



The European Union's Programme for Moldova

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Technical assistance for the implementation of the Sector Policy Support
Programme "Support to reform of the energy sector" (TA-SPSP Energy)

Service Contract No: 2012/294-811 / ID: EuropeAid/131650/C/SER/MD

**D1.2.2.a: Electricity Sector Roadmap for the Republic of Moldova by
2030**

and

**D1.2.2.b: Natural Gas Sector Roadmap for the Republic of Moldova by
2030**

Draft Report (V1)

Task 1.2 of the TA-SPSP Energy project

February 2014



Project implemented by EXERGIA S.A Consortium
Contracting Authority: Delegation of the European Union to Moldova

Service Contract No: 2012/294-811 / *ID:* EuropeAid/131650/C/SER/MD

Beneficiary: Ministry of Economy

Project: Technical assistance for the implementation of the Sector Policy Support Programme "Support to reform of the energy sector" (TA-SPSP Energy)

Report: D1.2.2.a: Electricity Sector Roadmap for the Republic of Moldova by 2030
D1.2.2.b: Natural Gas Sector Roadmap for the Republic of Moldova by 2030

Version: Draft Report (V1), February 2014

Task: 1.2: Support to MoE in the process of implementation of Energy Strategy of the RoM by the year 2030 ("the Energy Strategy"); Preparation of Action Plan including implementation strategies and implementation monitoring procedures

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Foreword

This report has been developed by the project “Technical assistance for the implementation of the Sector Policy Support Programme (SPSP): Support to Reform of the Energy Sector” (“TA-SPSP Energy”).

The TA-SPSP Energy project is financed by the European Union and managed by Delegation of the European Union to Moldova. It is carried out by Exergia S.A. (Leader) in a consortium with European Profiles S.A., CRES and Mott Macdonald Ltd.¹⁾ under the Service Contract No: 2012/294-811 signed between the Delegation of the European Union to Moldova and EXERGIA S.A. on June 5th 2012.

The report has been produced on the basis of held discussions between the Ministry of Economy (MoE) and the TA-SPSP Energy project in mid July 2013. Its aim is to assist MoE in the preparation of the Electricity Sector Roadmap of the Republic of Moldova by 2030 (“the Electricity Sector Roadmap” or ESR) and the Natural Gas Sector Roadmap of the Republic of Moldova by 2030 (“the Natural Gas Sector Roadmap” or NGSR), the two “policy documents” envisaged in the Energy Strategy of the RoM until 2030 (“the Energy Strategy” or ES2030) adopted in mid February 2013. The roadmaps are the products of the MoE and shall be approved by the Government of Moldova (GoM). They should support the GoM in decision-making process and monitoring of the implementation of the Energy Strategy. There is no formal deadline for completion / adoption of the roadmaps. However, it is sensible that the roadmaps are finalised and adopted as soon as possible.

The roadmaps in a form ready for adoption by the GoM represent the second part of this report. They have been prepared in close collaboration and consultation with MoE/DoESEE, in terms of provision of background materials and discussions on the most suitable content of the documents. Because one of the main objectives of the roadmaps is to ensure adequate security of electricity and gas supply to Moldova, best endeavours have been made by the authors to harmonise the roadmaps with the Security of Supply Statements of the Republic of Moldova (October 2013). This particularly refers to organisational / institutional, legal / regulatory set-ups as well as priority investment projects in the respective sectors.

The time horizon of the roadmaps is by 2030 which complies with the planning period applied in the Energy Strategy. However, it is obvious that for many reasons the current focus of the roadmaps is put on the short- to medium-term period of 3-5 years (2014-2016/2018) with 2020 as an important milestone year, by when most currently set strategic targets should be fulfilled. The period beyond 2020 remains relatively vague, also in terms of energy strategy in the European Union. As a consequence, it is sensible that the roadmaps are regarded as **living documents**, subject of necessary update and possible change at least every five years as ES2030, for example.

Separate enclosures entitled “Working document in support of the ESR for the RoM by 2030” (Enclosure 1) and “Working document in support of the NGSR for the RoM by 2030” (Enclosure 2) respectively, are standalone documents which contain additional information, discussions, analyses etc. relevant for the development of respective roadmaps and which are based on best TA-SPSP Consultant’s expert opinion about the possible and/or recommended future developments in the respective sectors.



Government of the Republic of Moldova

DECISION № _____
of _____ 2014

Chisinau

On approving

“Electricity Sector Roadmap for the Republic of Moldova by 2030”

and

“Natural Gas Sector Roadmap for the Republic of Moldova by 2030”

Based on Section VII, Paragraph 182 of the Energy Strategy of the Republic of Moldova until 2030, adopted by Government of the Republic of Moldova in February 2013; the Government

RESOLVES:

1. To approve the **Electricity Sector Roadmap for the Republic of Moldova by 2030** attached hereto in Annex 1.
2. To approve the **Natural Gas Sector Roadmap for the Republic of Moldova by 2030** attached hereto in Annex 2.
3. The Steering Committees established for the purpose of monitoring progress in implementation of actions stipulated in the Roadmaps shall report, on a semestrial basis, before the 15th day of the month following the reporting period, about actions undertaken, to the Ministry of Economy, which, in its turn, shall report to the Government about execution of this Decision.
4. Control over execution of this Decision shall be the task of the Ministry of Economy.

PRIME-MINISTER

IURIE LEANCĂ

Countersigned:

**Deputy Prime-Minister,
Minister of Economy**

Valeriu Lazăr

Electricity Sector Roadmap of the Republic of Moldova by 2030

I. OBJECTIVE AND SPECIFIC GOALS

The objective of the Electricity Sector Roadmap of the Republic of Moldova by 2030 (referred as »Electricity Sector Roadmap« or ESR) is to **ensure the security of electricity supply** through a clear vision how the electricity sector policy objectives stipulated in the Energy Strategy of the Republic of Moldova until 2030 (referred as »Energy Strategy«), adopted by the Government of Moldova (GoM) in February 2013, shall be achieved.

In addition, the roadmap is as a basis for establishment and implementation of effective progress monitoring mechanism. The roadmap identifies major work packages and tasks, allocates responsibilities among the key stakeholders, determines the major milestones and estimates the associated timelines, assesses type of costs and quantifies indicative costs of major investment projects. It determines the coordination and progress monitoring mechanisms, and the ultimate supervision over the whole process.

The following main specific goals of the Energy Strategy shall be achieved through successful implementation of the ESR:

- 1) Legal and regulatory framework in the electricity sector of Moldova is developed and adopted in full compliance with the Third legislative Package of the EU in the electricity sector, as a prerequisite for the integration to the European electricity market;
- 2) Institutional and organisational framework in the electricity sector is implemented in line with Directive 2009/72/EU; Central Electricity Supplier is successfully established on time;
- 3) Electricity market in Moldova is developed in line with sound market design rules and merged with Internal Energy Market (IEM) of the ENTSO-E interconnected system;
- 4) Security of electricity supply in the country is increased by (i) implementation of electricity infrastructure projects including new 400 kV interconnections with Romania and (ii) reinforcement of internal electricity transmission and distribution networks;
- 5) Investment projects increasing own electricity generation in the Republic of Moldova and possibilities for secured, reliable and energy efficient cogeneration (heat and electricity production) are promoted and implemented in line with the Energy Strategy objectives.

II. TASKS / ACTIONS TO BE UNDERTAKEN

II.I Stakeholders

Stakeholders are parties interested and/or directly involved in the implementation of the Energy Strategy, and in particular, in the electricity sector and the district heating sector. These are central public administration authorities, agencies and bodies, and public and private legal entities. The key ones include (status as of end 2013):

- Relevant Ministries:
 - Ministry of Economy (MoE) – ministry responsible for energy;
 - Ministry of Environment;
 - Ministry of Regional Development and Construction;
 - Ministry of Finance;
- Public agencies, funds and bodies:
 - National Energy Regulatory Agency (ANRE) – entitled among others to approve relevant methodologies, tariffs for regulated energy undertakings, market monitoring and customers' protection;
 - National Bank of Moldova (NBM) – entitled to approve payment systems and issue respective licenses, provide services of deposit accounts to central depository operators;
 - National Commission for Financial Markets (NCFM) - entitled to approve framework of central securities depository and issue respective licenses;
- Public, private or mixed legal entities in electricity and district heating sectors:

Cogeneration (electricity generation and district heat production):

- *CET-1 SA*, *CET-2 SA* in Chisinau and *CET-Nord SA* in Balti (all CHPs are regulated producers of electricity);

Electricity generation:

- *Nodul Hidroenergetic Costesti IS* (HPP Costesti – regulated producer);
- Moldavskaya GRES or CERMS;
- CHPs in sugar industry.

Electricity transmission (incl. central dispatch): *Moldelectrica IS* as the state-owned single power transmission system operator (TSO) of RoM, which also provides market operator functions in a limited scope

Electricity distribution and supply at regulated tariffs¹ consists of 3 distribution system operators (DSO): *RED Nord SA*, *RED Nord-Vest SA* (both state-owned) and *ICS RED Union Fenosa SA* (privately-owned)

Electricity supply at non-regulated tariffs: *Energocom SA* as a state-owned electricity supplier and trader on the wholesale market in charge of managing electricity import contracts with Ukraine, and 7 smaller suppliers.

Mixed (electricity network/generation) functions: are performed by *Dnestrenergo JSC* company located in Transnistria, which operates Eastern electricity networks in Dubasari city, South Eastern electricity networks in Tiraspol city and HPP Dubasari;

¹ Note: According to Law on Electricity (No. 124) Distribution and Supply should have had separate accounts and become legally unbundled by 1.1.2013. However, in reality, the accounts are separated while legal unbundling has not been achieved yet as this is now postponed by 1.1.2015, in accordance with the Accession protocol to the ECT and relevant Draft Law amending and supplementing Law on Electricity.

Distribution of district heat: *Termocom SA* as the district heat distribution system operator in Chisinau (under administration of local public authorities).

- Final consumers (electricity):
 - Eligible consumers: all non-households consumers (since 1 January 2013)
 - Non-eligible (household) consumers: 1,207,731 (as of end 2012).
- Others:
 - International organisations: Energy Community Secretariat (ECS), Energy Community Regulatory Board (EBRD);
 - Donors and IFIs: e.g. Sweden, EUD, EBRD, EIB, World Bank etc.

II.II Work packages, tasks and split of responsibilities

Work Package 1: Development of legal regulatory framework in the electricity sector

A) Short description of the Work Package

The completion of transposition of the Second legislative Package and implementation of the Third legislative Package for Moldova is the most important issue for the functioning of the electricity market. Whilst the general implementation deadline is set for 1 January 2015, Article 11 of Directive 2009/72/EC shall apply from 1 January 2017.

Completion of the Second legislative Package in the electricity sector (on-going)

- Completion of transposition of Directive 2005/89/EC of 18 January 2006 of the European Parliament and of the Council on security of electricity supply and infrastructure investments;
- Adoption of Draft Law amending and supplementing Law No. 124-XVII of 2 July 2010 'On Electricity' by Parliament;

Third legislative Package in the electricity sector (plan)

The content of the Third legislative Package in the electricity sector encompasses Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC and Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity and repealing Regulation (EC) No 1228/2003.

The Regulation (EC) 713/2009 which defines the powers of ACER is not implemented but replaced by a Decision of the Ministerial Council (MC) of the Energy Community (EnC).

