industry	13.7	12%
Waste	5.7	5%
Agriculture	19.4	17%
TOTAL	114.0	100%

Sustainable investments & financing (1/2)

Renewable energy market - One of major pillars in decarbonisation process

Renewable Energy in Romania

- Approx. 5000MW of RES projects have been installed until 12.2016 – to be gradually refurbished starting the end of the GCs scheme

Investment opportunities

- PNIESC proposed new investments: 2,300MW of wind and 3,700MW of solar
- Repowering of renewable energy capacities (incl. biogas from organic waste and sludge)
- EU Strategy for Offshore Renewable Energy by the end of 2020 → from currently 20GW off-shore wind to 300-450GW until 2050
- EU Strategy for Renewable Hydrogen

PPAs

- At a power price of 50-60 EUR/MWh wind and solar energy technologies no longer need support schemes to become economically viable investments in the EU, as a result of increased CO2 price and efficiency improvements/ decrease of technology cost for RES
- **Regulation 943** (applicable starting 2020)/ **Directive 944** should have been transposed in national law until 31.12.2020.
- Directly negotiated power purchase agreements concluded outside OPCOM centralized markets will once again be allowed.

PPAs (cont'd)

- Long term PPAs may be concluded as early as of the development stage, once a technical connection permit is obtained.
- Large consumers can participate in wholesale market, as PPA counterparty

CfD scheme

- Memorandum on the basic principals of a new CfD scheme for new RES, nuclear and battery capacities in Romania has been signed between the Ministry of Economy, ANRE and Competition Council
- Ministry currently runs a study with an independent consultant to evaluate options/ details for implementing the CfD scheme.
- Expected to be implemented in 2022-2023
- Transelectrica mentioned as possible CfD counterparty

Technical aspects

- High grid connection costs (if at all possible),
- High balancing costs
- Inflexible trading instruments
- Capacity reserve for volatile renewable production or storage

Sustainable investments & financing (2/2)

Energy efficiency

Production

- New gas capacities as a substitute for old gas and coal power plants
- **District heating (update of “Termoficare 2006-2020 strategy”)**: with the help of a new co-generation bonus scheme or investment subsidies
- Renewable or low-carbon hydrogen production plants (also as diversification strategy for single-fuel producers)
- Recovery and use of heat in power plants and vice-versa
- Carbon capture and storage systems

Transportation

- Retrofit of transmission lines or substations and/or distribution systems to reduce energy use and/or technical losses, especially in the thermal energy distribution networks

Consumption

- **Renovation of buildings** stock (MEUR 12,800 investments expected for 2030)
- Replacement of old inefficient industrial equipment
- Replacement of vehicle fleet to low-carbon fuels
- More efficient lightning solutions
- Modal shift of freight and/or passenger transport from road or air to rail or waterways
- Electrification of rail infrastructure and rolling stock
- Public low-carbon transportation or bikes for urban transport
- Carbon capture and storage systems

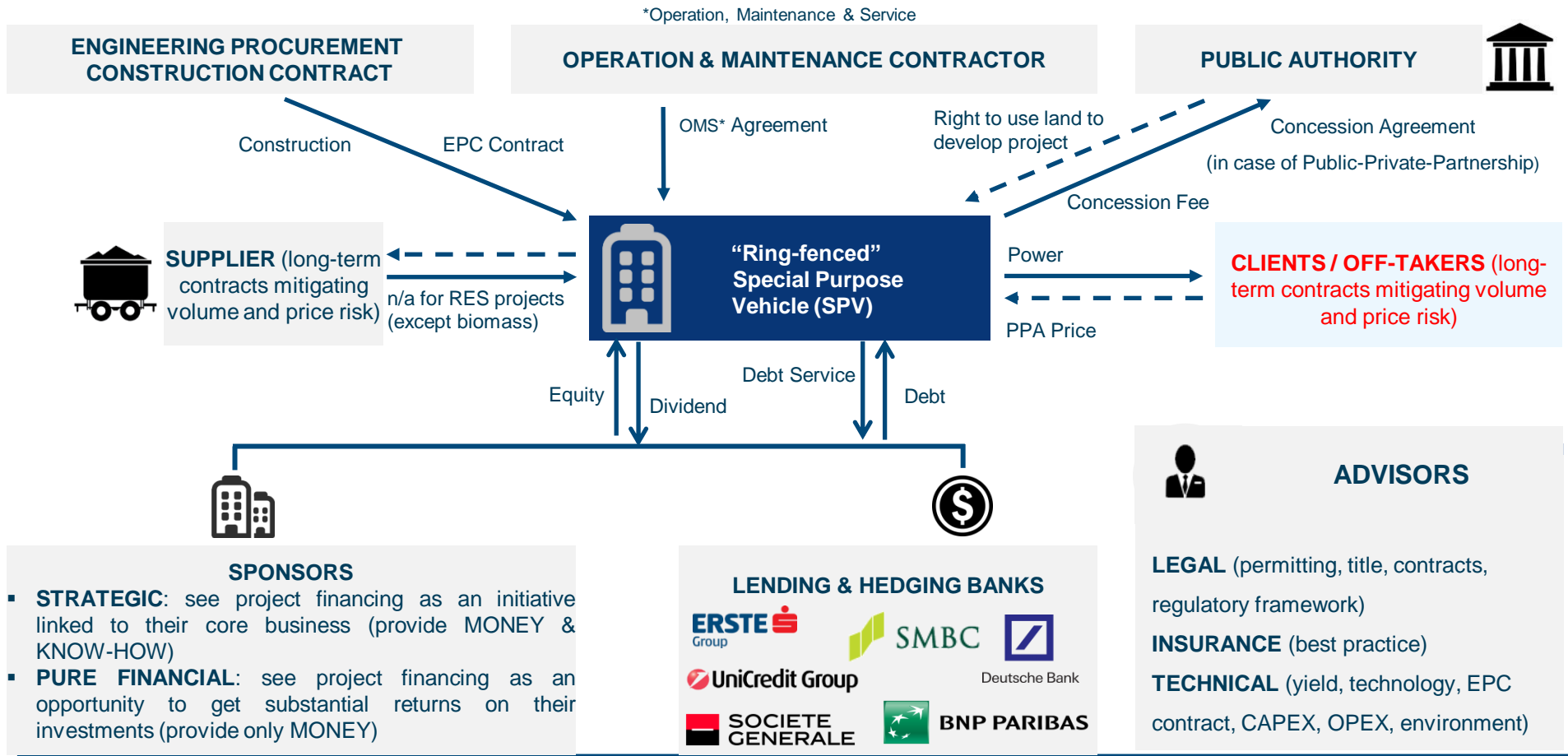
Project Financing Transaction Structure (1/2)