- Gap analysis and preparation of “concordance tables” for implementation of the Third legislative Package to define the necessary further amendments to:
 - i. Law on Energy (No. 1525 of 1998) (as amended);
 - ii. Law on Electricity (No. 124 of 2 July 2010) (after the planned amendment in 2014);
 - iii. Other secondary legislation for the electricity sector as applicable;
- Preparation of amendments and supplements to existing regulations including development of new regulations in the gas sector as needed relating to:

- a) TEN-e Regulation on Trans-European energy infrastructure (Regulation (EU) No 347/2013);
- b) REMIT Regulation (EC) No 1227/2011 of the European Parliament and of the Council of 25 October 2011 on wholesale energy market integrity and transparency;
- c) Preparation for the implementation of the Energy Infrastructure Package: (i) implementation of the Regulation and (ii) preparing for participation in the process of determining Projects of Common Interest (PCI) with an update every two years and its implementation.

B) Main tasks and split of responsibilities

Tasks and description of activities		Responsibility
T1.1	Gap analysis and preparation of “concordance tables” for implementation of the Third legislative Package to define the necessary further amendments to: <ul style="list-style-type: none"> • Law on Energy (No. 1525 of 1998) (as amended); • Law on Electricity (No. 124 of 2 July 2010) (after the planned amendment in 2014); • Other secondary legislation for the electricity sector as applicable. 	MoE
T1.2	Amendment and adoption of Draft Law amending and supplementing Law No. 124-XVIII of 2.7.2010 ‘On Electricity’ (Third legislative Package) <ul style="list-style-type: none"> • Transposition of Directive 2009/72/EC (Third legislative Package) of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC • Adoption of Draft Law amending and supplementing Law No. 124-XVIII of 2 July 2010 ‘On Electricity’ 	MoE Parliament
T1.3	Transposition of Regulation (EC) No 714/2009 of 13 July 2009 of the European Parliament and of the Council on conditions for access to the network for cross-border exchanges in electricity and repealing Regulation (EC) No 1228/2003 Preparation of transposed regulation and adoption thereof	ANRE
T1.4	Preparation of amendments and supplements to existing regulations including development of regulations in the electricity sector <ul style="list-style-type: none"> • TEN-e Regulation on Trans-European energy infrastructure (Regulation (EU) No 347/2013); • REMIT Regulation (EC) No 1227/2011 of the European Parliament and of the Council of 25 October 2011 on wholesale energy market integrity and transparency (covering gas and electricity sectors); • Energy Infrastructure Package; implementation of the Regulation and participation in the process of determining Projects of Common Interest (PCI) with an update every 	ANRE

Work Package 2: Strengthening of institutional and organisational framework in the electricity sector (Central Electricity Supplier)

A) Short description of the Work Package

The electricity market operator shall be established in order to facilitate further electricity market liberalisation and development as the central operational institution on the electricity market. Electricity market operator shall administer the electricity market, provide market mechanisms and efficient products to facilitate the efficient, transparent and liquid wholesale electricity market (day-ahead market, intra-day market, balancing market, etc.).

As the central part of RES support developments, Central Electricity Supplier (CES) is initially to operate the RES support schemes in the electricity market and for cogeneration facilities. Strengthening of the organisational framework primarily focuses on gradual upgrade of CES by means of market operator tasks and responsibilities and further evolution into (regional) trading venue (exchange) platform. CES as electricity market operator performs activities that shall be regulated / supervised by three institutions: ANRE for its electricity market part, NCFM for its central depository function, and NBM for its payment system. It is based on the following three main conceptual approaches:

- I. Electricity market is a free and regulated commodity market. CES is to operate trading / procurement platforms that imply exclusivity, such as system services and cross-border markets integration, and may operate other non-regulated trading/procurement platforms beneficial for the market development.
- II. Imbalances are natural and generally unavoidable characteristic of the electricity market. These have to be centrally managed by the TSO in real-time and market participants are to reimburse it for the balancing cost caused by their behaviour and/or actions. Reimbursement shall be made at least cost, fairly and equally distributed among those that caused it, while the market rules still have to ensure that being in balance is in the best interest of each market participant. CES is to operate the imbalances settlement system.
- III. Due to non-material nature of electricity and/or its infinitesimally short time of existence, transfers of possession and title (ownership) for the purposes of contract fulfilment on the electricity market are based on standardised time frames. Legally, this results in standard electricity products as means for representation of electricity commodity (traded and produced/consumed) and of cross-border capacity rights. CES is to perform the central depository activity of standard electricity products.

In order to build adequate institutional framework the RoM will set up its own institutions and ensure institutional capacity building. Institutions on the internal electricity market are needed in order to cope with market administration, trading process and monitoring and on the other hand to manage cross-border capacities and ensure proper regional market integration.

B) Main tasks and split of responsibilities

Tasks and description of activities		Responsibility
T2.1	Setting up CES (electricity market operator) <ul style="list-style-type: none"> Decision on CES set-up mode (legal and organisational form, ownership), establishment of CES as an independent entity and its formal designation Licensing of CES and opening of specific regulated accounts required 	GoM, MoE (Concessionaire) CES, ANRE, NCFM, NBM
T2.2	Certification of Moldelectrica SA <ul style="list-style-type: none"> Notification (request) for certification as an electricity TSO in accordance with the EnC acquis communautaire Certification of the electricity TSO upon receipt of request for certification as an electricity TSO in accordance with the EnC acquis Preparation of formal opinion(s) regarding certification in accordance with the EnC acquis Approval and designation of the electricity TSO upon its certification Institutional capacity building	Moldelectrica SA ANRE ECS, ECRB GoM

Tasks and description of activities		Responsibility
T2.3	Sectoral capacity building and information dissemination <ul style="list-style-type: none"> Institutional capacity building Market participants' education and public awareness programmes 	MoE, ANRE, CES, Moldelectrica IS

Work Package 3: Electricity market development

A) Short description of the Work Package

This work package includes measures and activities that are setting up efficient electricity market environment in the RoM that will support liquid, transparent and competitive electricity and electricity-related products trading.

Market development is to be governed by MoE and ANRE, with NCFM and NBM playing important regulatory role. CES shall perform market operation functions that consist of both the obligation to perform certain essential national public services for the electricity market and the right to provide other important services that facilitate market development and support its functioning.

Addressing all operation aspects of the electricity market, especially main market design pillars as congestion management, imbalances settlement (balancing) and operations, scheduling and market administration is crucial. It is planned to integrate the national market of the RoM into the wider regional markets, foreseen in two directions: towards Ukraine and towards Romania. By doing so, transparency, robustness of price formation and security of supply of the national market are going to be increased.

B) Main tasks and split of responsibilities

Tasks and description of activities		Responsibility
T3.1	Adoption of electricity market subordinated legislation and operative rules <ul style="list-style-type: none"> Adoption of the electricity market related secondary legislation (<i>Note: this activity might overlap with Tasks 1.3 and 1.4 above</i>) Adoption of the electricity market related regulations (<i>Note: this activity might overlap with Tasks 1.5 and 1.6 above</i>) Approvals and adoption of market operation rules 	GoM (MoE) ANRE CES, ANRE, NCFM, NBM
T3.2	Procurement, testing and deployment of operation specific IT solutions <ul style="list-style-type: none"> Design and deployment of IT solutions supporting CES operations, continuously developed in line with the market development 	CES
T3.3	Implementation of market operation functions <ul style="list-style-type: none"> Market administration operation Support mechanisms operation Market (trading/procurement) platforms operation Launch of feasibility studies on electricity market developments and/or IEM integration and tests 	CES CES CES ANRE, CES, Moldelectrica IS

Work Package 4: Major electricity infrastructure investment projects including cogeneration

This work package includes implementation of major investments projects in the sector:

1. Combined cycle gas turbine (CCGT) cogeneration plant of 650 MWe;
2. 400 kV interconnection line Suceava (RoM) - Balti (Romania), length: 115 km / 52 km²;
3. 400 kV interconnection line Straseni-Ungheni (RoM) - Iasi (Romania), length: 100 km / 70 km;
4. 330 kV interconnection line Balti (RoM) - HPP Novodnestrovsk (Ukraine), length: 123 km / 87 km;
5. Installation of back-to-back converter at the Vulcanesti power substation of 400 kV with the possibility of electricity flows no less than 500 MW;

Project 1 title: Construction of 650 MWe combined cycle gas turbine cogeneration plant

A) Short description of the project

For increasing own electricity generation and heat production capacity, and thus considerably increasing energy (electricity and district) supply security, the Government plans to construct a 650 MWe gas-fired combined-cycle gas turbine (CCGT) cogeneration plant, as it is envisaged in the Energy Strategy. The CCGT will replace the existing cogeneration plants CET-1 (66 MW) and CET-2 (240 MW), which are obsolete and operate at low energy efficiency.

The new CCGT will be able to generate about 2.85 TWh of electricity annually at power factor of 0.5. The CCGT is planned to be constructed in Chisinau at the site of the existing CET-2. The exact location and technical conditions will be established in the planned feasibility study, funded through relevant technical assistance of the major donors involved in the sector.

Apart from the standard techno-economic analysis, the feasibility study shall put attention and explore possible financing models and schemes that could attract future strategic investors that remain unknown for the time being and that could in principle be public, private or mixed, not even excluding Public-Private-Partnership and various implementation models. The prevailing unfavourable conditions of poor technical and financial performance of the district heating sector in Chisinau, the associated debt in the gas sector and lack of progress in corporate restructuring of Termocom and the two CHPs in Chisinau do not reflect positively. As a prerequisite for possible implementation of this project by 2020, most of these issues should be satisfactorily solved as soon as possible in 2014. The project implementation period, from a moment when the strategic investor is selected and the respective agreements signed up to commission, is estimated at 4 years, with pure construction period of 2 years.

Based on results of the feasibility study, GoM shall make a strategic decision how to go ahead and whether to be involved as (co)investor in the project. The subsequent activities will depend who the investor is going to be. If the investor is not the RoM State, the Energy permit has to be obtained. Because the plant exceeds 20 MW of installed capacity, the Energy permit has to be issued by the Government (either by direct authorisation or tender). After that the investor (project owner) has to follow the formal procedure prescribed in local

² By decision of MC-EnC on 24.10.2013, it has been attributed the status of a PCI project, therefore, being subject of favourable financing and regulatory regime.

legislation and to obtain all necessary permits and approvals, among others the final Construction permit. The operating license for the facility is issued by ANRE.

The new CCGT will consume about 496 million m³ of natural gas per year. The entire infrastructure needs to be reconstructed on site (thermal network, gas pipeline, electricity network, SSs etc.). Due to replacement of capacities on the same site, it will be necessary to take out of service the existing boilers which will thus temporary limit the supply of thermal energy to consumers. Therefore, all implementation works have to be well coordinated and tuned not to endanger the security of district heat supply to vulnerable consumers during the winter period.

Precondition for the financial consolidation of the district heating sector is completion of the on-going corporate restructuring plan adopted by the GoM in 2011. Support to the implementation of the corporative restructuring of Termocom, CHP-1 and CHP-2 is provided by the World Bank (2013-2014), through the trust fund grant – 1.77 mill. EUR. Activities includes: (i) development of a set of documents providing the merger of CHP-1, CHP-2 and Termocom, (ii) development of tender documents and technical specifications for JSC Termocom, and (iii) creation of a new company of district heating in Chisinau municipality.

B) Main tasks and split of responsibilities

Tasks and description of activities		Responsibility
T4.1.0	Consolidation of the district heating sector: <ul style="list-style-type: none"> Corporate restructuring of Termocom and the two CHPs (CET-1 and CET-2) in Chisinau area, establishment of a new company (merger) in line with Government Decision 983 of 22/12/2011 Settlement / reprogramming of outstanding debt in connection with the new company 	GoM (CPA and LPA of Chisinau)
T4.1.1	Comprehensive feasibility study implemented by the State <ul style="list-style-type: none"> Conceptualisation of the project Ensured financing of the feasibility study Implementation of the feasibility study for construction of the CCGT, including Environmental and Social Impact Assessment (ESIA) 	MoE, GoM FS Consultant
T4.1.2	Selection of financing and implementation models based on results of the FS	GoM (MoE)
T4.1.3	Selection of future investor and issuance of Energy permit on a basis of (i) direct authorization or (ii) tender launched by the State <ul style="list-style-type: none"> Signing of Financing or Project Implementation Agreement with the selected strategic investor 	GoM (MoE)
T4.1.4	Tendering for and development of Project documentation (PD) <ul style="list-style-type: none"> Tendering for development of PD Development of documentation for obtaining necessary approvals and permits in accordance with laws and regulations of the RoM (development of Project for obtaining Construction Authorisation and Documentation for obtaining approval of fire security authority, Development of Basic design documentation for civil works (resistance, architecture, internal installations, land development works, roads and platforms, underground pipelines, Execution documentation for civil works) Obtaining approvals and permits incl. Construction permit 	Investor PD Contractor under Investor's contract
T4.1.5	Tendering for construction <ul style="list-style-type: none"> Selection of company for construction of the CCGT Selection of Works Supervision Consultant (WSC) 	Investor (MoE or non-RoM State investor)

Tasks and description of activities		Responsibility
T4.1.6	Implementation of construction <ul style="list-style-type: none"> Building of the CCGT and SS, including the associated power lines Supervision of works 	Main Contractor WSC
T4.1.7	Commissioning, trial run and start-up of commercial operation <ul style="list-style-type: none"> Performance testing, grid compliance testing, reliability run 	Main Contractor and WSC

Project 2 title: 400 kV interconnection line Suceava (RoM) - Balti (Romania)

A) Short description of the project

On 18 February 2011, Moldelectrica SE and Transelectrica JSC concluded a Memorandum of Understanding on the construction of the OHL-400kV Balti (RoM) – Suceava (Romania). The already completed feasibility study was funded by the EBRD. The study was finalized, the project implementation costs are estimated at 66.4 mill. EUR, of which 36.9 mill. EUR represent the project costs for the Moldovan side (52 km through the country, or the total of 115 km of the extension of the Balti Power Station to accommodate a 400kV OHL, 400kV distribution installation and 400/330kV autotransformers). The project is on hold due to lack of financing and uncertainty/delay of the RoM/UA to ENTSO-E interconnection project.

B) Main tasks and split of responsibilities

Tasks and description of activities		Responsibility
T4.2.1	Preparatory phase <ul style="list-style-type: none"> Realisation of ESIA Realisation of study regarding payment capacity of consumers and impact of project implementation on the tariff Obtaining permits and expropriation of land for the transmission corridor 	ESIA Consultant Moldelectrica IS Moldelectrica IS
T4.2.2	Tendering for PD	Moldelectrica IS
T4.2.3	Elaboration of PD (Moldova side 52 km)	PD Consultant
T4.2.4	Tendering / selection and contracting of the Main Contractor and of the Works Supervision Consultant (WSC)	Moldelectrica IS
T4.2.5	Construction works <ul style="list-style-type: none"> Construction of the line Construction of the back-to-back station Commissioning (by end 2019) 	Main Contractor and WSC

Project 3 title: 400 kV interconnection line Straseni-Ungheni (RoM) - Iasi (Romania)

A) Short description of the project

A similar feasibility study is still required for the Straseni-Ungheni-Iasi line, in order to establish the technical conditions and related costs. This project also requires the identification of funding sources. The cost of this line accounts for approximately 64 mill. EUR, of which 28 mill. EUR are for the Romanian side and 36 mill. EUR for the Moldova side.

B) Main tasks and split of responsibilities

Tasks and description of activities		Responsibility
T4.3.1	Preparatory phase <ul style="list-style-type: none"> Obtaining financing for FS+PD+project implementation, conclusion of Financing Agreement Realisation of ESIA Realisation of study regarding payment capacity of consumers and impact of project implementation on the tariff Obtaining permits and expropriation of land for the transmission corridor 	GoM (MoE) ESIA Consultant Moldelectrica IS Moldelectrica IS
T4.3.2	Tendering for PD	Moldelectrica IS
T4.3.3	Elaboration of PD (Moldova side 70 km)	PD Consultant
T4.3.4	Tendering / selection and contracting of the Main Contractor and of the Works Supervision Consultant (WSC)	Moldelectrica IS
T4.3.5	Construction works <ul style="list-style-type: none"> Construction of the line Construction of the back-to-back station Commissioning (by end 2019) 	Main Contractor and WSC

Project 4 title: 330 kV interconnection line Balti (RoM) - HPP Novodnistrovsk (Ukraine)

A) Short description of the project

Length: 123 km, of which 87 km in RoM; feasibility study finalised on the RoM side; overall cost min. 28.5 mill. EUR, of which min. 20 mill. EUR for RoM. Investment decision depends on the ENTSO-E CE Power System Interconnection project and financing options; earliest possible date for completion of project implementation: end 2019.

B) Main tasks and split of responsibilities

Tasks and description of activities		Responsibility
T4.4.1	Preparatory phase <ul style="list-style-type: none"> Obtaining financing for FS+PD+project implementation, conclusion of Financing Agreement Realisation of ESIA Realisation of study regarding payment capacity of consumers and impact of project implementation on the tariff Obtaining permits and expropriation of land for the transmission corridor 	GoM (MoE) ESIA Consultant Moldelectrica IS Moldelectrica IS
T4.4.2	Tendering for PD	Moldelectrica IS
T4.4.3	Elaboration of PD (Moldova side 87 km)	PD Consultant
T4.4.4	Tendering / selection and contracting of the Main Contractor and of the Works Supervision Consultant (WSC)	Moldelectrica IS
T4.4.5	Construction works <ul style="list-style-type: none"> Construction of the line Construction of the back-to-back station Commissioning (by end 2019) 	Main Contractor and WSC

Work Package 5: Other security of electricity and district heat supply improvement related measures

A) Short description of the Work Package

Capital repairs and priority short-term investment plans in electrical transmission / distribution and district heating networks

- Moldelectrica power network rehabilitation programme (39.3 mill. EUR, 2012-2017, on-going);
- Energy project III (6.3 mill. EUR, 2015-2016, under preparation).

Feasibility analysis and possible construction of a 250 MW CFB coal-fired power plant

The possible coal-fired thermal power plants would have at least 250 MW of installed capacity and utilise the circulated fluidised bed (CFB) combustion technology coupled with additional standard measures to fully comply with EU environmental standards.

The state of the art of CFB today typically does not exceed 300-350 MW of installed capacity per generation unit. The investor /owner of the plant is envisaged as IPP operating under market conditions to be put in place by the time the power plant would be commissioned. Due to current non-existence of electricity market in the RoM, and while aiming at improving security of electricity supply in Moldova, the IPP shall have a possibility to conclude a PPA for a period not exceeding 5 years or for the remaining period until the electricity market is established and becomes functional under the negotiated terms, provided the Energy Community would endorse such derogation from the prevailing principles which do not allow PPAs, which typically distort the market. The standard economic lifetime would be 40 years

Such TPP would generate approx. 1,750 GWh per annum (at 7,000 operating hours or at capacity factor of 0.8, 42% of net efficiency and investment cost of 1,200 EUR/kW or total cost of approx. 300m EUR excl. cost of connection to the power network), which represents approx. 44% of average gross electricity demand of Moldova on the right bank of the Dniester River of 3,987 GWh in the last 3 years (2010-2012) or twice as much as the indigenous total power generation was in the same period (840 GWh). If, theoretically, such TPP sold all generated electricity to the Moldovan power system the present electricity dependence of approx. 80% could be reduced to 35%.

It is worth stating that the power sector of Moldova has practically no power reserve of any kind, as well as no power system regulation capabilities, the services of which have to be provided by the Ukrainian system at unpredictable prices in the future. Equally, the Moldovan power system has no capability to provide any ancillary services to generators of RES-E electricity in the future. In some summer months, all power generation units in Moldova generate not more than 40-60 MW as against the typical summer loads in the range of approx. 250-550 MW and winter ones of approx. 330-750 MW.

In the above conditions, the security of electricity supply to Moldova is extremely low in case of any failure on interconnections to Transnistria and the Ukraine that may result in disastrous consequences.

Despite PPAs with IPPs are principally forbidden in the electricity market concepts in the Energy Community, Moldova with its specific power supply situation represents an exceptional case. Therefore, ways of possible derogation from the existing rules should be studied, which would encourage strategic investors to enter into the Moldovan power market under special conditions. In case of problems in finding a strategic investor for the 650 MWe

CCGT, due to very difficult and unpromising situation in the heat and gas sectors, construction of the 250 MW TPP could be a pillar for certain improvement towards the electricity market in Moldova, where practically no power generation unit can participate on an open market because of its specific role and inherited unfavourable conditions.

B) Main tasks and split of responsibilities

Tasks and description of activities		Responsibility
T5.1	Feasibility study on joining ENTSO-E	ENTSO-E Consortium
T5.2	Capital repairs and priority short-term investment plans in power transmission / distribution and district heating networks <ul style="list-style-type: none"> • Implementation of Molelectrica power network rehabilitation programme (2012-2017) • Preparation for and Implementation of Energy project III (2015-2016) 	Moldelectrica IS Termocom
T5.3	Introduction, development and implementation of rolling 10-year Development Plans at power system operators <ul style="list-style-type: none"> • Introduction and preparation of long-term 10-year development plans for electricity system operator(s); adoption of such plans in cooperation with MoE and ANRE and publishing of plans on website of the enterprise(s) • Implementation of development plans and update every two year 	Moldelectrica IS (licensees for electricity system operators)
T5.4	Preparation of pre- and feasibility study for construction of a coal-fired thermal power plant of approx. 250 MW capacity <ul style="list-style-type: none"> • Ensuring financing of the pre- and feasibility study • Implementation of the pre- and feasibility study including ESIA 	MoE FS Consultant
T5.5	Selection of strategic investor in the 250 MW TPP project <ul style="list-style-type: none"> • By authorisation of the GoM based on expressed direct interest • By a tender procedure prepared and implemented by the GoM (MoE) • Signing of the Project Implemenattion Agreement with the State 	GoM (MoE)
T5.6	Implementation of the 250 MW TPP project (implementation period 4-5 years) <ul style="list-style-type: none"> • Preparation of Project documentation for a 250 MW CFB technology (BAT) • Obtaining permits and approvals • Selection and contracting of Main Contractor and Works Supervisory Consultant • Construction • Commissioning and start-up of Commercial operations 	Investor

III. IMPLEMENTATION TIMELINE

Work Package 1: Development of legal-regulatory framework in the electricity sector

					2014				2015				2016				2017				2018				2019				2020			
	Tasks, Activities and Milestones	Responsibility	Start	End	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	T1.1 Gap analysis and preparation of “concordance tables” for implem. of the Third leg. Package to define the necessary further amendments	MoE	2Q2014	3Q2014																												
2	Law on Energy (No. 1525 of 1998) (as amended)	MoE	2Q2014	3Q2014																												
3	Law on Electricity (No. 124 of 2 July 2010) (after the planned amendments and supplements by 2014)	MoE	2Q2014	3Q2014																												
4	Other secondary legislation for the electricity sector as applicable	MoE	2Q2014	3Q2014																												
5	T1.2 Amendment and adoption of Draft Law amending and supplementing Law No. 124-XVIII of 2.7.2010 ‘On Electricity’ (Third legislative Package)																															
16	Transposition of Directive 2009/72/EC (Third legislative Package)	MoE	4Q2014	1Q2015																												
17	Adoption of Draft Law amending and supplementing Law No. 124-XVII of 2 July 2010 ‘On Electricity’	Parliament	1Q2015	2Q2105																												
8	T1.3 Transposition of Regulation (EC) No 714/2009 Preparation of transposed regulation and adoption thereof	ANRE	2Q2015	3Q2015																												
9	T1.4 Preparation of amendments and supplements to existing regulations including development of regulations in the electricity sector (TEN-e Regulation (EU) No 347/2013), REMIT Regulation (EC) No 1227/2011, Energy Infrastructure Package (PCI)	ANRE	2Q2015	4Q2015																												