Lending Principles for energy production projects

Conditions	Explanation
Strong Sponsor	Investors capabilities to sustain the project, extensive track record, excellent financial standing.
Non-recourse/ Limited Recourse	Limited recourse during construction period/ in some cases for covering off-take/ regulatory risk (in case of incentive schemes).
Min. Equity Level	Not less than 30%, but subject to debt sizing criteria (min. DSCR level)
Loan Maturity	Max. 15 years, but (i) no more than 75% of the asset technical life and (ii) no more than off-take agreements tenor;
Technology	Only proven technologies supplied by reputable suppliers with proper maintenance program in place.
Permitting	All the permits and authorizations for the “ready to build phase” in place
Reputable EPC and O&M	Lump Sum and Turnkey EPC Contract with Standard Liquidated Damages securing delays, performance ratios, availability etc.
Supply and Off-take Agreem.	Long term supply and off-take agreements with reputable parties accepted by the lender will be required.
Clean legal& technic. DD from Reputable Party	Review of technical specifications, performance parameters, yield forecast, permitting, real estate, corporate, legal framework and project contracts.
Hedging	Offtake price, Interest Rate and FX risk solution, to mitigate market volatility
Suitable Insurance	Insurance must cover business interruption, mechanical breakdown, operational risks and third party liabilities.
Mortgage	Mortgage over all shares, constructions, equipment, Project Contracts, accounts
Other	In some cases market reports, environmental studies and commercial DD are also required.
Regulatory Framework	Clear and stable legal framework accommodating market reality/ needs and offering predictability.

Project Financing Transaction Structure (2/2)

Allocation of risk for energy production projects



PPA requirements in Project Financing

Main Points

Counterparty:	Energy supplier and/or large consumer with strong creditworthiness and long-term perspective of business
Volume:	Pay as produced, off-taker to pay for each MWh produced by RES producer, irrespective of production profile. Contract should cover 80-100% of P90 energy produced during loan period
Price:	Fixed price for the entire contract period or at least floor (or linked to market, in case they are combined with a CfD)
Balancing	Should be assumed by a power supplier over loan period
Duration:	For the entire loan period
Termination Compensation:	Off-taker to pay termination compensation, so that the RES producer ends-up in the same position, as if the PPA would still produce effects
Guarantees:	Depending on financial strength of off-taker, a bank guarantee/ corporate guarantee (from an investment grade party) should be provided to guarantee the fulfilment of its obligation and payment of the termination compensation
Timing:	Valid and enforceable PPAs need to be signed as a CP for signing the financing agreement. Obligation of the off-taker to buy power should start at COD (commercial operation date).
Template:	Standardization is essential, especially in case of corporate buyer with little experience regarding such contract. The European Federation of Energy Traders have developed a standard for all types of PPAs.
Other important conditions:	Change in Law, Termination clauses (no unilateral termination)

Selected credentials

Energy Sector is key interest for BCR and ERSTE Group, as it plays a very important role in the development, sustainability and security of Romania

Private sector

High Efficiency Cogeneration Projects:

- ▶ 42 MWe + 110 MWt



Renewable Energy Projects:

- ▶ 420 Mwe
 - 79.7 Mwe micro-hydro power plants
 - 304 Mwe wind power plants
 - 35.7 Mwe PV power plants
 - 1.5 Mwe biogas power plant



Public sector

Thermal Power Projects:

- ▶ 990 MWe producing only power
- ▶ 82,1 MWe and 1,151 MWt producing in cogeneration
- ▶ 90 MWt producing only heat



Conclusions & Next Steps

National Strategies

- PNRR which will include resources for energy projects: E-RES, H2, district heating networks, cogeneration – new final version to be sent by end of March for approval by EC
- LT Renovation Strategy – approval EC?
- Energy Strategy 2030-2050 – 1st draft published
- Heating Strategy (incl. support scheme for CHP plants) – no updates existing

Regulatory

- Legal permissions to conclude PPAs – electricity law is being rewritten
- CfD support scheme – solution study in progress
- Cogeneration scheme - for new investments
- Amended off-shore law – draft to be presented in the Parliament by the governing coalition

Investments

- Infrastructure Investments (electricity, gas, charging stations)
- New power and heat production capacities investments. Capacity reserve or storage for volatile renewable production (balancing costs are an issue).
- Consumer energy efficiency investments (i.e. EPC, ESCO)
- Renovation of building stock (renovations higher than 25% of building fiscal value must meet NZEB (net zero emissions building standard) standard, which includes obligation for 30% of energy consumption from RES)

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