Milestones: M1 - Gap analysis completed and “concordance tables” developed



M2 - Draft Law amending and supplementing Law on Electricity is adopted (Third leg. Package)

M3 - Regulation (EC) No. 714/2009 is transposed and adopted

M4 - Other relevant regulations in the electricity sector are developed and adopted

Work Package 2: Strengthening of institutional and organisational framework in the electricity sector (Central Electricity Supplier)

					2014				2015				2016				2017				2018				2019				2020			
	Tasks, Activities and Milestones	Responsibility	Start	End	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	T2.1 Setting up electricity market operator																															
2	Decision on CES set-up mode	GoM	1Q2014	2Q2014																												
3	Establishment of project team or/and preparation of the tendering (concession for CES activity) procedure	MoE	2Q2014	4Q2014																												
4	Establishment of CES as an independent entity	MoE (Concessionaire)	3Q2014	4Q2014																												
5	Formal designation of CES	GoM (MoE)	4Q2014	4Q2014																												
6	Formal preparations for licensing and for opening of specific regulated accounts required by ANRE, NCFM and NBM	CES	3Q2014	1Q2015																												
7	Licensing CES for supply of electricity at regulated tariffs and at non-regulated tariffs	ANRE	1Q2015	1Q2015																												
8	Approving the CES framework as the central depository of standard electricity commodity securities and respective licensing	NCFM	1Q2015	1Q2015																												
9	Licensing CES for non-bank financial institution and opening the CES accounts for its payment system and collaterals	NBM	1Q2015	1Q2015																												
10	T2.2 Certification of Moldelectrica IS																															
11	Notification (request) for certification as an electricity TSO in accordance with the EnC acquis communautaire	Moldelectrica SA	1Q2015	2Q2016																												
12	Certification of the electricity TSO upon receipt of request for certification as an electricity TSO in accordance with the EnC acquis	ANRE	2Q2015	2Q2016																												
13	Preparation of formal opinion(s) regarding certification in accordance with the EnC acquis	ECS, ECRB	4Q2015	1Q2016																												
14	Approval and designation of the electricity TSO upon its certification	GoM	2Q2016	2Q2016																												
15	T2.3 Sectoral capacity building and information dissemination																															
16	Institutional capacity building	MoE, ANRE, CES, Moldelectrica IS	1Q2014	4Q2020 ... and on																												
17	Market participants' education and public awareness programmes	MoE, ANRE, CES, Moldelectrica IS	2Q2014 1Q2018	4Q2016 4Q2019																												

Milestones:



M1 - adoption of decision on CES set up mode (legal and organisational form, ownership)

M2 – dependent on the way of CES establishment, setting up project team for CES establishment or preparation of tendering procedure for the granting of CES concession

M3 – preparation of project/tender documentation

M4 - establishment of CES, including transfer of the project team, other resources and contracts

M5 - formal designation of CES

M6 - submission of applications for issuance of required licenses and provision of specific services

M7 - organisation of conference on Moldovan market opening and of workshop for the market participants

M8 - issuance of license(s) for supply of electricity at regulated tariffs and at non-regulated tariffs

M9 - approval of CES framework as the central depository of standard electricity commodity securities and respective licensing

M10 - issuance of license for non-bank financial institution and opening of accounts for CES operations

M11 - capacity of ANRE, Moldelectrica IS and CES built for the 2015 scope of market operative functions status/development

M12- initial training of market participants before start of operations in 2015

M13 - notification (request) for certification as TSO submitted to ANRE

M14 - adoption of draft decision on the certification and notification of EnC Secretariat

M15 - public consultations on developing the system services procurement and balancing market

M16 - delivery of opinion on draft decision on certification

M17 - adoption of final decision on certification, EnC Secretariat duly notified and publication in the Official Journal of the EU executed

M18 - Moldelectrica IS is approved and designated as electricity TSO

M19 - capacity of ANRE, Moldelectrica IS and CES built for the 2017 scope of market operative functions status/development

M20 - training of market participants before start of operations introduced in 2017

M21 - capacity of ANRE, Moldelectrica IS and CES built for the 2018 scope of market operative functions status/development

M22 - training of market participants before start of operations introduced in 2019

M23 - training of market participants before start of operations introduced in 2020

M24 - capacity of ANRE, Moldelectrica IS and CES built for the 2020 scope of market operative functions status/development

Work Package 3: Electricity market development

					2014				2015				2016				2017				2018				2019				2020							
1	Tasks, Activities and Milestones	Responsibility	Start	End	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
2	T3.1 Electricity market subordinated legislation and operative rules				←-----→←-----→←-----→←-----→←-----→←-----→																															
3	Preparation and adoption of required (amendments to) the electricity market and CES operations related secondary legislation <i>(Note: this activity might overlap with Tasks 1.3 and 1.4 above)</i>	GoM (MoE)	1Q2014 (4Q2016)	2Q2014 (1Q2018)																																
4	Preparation and adoption of required (amendments to) the electricity market and CES operations related regulations <i>(Note: this activity might overlap with Tasks 1.5 and 1.6 above)</i>	ANRE	1Q2014 (4Q2016)	2Q2014 (2Q2018)																																
5	Preparation, coordination, adoption and publication of market operation rules	CES	2Q2014 2Q2017	2Q2016 2Q2019																																
6	Coordination and approval of market operation rules before publication	ANRE	4Q2014 1Q2016 4Q2017	4Q2014 2Q2016 2Q2019																																
7	Coordination and approval of market operation rules before publication	NCFM	4Q2014 1Q2016 4Q2017 2Q2019	4Q2014 2Q2016 4Q2017 2Q2019																																
8	Coordination and approval of market operation rules before publication	NBM	4Q2014 1Q2016 4Q2017 2Q2019	4Q2014 2Q2016 4Q2017 2Q2019																																
9	T3.2 CES operation-specific IT solutions				←-----→←-----→←-----→←-----→←-----→←-----→																															
10	Procurement of CES operation-specific IT solutions for the operational scope of 2015	CES	2Q2014	3Q2014																																
11	Procurement, testing and deployment of CES operation-specific IT solutions	CES	3Q2014 1Q2016 1Q2019	4Q2014 4Q2017 4Q2019																																
12	T3.3 Implementation of market operation functions				←-----→←-----→←-----→←-----→←-----→←-----→																															
13	Market administration operation	CES	1Q2015	4Q2020 ... and on																																
14	Support mechanisms operation	CES	1Q2015	4Q2020 ... and on																																
15	Market (trading/procurement) platforms operation	CES	1Q2017	4Q2020 ... and on																																
16	Launch of feasibility studies on electricity market developments and/or IEM integration and tests	ANRE, CES, Moldelectrica IS	3Q2015	3Q2019																																

Milestones:

- M1 - finalisation of the proposed changes to the secondary legislation needed for operation of the market
- M2 - adoption of the (amendments to) secondary legislation required for operation of the market
- M3 - adoption of the (amendments to) regulations required for operation of the market
- M4 - start of the (operational scope of 2015) operation-specific-IT procurement procedures
- M5 - draft of the CES operation rules (scope limited to the 2015 functions) submitted to regulatory coordination and public consultation procedures (initially drafted by the team within Moldelectrica IS)
- M6 - approval of the CES 2015 operation rules by ANRE
- M7 - approval of the CES 2015 operation rules by NCFM
- M8 - approval of the CES 2015 operation rules by NBM
- M9 - publication of the CES 2015 operation rules
- M10 - deployment of (operational scope of 2015) operation-specific-IT
- M11 - start of market schedule administration and balancing mechanism operation
- M12 - start of support mechanisms operation
- M13 - feasibility studies on short term trading markets (balancing, intra-day) launched
- M14 - draft of the CES operation rules amendments (scope adjusted for the 2017 functions) submitted to regulatory coordination and public consultation procedures
- M15 - start of the (operational scope of 2017) operation-specific-IT procurement procedures
- M16 - approval of the CES 2017 operation rules by ANRE
- M17 - approval of the CES 2017 operation rules by NCFM
- M18 - approval of the CES 2017 operation rules by NBM
- M19 - publication of the CES 2017 operation rules
- M20 - initialisation of conceptual work on market coupling with Ukraine (intra-day) and/or ENTSO-E (day-ahead)
- M21 - deployment of (operational scope of 2017) operation-specific-IT
- M22 - start of operation of: system services procurement platform, balancing market platform, and intra-day market platform
- M23 - start of the (operational scope of 2018) operation-specific-IT procurement procedures
- M24 - adoption of the (amendments to) secondary legislation required for operation of the market in integration with connected markets, if needed, for (a) intra-day market coupling with Ukraine and (b) day-ahead market coupling with Romania
- M25 - finalisation of market coupling tests with Ukraine
- M26 - adoption of the (amendments to) regulations required for operation of the market in integration with connected markets, if needed, for (a) intra-day market coupling with Ukraine and (b) day-ahead market coupling with Romania
- M27 - approval of the CES 2018 operation rules by ANRE
- M28 - approval of the CES 2018 operation rules by NCFM
- M29 - approval of the CES 2018 operation rules by NBM
- M30 - publication of CES 2018 operational rules (addition of intra-day market coupling East / Ukraine)
- M31 - deployment of (operational scope of 2018) operation-specific-IT
- M32 - coupling the intra-day markets with Ukraine
- M33 - start of the (operational scope of 2020) operation-specific-IT procurement procedures
- M34 - approval of the CES 2020 operation rules by ANRE
- M35 - approval of the CES 2020 operation rules by NCFM
- M36 - approval of the CES 2020 operation rules by NBM
- M37 - publication of CES 2020 operational rules (addition of day ahead market and market coupling West / Romania)
- M38 - finalisation of market coupling tests with Romania
- M39 - deployment of (operational scope of 2020) operation-specific-IT
- M40 - start of operation of day-ahead market platform, including market coupling with Romania

Work Package 4: Major electricity infrastructure investment projects

Project 1: Combined cycle gas turbine (CCGT) cogeneration plan of 650 MWe

					2014				2015				2016				2017				2018				2019				2020			
	Tasks, Activities and Milestones	Responsibility	Start	End	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	T4.1.0 Consolidation of the district heating sector: <ul style="list-style-type: none"> Corporate restructuring of Termocom and the two CHPs (CET-1 and CET-2) in Chisinau area, establishment of a new company (merger) Settlement / reprogramming of outstanding debt for the new company 	GoM (CPA and LPA of Chisinau) (MoE)	1Q2013	3Q2014																												
2	Preparation for and implementation of the CCGT project	MoE (GoM)	4Q2014	4Q2020																												
3	T4.1.1 Comprehensive feasibility study implemented by the State <ul style="list-style-type: none"> Conceptualisation of the project; ensured financing of the feasibility study Implementation of the feasibility study for construction of the CCGT, including Environmental and Social Impact Assessment (ESIA) 	MoE FS Consultant	4Q2014	2Q2015																												
3	T4.1.2 Selection of financing and implementation models based on results of the feasibility study	GoM (MoE)	3Q2015	4Q2015																												
4	T4.1.3 Selection of future investor and issuance of Energy permit on a basis of (i) direct authorization or (ii) tender launched by the State <ul style="list-style-type: none"> Signing of Financing or Project Implementation Agreement with the selected strategic investor 	GoM (MoE)	1Q2016	3Q2016																												
5	T4.1.4 Tendering for and development of Project documentation (PD) <ul style="list-style-type: none"> Tendering for development of PD Development of PD for obtaining necessary approvals and permits in accordance with laws and regulations of the RoM Obtaining approvals and permits incl. Construction permit 	Investor PD Contractor	4Q2016	4Q2017																												
6	T4.1.5 Tendering for construction <ul style="list-style-type: none"> Selection of company for construction of the CCGT Selection of the Works Supervision Consultant (WSC) 	Investor (MoE or non-RoM State investor)	4Q2017	2Q2018																												
7	T4.1.6 Implementation of construction Building of the CCGT and SS, including the associated power lines.	Main Contractor WSC	3Q2018	2Q2020																												
8	T4.1.7 Commissioning, trial run and start-up of commercial operation Performance testing, grid compliance testing, reliability run	Main Contractor and Works Supervisory Consultant	3Q2020	4Q2020																												

Milestones: M1 – Successful completion of the corporate restructuring plan in the district heating sector of Chisinau by the GoM

M2 – Comprehensive feasibility study completed and the results and the proposed concepts adopted by the stakeholders

M3 – Financing and implementation models decided by the GoM

M5 – Project documentation prepared

M7 - Construction completed successfully

M4 - Financing or Project Implementation Agreements signed with the selected strategic investor

M6 – Main Contractor for construction and Works Supervision Consultant selected and contracted

M8 - Commissioning of CCGT completed, start-up of commercial operation

Project 2: 400 kV interconnection line Suceava (RoM) - Balti (Romania)

					2014				2015				2016				2017				2018				2019				2020			
	Tasks, Activities and Milestones	Responsibility	Start	End	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	Total project implementation period		1Q2014	4Q2019																												
1	T4.2.1 Preparatory phase		1Q2014	4Q2014																												
2	Realisation of ESIA	ESIA Consultant	1Q2014	2Q2014																												
3	Realisation of study regarding payment capacity of consumers and impact of project implementation on the tariff	Moldelectrica IS	1Q2014	2Q2014																												
4	Obtaining permits and expropriation of land for the transmission corridor	Moldelectrica IS	3Q2014	4Q2014																												
5	T4.2.2 Tendering for PD	Moldelectrica IS	1Q2015	2Q2015																												
6	T4.2.3 Elaboration of PD (Moldova side 52 km)		3Q2015	2Q2016																												
7	T4.2.4 Tendering / selection and contracting of the Main Contractor and of the Works Supervision Consultant	Moldelectrica IS	3Q2016	4Q2016																												
8	T4.2.5 Construction works		1Q2017	4Q2019																												
9	Construction of the line	Main Contractor	1Q2017	4Q2018																												
10	Construction of the back-to-back station	Main Contractor	3Q2018	2Q2019																												
11	Commissioning (by end 2019)	Main Contractor and Works Supervision Consultant	3Q2019	4Q2019																												

- Milestones:**
- M1 – All permits are obtained and land expropriated
 - M2 – Consultant for preparation of PD selected and contract signed
 - M3 – PD completed and adopted
 - M4 – Main Contractor and Works Supervision Consultant selected and contracted
 - M5 – Construction of all project components completed
 - M6 – The line enters into commercial operation after successful commissioning

Project 3: 400 kV interconnection line Straseneni-Ungheni (RoM) - Iasi (Romania)

					2014				2015				2016				2017				2018				2019				2020			
	Tasks, Activities and Milestones	Responsibility	Start	End	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	Total project implementation period		1Q2014	2Q2020																												
1	T4.3.1 Preparatory phase		1Q2014	3Q2015																												
2	Obtaining financing for FS+PD+project implementation, conclusion of Financing Agreement	GoM (MoE)	1Q2014	2Q2014																												
3	Realisation of ESIA	ESIA Consultant	3Q2014	4Q2014																												
4	Realisation of study regarding payment capacity of consumers and impact of project implementation on the tariff	Moldelectrica IS	3Q2014	4Q2014																												
5	Obtaining permits and expropriation of land for the transmission corridor	Moldelectrica IS	1Q2015	3Q2015																												
6	T4.3.2 Tendering for PD	Moldelectrica IS	4Q2015	1Q2016																												
7	T4.3.3 Elaboration of PD (Moldova side 70 km)		2Q2016	2Q2017																												
8	T4.3.4 Tendering / selection and contracting of the Main Contractor and of the Works Supervision Consultant	Moldelectrica IS	3Q2017	4Q2017																												
9	T4.3.5 Construction works		1Q2018	2Q2020																												
10	Construction of the line	Main Contractor	1Q2018	4Q2019																												
11	Construction of the back-to-back station	Main Contractor	1Q2019	4Q2019																												
12	Commissioning (by mid 2020)	Main Contractor and Works Supervision Consultant	1Q2020	2Q2020																												

- Milestones:**
- M1 – Financing ensured and Financing Agreement signed
 - M2 – After all permits are obtained and land expropriated
 - M3 – Consultant for preparation of PD selected and contract signed
 - M4 – PD completed and adopted
 - M5 – Main Contractor and Works Supervision Consultant selected and contracted
 - M6 – Construction of all project components completed
 - M7 – The line enters into commercial operation after successful commissioning

Project 4: 330 kV interconnection line Balti (RoM) - HPP Novodnestrovsk (Ukraine)

					2014				2015				2016				2017				2018				2019				2020			
	Tasks, Activities and Milestones	Responsibility	Start	End	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	Total project implementation period		1Q2014	4Q2019																												
1	T4.4.1 Preparatory phase		1Q2015	2Q2016																												
2	Obtaining financing for FS+PD+project implementation, conclusion of Financing Agreement	GoM (MoE)	1Q2015	2Q2015																												
3	Realisation of ESIA	ESIA Consultant	3Q2015	4Q2015																												
4	Realisation of study regarding payment capacity of consumers and impact of project implementation on the tariff	Moldelectrica IS	3Q2015	4Q2015																												
5	Obtaining permits and expropriation of land for the transmission corridor	Moldelectrica IS	1Q2016	2Q2016																												
6	T4.4.2 Tendering for PD	Moldelectrica IS	3Q2016	4Q2016																												
7	T4.4.3 Elaboration of PD (Moldova side 87 km)		1Q2017	4Q2017																												
8	T4.4.4 Tendering / selection and contracting of the Main Contractor and of the Works Supervision Consultant	Moldelectrica IS	1Q2018	2Q2018																												
9	T4.4.5 Construction works		1Q2018	4Q2019																												
10	Construction of the line	Main Contractor	3Q2018	2Q2019																												
11	Commissioning (by end 2019)	Main Contractor and Works Supervision Consultant	3Q2019	4Q2019																												

Milestones: M1 - Financing ensured and Financing Agreement signed



M2 – After all permits are obtained and land expropriated

M3 – Consultant for preparation of PD selected and contract signed

M4 – PD completed and adopted

M5 – Main Contractor and Works Supervision Consultant selected and contracted


M6 – Construction of all project components completed

M7 – The line enters into commercial operation after successful commissioning

Work Package 5: Other security of electricity supply improvement related measures

					2014				2015				2016				2017				2018				2019				2020			
	Tasks, Activities and Milestones	Responsibility	Start	End	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	T5.1 Feasibility study on joining ENTSO-E	ENTSO-E Cons.	3Q2012	3Q2016																												
2	T5.2 Capital repairs and priority short-term investment plans in electrical transmission / distribution and district heating networks	Moldelectrica IS	2012	4 Q2017																												
3	Implem. of Molelectrica power network rehab. programme (2012-2017)	Moldelectrica IS	2012	4Q2017																												
4	Preparation for and Implementation of Energy project III (2015-2016)	New company	1Q2015	4Q2016																												
5	T5.3 Introduction, development and implementation of rolling 10-year Development Plans at gas system operators		2Q2014	4Q2020																												
4	Introduction and preparation of long-term 10-year development plans for electricity system operator(s) (2016-2025); adoption of such plans and publishing of plans on website of the enterprise(s)	Moldelectrica IS in cooperation with MoE and ANRE	3Q2014	4Q2015																												
5	Implementation of develop. plans and regular update every two years	Moldelectrica IS (TSO and DSOs)	1Q2016	Onwards																												
	Feasibility study and possible construction of a 250 MW coal-fired thermal power plants probably based on CFB technology		3Q2014	4Q2020																												
6	T5.4 Preparation of the pre- and feasibility study for construction of a coal-fired thermal power plant of approx. 250 MW capacity <ul style="list-style-type: none">Ensuring financing of the pre- and feasibility studyImplementation of the pre- and feasibility study including ESIA	MoE FS Consultant	3Q2014	4Q2015																												
7	T5.5 Selection of strategic investor for the 250 MW TPP project <ul style="list-style-type: none">By authorisation of the GoM based on expressed direct interestBy a tender procedure prepared and implemented by the GoM (MoE)Signing of the Project Implemenattion Agreement with the State	GoM (MoE)	4Q2015	2Q2016																												
8	T5.6 Implementation of the 250 MW TPP project (implementation period 4-5 years) <ul style="list-style-type: none">Preparation of Project documentation for a 250 MW CFB technologyObtaing permits and approvalsSelection and contracting of Main Contractor and Works Supervisory ConsultantConstructionCommissioning and start-up of Commercial operations	Investor	3Q2016	4Q2020																												

Milestones:

 M1 – Results of the ENTSO-E study available, decision on on joining ENTSO-E taken

M3 – First rolling Development Plan (2016-2020) is adopted and published

M5 – Updates of the development Plan (2020-2030) are prepared, adopted and published

M2 – First rolling Development Plan (2016-2024) is prepared

M4 – 1st update of the Development Plan (2018-2026) prepared, adopted and published

M6 – Feasibility study completed and decision of the GoM taken on possible implementation of the project

IV. IMPLEMENTATION COSTS

Implementation of the ESR will ask for intensive involvement of all electricity sector stakeholders. Deployment of available and new personnel resources will be needed, including training as required. The related costs are standard running costs of the public institutions and enterprises in the sector. Apart from these, financial resources will be needed for external technical assistance (TA) and investment projects. The following table describes the type of such additional costs and the likely financing sources if identified (in brackets).

Work Package	Type, amount of costs and financing
Work Package 1: Development of legal-regulatory framework in the electricity sector	<ul style="list-style-type: none"> TA required to support MoE and possibly ANRE in transposition of Third legislative Package
Work Package 2: Strengthening of institutional and organisational framework in the electricity sector (Central Electricity Supplier)	<ul style="list-style-type: none"> TA required to support Moldelectrica IS in the reorganisation and certification as TSO TA required to support GoM (MoE) in establishment of the Central Electricity Supplier
Work Package 3: Electricity market development	<ul style="list-style-type: none"> TA required to support MoE and ANRE in electricity market development
Work Package 4: Major electricity infrastructure investment projects including cogeneration	<ul style="list-style-type: none"> 650MWe CCGT - 617.5m EUR (financial sources: NA) 440kV interconnection line Suceava (RoM) - Balti (Romania) – 39.9m EUR (PCI project) 400kV interconnection line Strasenii-Ungheni (RoM) - Iasi (Romania) - 44.2m EUR 330kV interconnection line Balti (RoM) - HPP Novodnestrovsk (Ukraine) - 20.0m EUR AC/DC convertors for “back-to-back” solutions (three 500MW units x 70 mill. EUR per unit) – 210m EUR
Work Package 5: Other security of electricity and district heat supply improvement related measures	<ul style="list-style-type: none"> Feasibility study on joining ENTSO-E (on-going) – 7.1m EUR (financing ensured) Rehabilitation of HV transmission system (lines and SSs) of Moldelectrica IS by loans (EBRD, EIB) and grant of EC NIF – 39.3m EUR Energy project III (implementation of the investment plan on short-term measures for improved energy efficiency of the district heating system in Chisinau – 6.3 mill. EUR TA assistance for implementation of the feasibility study on possible 250MW coal-fired TPP with CFB technology Possible construction of a 250MW TPP worth approx. 300m EUR

V. PERFORMANCE INDICATORS

The Energy Strategy stipulates the major quantitative and qualitative performance indicators.

ENERGY SUPPLY SECURITY			
Indicators	MU	2015	2020
Energy interconnections:			
- Power lines	km		139
- Natural gas pipelines			40
Alternative natural gas supply sources: long-term supplier, relevant use of internal resources, short-term market		2	3
Stimulating the use of energy produced from RES in the gross internal consumption	%	10	20
Ensuring the biofuel share in the total used fuel	%	4	10
Use of energy from renewable sources in all forms of transport:	%		10
- volume of ethanol and petrol mix in the sold petrol amount		6	
- volume of biodiesel mix in the volume of sold diesel		5	
Increasing the internal power generation capacity	MW		By 800
Ensuring the share of annual generation of power from RES	%		10
OPENING OF MARKETS AND CONNECTION TO EUROPEAN MARKETS			
Transposing the Third legislative Package		√ (in part)	√ (in full)
Approving the new roadmap and commercial codes for power and gas			√
Approving the regulatory framework on liberalization and competition		√	
Appointing a market operator		√	
Accession of the SE Moldelectrica to the cross-border capacities tendering coordination mechanisms		√	
Integration of markets managed by the Market Operator in Moldova to the EIM			√
Official opening of markets	%	100	
Interconnection with EU systems:			
- Electricity			√
- Gas			√

VI. REPORTING

Steering Committee No. 1 will be in charge of coordination of the Electricity Sector Roadmap implementation. It will be appointed by the Government, with Parliament's approval. The committee will meet on a monthly basis.

The administration of the committee will be shared between representatives of the Ministry of Economy and National Energy Regulatory Agency, thus reflecting the two parallel authorities that have to participate in the coordination process.

Membership will be assigned to all important actors in the natural gas and environmental protection fields, e.g.:

- 1) MoE (co-chair)
- 2) ANRE (co-chair)
- 3) Ministry of Finance
- 4) Ministry of Environment
- 5) MRDC
- 6) Moldelectrica IS
- 7) New company
- 8) Academy of Science of Moldova
- 9) Chamber of Commerce and Industry
- 10) NGO

11) Other members to be identified by the Government

Observers to the Steering Committee No.1 will be representatives of the State Chancellery, of the donor community (e.g. Delegation of the EU to Moldova and the Swedish Embassy as the Donor Coordinator) and of the selected IFIs with local offices in Moldova (e.g. EBRD, WB etc.).

The reporting body to the Government of Moldova is the mentioned Steering Committee, which will prepare and submit report on a **semestrial basis**. The reports will be submitted to the MoE, which will in turn submit the reports to the Government of Moldova through the State Chancellery.

Natural Gas Sector Roadmap of the Republic of Moldova by 2030

I. OBJECTIVE AND SPECIFIC GOALS

The objective of the Natural Gas Sector Roadmap of the Republic of Moldova by 2030 (referred as »Natural Gas Sector Roadmap« or NGSР) is to **ensure the natural gas supply security** through a clear vision how the gas sector policy objectives stipulated in the Energy Strategy of the Republic of Moldova until 2030 (referred as »Energy Strategy«), adopted by the Government of Moldova (GoM) in February 2013, shall be achieved.

In addition, the roadmap is as a basis for establishment and implementation of effective progress monitoring mechanisms. The roadmap identifies major work packages and tasks, allocates responsibilities among the key stakeholders, determines the major milestones and estimates the associated timelines, assesses type of costs and quantifies indicative costs of major investment projects. It determines the coordination and progress monitoring mechanisms, and the ultimate supervision over the whole process.

The following main specific goals of the Energy Strategy shall be achieved through successful implementation of the NGSР:

- 1) Legal and regulatory framework in the gas sector of Moldova is developed and adopted in full compliance with the Third legislative Package of the EU in the energy sector;
- 2) Institutional and organisational framework in the gas sector is implemented in line with Directive 2009/73/EU; Moldovagaz SA is successfully unbundled and functional by 1.1.2020;
- 3) Natural gas market in Moldova is developed in line with sound market design rules and merged with Internal Energy Market (IEM) of ENTSO-G;
- 4) Security of gas supply in the country is increased by (i) implementation of major gas infrastructure projects including new interconnection with Romania and (ii) reinforcing of internal gas distribution network;
- 5) Potential for own gas resources and possibilities for the development of underground gas storage facilities are explored and developed if found economic;
- 6) Gas sector system operators comply with best European development planning principles and applied methodologies.

II. TASKS / ACTIONS TO BE UNDERTAKEN

II.I Stakeholders

Stakeholders are parties interested and/or directly involved in the implementation of the Energy Strategy, and in particular, in the gas sector. These are central public administration authorities, agencies and bodies, and public and private legal entities. The key ones include:

- Relevant Ministries:
 - Ministry of Economy (MoE) – ministry responsible for energy;
 - Ministry of Environment;
 - Ministry of Finance;
 - Ministry of Regional Development and Construction.
- Public agencies, funds and bodies:
 - National Energy Regulatory Agency (ANRE) – entitled to approve relevant methodologies, tariffs for regulated energy undertakings, market monitoring and customers’ protection;
 - National Commission for Financial Markets (NCFM) - entitled to approve framework of central securities depository and issue respective licenses;
 - National Bank of Moldova (NBM) – entitled to approve payment systems and issue respective licenses, provide services of deposit accounts to central depository operators;
- Public, private or mixed legal entities in the gas industry:
 - *Moldovagaz SA* - a single vertically integrated company controlling import, transit, transmission, wholesale supply, distribution and retail supply;
 - 2 transmission system operators: *SRL Moldovatransgaz* and *SRL Tiraspoltransgaz* (all subsidiaries of *Moldovagaz SA*);
 - 12 regional distribution system operators (all subsidiaries of *Moldovagaz SA*) on the right bank of the Dniester River and 6 distribution system operators in Transnistria;
- Others
 - International organisations: Energy Community Secretariat (ECS), Energy Community Regulatory Board (EBRD);
 - Donors and IFIs: e.g. EUD, EBRD, World Bank etc.

II.II Work packages, tasks and split of responsibilities

Work Package 1: Development of legal-regulatory framework in the gas sector

A) Short description of the Work Package

The completion of transposition of the Second legislative Package and implementation of the Third legislative Package for Moldova is most important issue for the functioning of the energy market, both in gas and electricity sector. Whilst the general implementation deadline is set for 1 January 2015, Article 11 of Directive 2009/72/EC and of Directive 2009/73/EC, respectively, shall apply from 1 January 2017.

Completion of the Second legislative Package in the gas sector (on-going)

- Completion of transposition of Directive 2004/67/EC of 26 April 2004 of the European Parliament and of the Council concerning measures to safeguard security of natural gas supply;
- Adoption of Draft Law amending and supplementing Law No. 123-XVIII of 23 December 2009 ‘On Natural Gas’ by Parliament;

- Transposition of Regulation (EC) no. 1775/2005 on conditions for access to the natural gas transmission networks and adoption thereof by ANRE.

Third legislative Package in the gas sector (plan)

The content of the Third legislative Package in the gas sector encompasses Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC and Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks.

The Regulation (EC) 713/2009 which defines the powers of ACER is not implemented but replaced by a Decision of the MC of the Energy Community.

- Gap analysis and preparation of “concordance tables” for implementation of the Third legislative Package to define the necessary further amendments to:
 - i. Law on Energy (No. 1525 of 1998) (as amended);
 - ii. Law on Natural Gas (No. 123 of 23 December 2009) (after the planned amendment in 2014);
 - iii. Other secondary legislation for gas as applicable;
- Preparation of amendments and supplements to existing regulations including development of new regulations in the gas sector as needed relating to:
 - a) Regulation (EU) 994/2010 of the European Parliament and of the Council of 20 October 2010 concerning measures to safeguard security of gas supply and repealing Council Directive 2004/67/EC;
 - b) TEN-e Regulation on Trans-European energy infrastructure (Regulation (EU) No 347/2013);
 - c) REMIT Regulation (EC) No 1227/2011 of the European Parliament and of the Council of 25 October 2011 on wholesale energy market integrity and transparency;
 - d) Preparation for the implementation of the Energy Infrastructure Package: (i) implementation of the Regulation and (ii) preparing for participation in the process of determining Projects of Common Interest (PCI) with an update every two years and its implementation.

B) Main tasks and split of responsibilities

Tasks and description of activities		Responsibility
T1.1	Amendment and adoption of Draft Law amending and supplementing Law No. 123-XVIII of 23.12.2009 ‘On Natural Gas’ (Second legislative Package) <ul style="list-style-type: none"> • Completion of transposition of Directive 2004/67/EC of 26 April 2004 of the European Parliament and of the Council concerning measures to safeguard security of natural gas supply • Adoption of Draft Law amending and supplementing Law No. 123-XVIII of 23 December 2009 ‘On Natural Gas’ 	MoE Parliament
T1.2	Transposition of Regulation (EC) no. 1775/2005 on conditions for access to the natural gas transmission networks and adoption thereof by ANRE	ANRE
T1.3	Elaboration of the „Conformity (compliance) program” with measures to ensure exclusion of a discriminatory behaviour of the network operators and submitting it for review to ANRE	Enterprises of Moldovagaz SA with licenses for natural gas transmission and

Tasks and description of activities		Responsibility
		distribution
T1.4	Legal unbundling of the natural gas distribution activity from the natural gas supply activity	MoE Moldovagaz SA
T1.5	Gap analysis and preparation of “concordance tables” for implementation of the Third legislative Package to define the necessary further amendments to: <ul style="list-style-type: none"> • Law on Energy (No. 1525 of 1998) (as amended); • Law on Natural Gas (No. 123 of 23 December 2009) (after the planned amendment in 2014); • Other secondary legislation for the gas sector as applicable. 	MoE
T1.6	Amendment and adoption of Draft Law amending and supplementing Law No. 123-XVIII of 23.12.2009 ‘On Natural Gas’ (Third legislative Package) <ul style="list-style-type: none"> • Transposition of Directive 2009/73/EC (Third legislative Package) of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC • Adoption of Draft Law amending and supplementing Law No. 123-XVIII of 23 December 2009 ‘On Natural Gas’ 	MoE Parliament
T1.7	Transposition of Regulation (EC) No 715/2009 of 13 July 2009 of the European Parliament and of the Council on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005 Preparation of transposed regulation and adoption thereof	ANRE
T1.8	Preparation of amendments and supplements to existing regulations including development of regulations in the gas sector <ul style="list-style-type: none"> • Regulation (EU) 994/2010 of the European Parliament and of the Council of 20 October 2010 concerning measures to safeguard security of gas supply and repealing Council Directive 2004/67/EC; • TEN-e Regulation on Trans-European energy infrastructure (Regulation (EU) No 347/2013); • REMIT Regulation (EC) No 1227/2011 of the European Parliament and of the Council of 25 October 2011 on wholesale energy market integrity and transparency (covering gas and electricity sectors); • Energy Infrastructure Package; implementation of the Regulation and participation in the process of determining Projects of Common Interest (PCI) with an update every 	ANRE

Work Package 2: Strengthening of institutional and organisational framework in the gas sector including unbundling of Moldovagaz SA

A) Short description of the Work Package

Unbundling, as the core measure on the way to a liberalised market is to be performed by 2020 and until then Moldovagaz SA will hold all responsibilities related to planning and implementation, with ANRE regulating its investments, congestion management and tariffs and the Government of Moldova monitoring/influencing its policy decisions via representatives in the Board.

On 18 October 2012, the Republic of Moldova submitted a request to Ministerial Council - EnC for derogation from Article 9 of the Directive. The application has passed the formal procedure and was enforced on 5 December 2012. However, the derogation only postpones the implementation deadline of art. 9(1) of the Directive from 31 June 2016 to 1 January

2020, and does not change the subject of the transposition content-wise e.g. the obligation to execute the unbundling according to the Gas Directive.

In order to facilitate the gas market liberalisation the gas market operator should be established while becoming the central operational institution on the gas market. Gas market operator should administer the market and provide market mechanisms and efficient products to facilitate the transparent and liquid wholesale gas market (day-ahead market, intraday market, balancing market, etc.).

In order to build adequate institutional framework Republic of Moldova needs to set up its own institutions and ensure institutional capacity building. Institutions on the internal gas market are needed in order to cope with market administration, trading process and monitoring and on the other hand to manage cross-border capacities and ensure proper regional market integration.

B) Main tasks and split of responsibilities

Tasks and description of activities		Responsibility
T2.1	Setting up gas market operator <ul style="list-style-type: none"> Decision on gas market operator set-up mode (legal and organisational form, ownership) and its establishment, including formal designation Licensing of gas market operator and opening of specific regulated accounts required 	GoM, MoE, (Concessionaire) Market operator, ANRE, NCFM, NBM
T2.2	Unbundling of Moldovagaz SA <ul style="list-style-type: none"> Unbundling in accordance with the EnC acquis as transposed in RoM, the unbundling model should be properly selected in accordance with the actual conditions of RoM's gas market set up. Notification (request) for certification as a gas TSO in accordance with the EnC acquis Certification of the gas TSO upon receipt of request for certification as a gas TSO in accordance with the EnC acquis Preparation of formal opinion(s) regarding certification in accordance with the EnC acquis Approval and designation of the gas TSO upon its certification 	Moldovagaz SA SRL Moldovatrangas ANRE ECS, ECRB GoM
T2.3	Sectoral capacity building and information dissemination <ul style="list-style-type: none"> Institutional capacity building Market participants' education and public awareness programmes 	MoE, ANRE, Moldovagaz SA, SRL Moldovatrangas, Market operator

Work Package 3: Natural gas market development

A) Short description of the Work Package

This work package includes measures and activities that are setting up an efficient gas market environment in Republic of Moldova that will lead to liquid, transparent and competitive gas trading.

The key element is going to be to define the sound internal market design that will address all aspects of the gas market especially main market design pillars as congestion management (cross border capacity allocation, entry/exit model), imbalances settlement (balancing) and operations, scheduling and market administration. Gas market operator performs activities that shall be regulated / supervised by three institutions: ANRE for its electricity market part, NCFM for its central depository function, and NBM for its payment system.

It is planned to integrate the internal gas market of Republic of Moldova into the wider regional gas market. By that security of supply and liquidity of the internal market are going to be increased.

B) Main tasks and split of responsibilities

Tasks and description of activities		Responsibility
T3.1	Gas market subordinated legislation and operative rules <ul style="list-style-type: none"> Preparation and adoption of required (amendments to) the gas market operations related secondary legislation (Note: this activity might overlap with Tasks 1.5 and 1.6 above) Preparation and adoption of required (amendments to) the gas market operations related regulations (Note: this activity might overlap with Tasks 1.2, 1.7 and 1.8 above) Preparation, coordination, adoption and publication of market operation rules Coordination and approval of market operation rules before publication 	GoM (MoE) ANRE Market operator ANRE, NCFM, NBM
T3.2	Procurement and deployment of market operation specific IT solutions <ul style="list-style-type: none"> Procurement, testing and deployment of market operation specific IT solutions before unbundling 	Market operator
T3.3	Implementation of market operation functions <ul style="list-style-type: none"> Market administration and (trading/procurement) platforms operation Feasibility studies on gas market developments and/or IEM integration and tests 	Market operator ANRE, Gas producers and suppliers, Gas TSO's,

Work Package 4: Major gas infrastructure investment projects

This work package includes implementation of major investments projects in the sector:

- a) Completion of the implementation of the on-going project of construction of Iasi (RO) – Ungheni (RoM) gas interconnection, and
- b) Extension of the Iasi–Ungheni gas pipeline on the RoM territory, Ungheni-Chisinau

Project title: Extension of the Iasi-Ungheni gas pipeline of the RoM territory, Ungheni-Chisinau

A) Short description of the project

The next and final phase of the Iasi-Ungheni project is the extension of the pipeline of 130 km (Ø500mm) on the RoM territory by construction of (1) gas pipeline Ungheni-Chisinau, (2) the ring around Chisinau and of (3) a distribution / measurement station on the ring. By that the new source of supply from Romania will be connected with the biggest consumption area, Chisinau (approx. 60% of total consumption of the country).

This pipeline is feasible if the Gas Pumping Station (on the territory of Romania) will be constructed and Romanian gas transmission network will be strengthened in the region (in this respect, 130 km of new/upgraded gas transmission pipe is under discussion).

The estimate budget of the project is approx. 70 mill. EUR. This project is of a strategic importance for the RoM and represents a significant step forward towards building and consolidating the energy security of the country.

In order to prepare the project for the implementation the MoE of the RoM is currently seeking donor's support to develop a Feasibility Study (FS), which will include the Environmental and Social assessment (ESA). This FS is planned to be finalized by end of 2Q2014 provided financial resources are ensured by the end of 2014. The project design is also envisaged to be drafted with the support of the donor community. The deadline would be by end of 1Q2015. In this regards, financing of the FS will be provided by SIDA through the Trust Fund managed by EBRD.

The Financing Agreement on the construction Ungheni-Chisinau pipeline should be signed preferably by the beginning of 2015, taking into account the support offered by EBRD, EIB, European Commission through the NIF (ENPI). The initial goal was to finalize the entire project by the end of 2016.

B) Main tasks and split of responsibilities

Tasks and description of activities		Responsibility
T4.1	Preparatory phase Preparation of the project concept, pre- and feasibility study (including ESIA) for the Ungheni-Chisinau gas pipeline	MoE
T4.2	Conclusion of financing agreement for project implementation	GoM (MoE)
T4.3	Obtaining permits and approval Obtaining permits and expropriation of land for the gas pipeline, mapping of land, obtaining of approval from environmental authorities and others as required by law	MoE
T4.4	Tendering for development of project documentation (PD) Selection of engineering/consulting company for preparation of PD	MoE
T4.5	Elaboration of PD Preparation of PD for Ungheni-Chisinau gas pipeline	PD Contractor
T4.6	Tendering for construction and supervision Selection of main contractor for construction of the Ungheni-Chisinau gas pipeline and selection of the Works Supervision Consultant	MoE
T4.7	Construction Building of the Ungheni-Chisinau gas pipeline as per PD, including ring around Chisinau and the regulation station	Project Contractor, Works Supervision Consultant
T4.8	Commissioning Trial runs until successful technical taking over and start-up of commercial operations	Works Supervision Consultant, Project Contractor

Work Package 5: Other security of gas supply improvement related measures

A) Short description of the Work Package

This work package includes additional elements/activities that shall/could further increase security of natural gas supply in Moldova as well as to bring the sector in line with international technical standards and methodologies applied on the IEM:

- Introduction and development of rolling 10-year Development Plans at gas system operators in line with applicable regulation of the Energy Community to ensure proper and timely planning and coordination of system infrastructure development

and the implementation thereof, as well as to send proper signals to other infrastructure development subjects in the country and abroad;

- Studying, development and introduction of the Entry-Exit method for tariffing of transmission and transit in line with Third legislative Package and best European practices to bring the gas sector of Moldova in line with comparable methodologies on IEM;
- Reactivation of exploratory works for possible development of indigenous gas resources with an aim to reduce energy dependence of the country;
- Studying and possible development of indigenous underground gas storage possibilities to considerably improve security of gas supply in the country as well as abroad;
- Studying of possible participation of Moldova in international LNG facility development in the region to diversify supply of gaseous fuels.

B) Main tasks and split of responsibilities

Tasks and description of activities		Responsibility
T5.1	Implementation of Development Plan of Moldovagaz SA (2013-2015)	Moldovagaz SA
T5.2	Introduction, development and implementation of rolling 10-year Development Plans at gas system operators <ul style="list-style-type: none"> • Introduction and preparation of long-term 10-year development plans for gas system operator(s); adoption of such plans in cooperation with MoE and ANRE and publishing of plans on website of the enterprise(s) • Implementation of development plans and update every two year 	Moldovagaz SA (licensees for system operators)
T5.3	Studying, development and introduction of the Entry-Exit method for tariffing of transport and transit <ul style="list-style-type: none"> • Study of introduction of Entry-Exit method in Moldova; adoption of new methodology by ANRE • Implementation of Entry-Exit method 	Moldovagaz SA ANRE
T5.4	Research of possible indigenous gas resources <ul style="list-style-type: none"> • Preparation of tender and granting of concession for gas exploratory works in southern part of Moldova • Implementation of exploratory works 	MoE Concessionaire
T5.5	Research of possible underground gas storage <ul style="list-style-type: none"> • Feasibility study and additional geological research works on possible development of indigenous underground gas storage facility • Possible preparation of tender for the implementation should the feasibility study show clearly positive results 	MoE, Contractor
T5.6	Participation of Moldova in international LNG facility development <ul style="list-style-type: none"> • Close follow-up of relevant development in the region and identification of possible participation of Moldova in the project of construction of new LNG terminal at the Black Sea • Preparation of adequate decision on involvement of Moldova in the project 	MoE

III. IMPLEMENTATION TIMELINE

Work Package 1: Development of legal-regulatory framework in the gas sector

					2014				2015				2016				2017				2018				2019				2020			
	Tasks, Activities and Milestones	Responsibility	Start	End	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	T1.1 Amendment and adoption of Draft Law amending and supplementing Law No. 123-XVIII of 23.12.2009 'On Natural Gas'				← →																											
2	Completion of transposition of Directive 2004/67/EC	MoE	3Q2012	1Q2014																												
3	Adoption of Draft Law amending and supplementing Law No. 123-XVIII of 23 December 2009 'On Natural Gas'	Parliament	1Q2014	2Q2014																												
4	T1.2 Transposition of Regulation (EC) no. 1775/2005 on conditions for access to the natural gas transmission networks and adoption thereof	ANRE	3Q2014	3Q2014																												
5	T1.3 Elaboration of the „Conformity (compliance) program” with measures to ensure exclusion of a discriminatory behaviour of the network operators and submitting it for review to ANRE	Natural gas trans. and distribution enterprises	2Q2014	3Q2014																												
6	T1.4 Legal unbundling of the natural gas distribution activity from the natural gas supply activity	MoE Moldovagaz SA	3Q2014	4Q2014																												
7	T1.5 Gap analysis and preparation of “concordance tables” for implem. of the Third leg. Package to define the necessary further amendments	MoE	2Q2014	3Q2014																												
8	Law on Energy (No. 1525 of 1998) (as amended)	MoE	2Q2014	3Q2014																												
9	Law on Natural Gas (No. 123 of 23 December 2009) (after the amendment in 2014)	MoE	2Q2014	3Q2014																												
10	Other secondary legislation for the gas sector as applicable	MoE	2Q2014	3Q2014																												
11	T1.6 Amendment and adoption of Draft Law amending and supplementing Law No. 123-XVIII of 23.12..2009 'On Natural Gas' (Third legislative Package)		4Q2014	2Q2015																												
12	Transposition of Directive 2009/73/EC (Third legislative Package)	MoE	4Q2014	1Q2015																												
13	Adoption of Draft Law amending and supplementing Law No. 123-XVIII of 23 December 2009 'On Natural Gas'	Parliament	1Q2015	2Q2015																												
14	T1.7 Transposition of Regulation (EC) No 715/2009 Preparation of transposed regulation and adoption thereof	ANRE	2Q2015	3Q2015																												
15	T1.8 Preparation of amendments and supplements to existing regulations including development of regulations in the gas sector (Regulation (EU) 994/2010, TEN-e Regulation (EU) No 347/2013), REMIT Regulation (EC) No 1227/2011, Energy Infrastructure Package (PCI)	ANRE	2Q2015	4Q2015																												

Milestones: M1 – Draft Law amending and supplementing Law on Natural Gas is adopted (Second leg. Package) M2 – Transposed Regulation (EC) no. 1775/2005 is adopted

M3 – Conformity programs submitted and endorsed by ANRE

M4 – Distribution and Supply activities unbundled in all gas undertakings

M5 – Gas analysis complete and “concordance tables” developed

M6 - Draft Law amending and supplementing Law on Natural Gas is adopted (Third leg. Package)

M7 – Regulation (EC) No. 715/2009 is transposed and adopted

M8 – Other relevant regulations in the gas sector are developed and adopted

Work Package 2: Strengthening of institutional and organisational framework in the gas sector including unbundling of Moldovagaz SA

					2014				2015				2016				2017				2018				2019				2020			
	Tasks, Activities and Milestones	Responsibility	Start	End	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	T2.1 Setting up gas market operator				←-----→																											
2	Decision on allocation of responsibilities and provision of resources for set-up of gas market operator	GoM	1Q2014	1Q2014																												
3	Organisation of a project team and/or preparation of the tendering (concession for gas market operation activity) procedure	MoE	1Q2014	3Q2014																												
4	Establishment / set-up of Market operator in accordance with the Governmental decision	MoE / Concessionaire	2Q2014	3Q2014																												
5	Nomination / designation of Market operator	GoM (MoE)	3Q2014	4Q2014																												
6	Formal preparations for licensing and for opening of specific regulated accounts required by ANRE, NCFM and NBM	Market operator	2Q2014	4Q2014																												
7	Licensing designated market operator entity for supply of gas at regulated tariffs and at non-regulated tariffs, as required / needed	ANRE	4Q2014	4Q2014																												
8	Approving the framework of the designated market operator entity as the central depository of standard gas commodity securities and respective licensing	NCFM	4Q2014	4Q2014																												
9	Licensing the designated market operator entity for non-bank financial institution and opening its accounts for the payment system and collaterals purposes	NBM	4Q2014	4Q2014																												
10	T2.2 Unbundling of Moldovagaz SA																															
11	Unbundling in accordance with the EnC acquis communautaire as transposed in RoM	Moldovagaz SA	1Q2018	4Q2019																												
12	Notification (request) for certification as a gas TSO in accordance with the EnC acquis communautaire	SRL Moldovatrangas	1Q2018	4Q2019																												
13	Certification of the gas TSO upon receipt of request for certification as a gas TSO in accordance with the EnC acquis communautaire	ANRE	4Q2018	4Q2019																												
14	Preparation of formal opinion(s) regarding certification in accordance with the EnC acquis communautaire	ECS, ECRB	1Q2019	3Q2019																												
15	Approval and designation of the gas TSO upon its certification	GoM	4Q2019	4Q2019																												
16	T2.3 Sectoral capacity building and information dissemination				←-----→																											
17	Institutional capacity building	MoE, ANRE, Moldovagaz SA, SRL Moldovatrangaz, Market operator	1Q2014	4Q2020 ... and on																												
18	Market participants' education and public awareness programmes	MoE, ANRE, Moldovagaz SA, SRL Moldovatrangaz, Market operator	2Q2014 1Q2018	4Q2014 4Q2019																												

Milestones:



- M1 - adoption of decision on allocation of responsibilities and provision of resources for securing timely set-up of gas market operator
- M2 - dependent on the way of establishment: setting up project team for gas market operator establishment or preparation of tendering procedure for the granting of gas market operation concession
- M3 - preparation of project/tender documentation
- M4 - establishment of gas market operator, including transfer of the project team, other resources and contracts
- M5 - formal designation as the gas market operator
- M6 - submission of applications for issuance of required licenses and provision of specific services
- M7 - Market operator issued the required licenses for gas market activities
- M8 - Market operator's central depository framework approved and the respective license issued
- M9 - Market operator is issued the license to operate its payment system and special accounts at NBM are opened
- M10 - capacity of ANRE, SRL Moldovatrangaz (and CES, if applicable) built for the 2015 scope of market operative functions status/development
- M11 - education of market participants on 2015 scope of market functions and means of operation performed
- M12 - finalisation of the unbundling of Moldovagaz SA
- M13 - notification (request) for certification as TSO submitted to ANRE
- M14 - notification of EnC Secretariat on the certification being requested by a person (to be) controlled by (a) person(s) from third country/(countries)
- M15 - capacity of ANRE, Moldovagaz SA, SRL Moldovatrangaz and Market operator built for the 2020 scope of market operative functions status/development including market integration into wider IEM and implementation of unbundling with respective certifications
- M16 - education of market participants on the market integration into wider IEM and on the 2020 scope of market operative functions status/development performed
- M17 - delivery of opinion on compliance of the person(s) controlling the gas TSO and whether granting certification present relevant risks
- M18 - adoption of draft decision on the certification and notification of EnC Secretariat
- M19 - delivery of opinion on draft decision on certification
- M20 - adoption of final decision on certification, EnC Secretariat duly notified and publication in the Official Journal of the EU executed
- M21 - certified entity is approved and designated as gas TSO
- M22 - capacity of ANRE, ANRE, Moldovagaz SA, SRL Moldovatrangaz and Market operator built for the unbundled market and for 2020 scope of market operative functions status/development
- M23 - education of market participants on the unbundled market and on the 2020 scope of market operative functions status/development performed

Work Package 3: Natural gas market development

	Tasks, Activities and Milestones	Responsibility	Start	End	2014				2015				2016				2017				2018				2019				2020			
					1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	T3.1 Gas market subordinated legislation and operative rules				←								←												→							
2	Preparation and adoption of required (amendments to) the gas market and Moldovagaz SA / SRL Moldovatrangaz (or CES / another entity, if applicable) operations related secondary legislation (<i>Note: this activity might overlap with Tasks 1.5 and 1.6 above</i>)	GoM (MoE)	1Q2014 (1Q2017) 1Q2019	2Q2014 (3Q2018) 2Q2019				M1		M2															M13		M23					
3	Preparation and adoption of required (amendments to) the gas market and Moldovagaz SA / SRL Moldovatrangaz (or CES / another entity, if applicable) operations related regulations (<i>Note: this activity might overlap with Tasks 1.2, 1.7 and 1.8 above</i>)	ANRE	2Q2014 (1Q2017) 2Q2019	2Q2014 (4Q2018) 2Q2019				M3			M5														M15		M24	M25				
4	Preparation, coordination, adoption and publication of market operation rules	Market operator	2Q2014 1Q2017 4Q2019	4Q2014 4Q2019							M6														M16		M19	M26				
5	Coordination and approval of market operation rules before publication	ANRE	4Q2014 4Q2018	4Q2014 4Q2019																												
6	Coordination and approval of market operation rules before publication	NCFM	4Q2014 4Q2018 2Q2019	4Q2014 4Q2018 2Q2019							M7																					
7	Coordination and approval of market operation rules before publication	NBM	4Q2014 4Q2018 4Q2019	4Q2014 4Q2018 4Q2019							M8																					
8	T3.2 Procurement and deployment of market-operation-specific IT solutions				←																											
9	Procurement, testing and deployment of market-operation-specific IT solutions	Market operator	2Q2014 1Q2018	4Q2014 4Q2019							M10														M12		M20	M22	M30			
10	T3.3 Implementation of market operation functions				←																											
11	Market administration and (trading/procurement) platforms operation before unbundling	Market operator	1Q2015 ... and on	4Q2020							M11																					
12	Feasibility studies on gas market developments and/or IEM integration and tests	ANRE, Moldovagaz SA, SRL Moldovatrangaz, Market operator	(3Q2015) 1Q2017	(4Q2016) 3Q2018																						M14						

Milestones:

- M1 - finalisation of the proposed changes to the secondary legislation needed for operation of the market
- M2 - adoption of the (amendments to) secondary legislation required for operation of the market
- M3 - adoption of the (amendments to) regulations required for operation of the market
- M4 - start of the (operational scope of 2015) operation-specific-IT procurement procedures
- M5 - draft of the market operation rules (scope limited to the 2015 functions) submitted to regulatory coordination and public consultation procedures
- M6 - approval of the 2015 market operation rules by ANRE
- M7 - approval of the 2015 market operation rules by NCFM
- M8 - approval of the 2015 market operation rules by NBM
- M9 - publication of the 2015 market operation rules
- M10 - deployment of (operational scope of 2015) operation-specific-IT
- M11 - start of market schedule administration and balancing mechanism operation in accordance with the 2015 market operation rules
- M12 - start of the (operational scope of 2019) operation-specific-IT procurement procedures
- M13 - adoption of the (amendments to) secondary legislation required for operation of the market in integration with connected markets, if needed
- M14 - finalisation of market integration tests
- M15 - adoption of the (amendments to) regulations required for operation of the market in integration with connected markets, if needed
- M16 - approval of the 2019 market operation rules by ANRE
- M17 - approval of the 2019 market operation rules by NCFM
- M18 - approval of the 2019 market operation rules by NBM
- M19 - publication of the 2019 market operation rules
- M20 - deployment of (operational scope of 2019) operation-specific-IT
- M21 - gas market integration into the wider IEM
- M22 - start of the (operational scope of 2020) operation-specific-IT procurement procedures
- M23 - adoption of the (amendments to) secondary legislation required for operation of the market after unbundling
- M24 - adoption of the (amendments to) regulations required for operation of the market after unbundling
- M25 - draft of the market operation rules after unbundling submitted to regulatory coordination and public consultation procedures
- M26 - approval of the 2020 market operation rules by ANRE
- M27 - approval of the 2020 market operation rules by NCFM
- M28 - approval of the 2020 market operation rules by NBM
- M29 - publication of the 2020 market operation rules
- M30 - deployment of (operational scope of 2020) operation-specific-IT
- M31 - start of market operations after unbundling

Work Package 4: Major gas infrastructure investment projects

Project 1: Gas interconnection Iasi (ROM) – Ungheni (RoM)

Project 2: Extension of the Iasi-Ungheni pipeline on the RoM territory, Ungheni-Chisinau

					2014				2015				2016				2017				2018				2019				2020			
	Tasks, Activities and Milestones	Responsibility	Start	End	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	Gas interconnection Iasi (RO) - Ungheni (RoM)		2Q2013	3Q2014	←→				M1																							
2	Completion of construction of the interconnection	Contractors	2Q2013	2Q2014					M1																							
3	Commissioning (start by 1 July 2014) and start-up of commercial operations	Contractors	3Q2014	3Q2014																												
4	Extension of the Iasi-Ungheni pipeline on the RoM territory, Ungheni-Chisinau		4Q2013	1Q2019	←→																											
5	T4.1 Preparatory phase				←→																											
6	Obtaining financing from donors to support the (P)FS (incl. ESIA)	MoE	4Q2013	1Q2014					M2																							
7	Selection/contracting of consultants to implement the (P)FS	Donor (EBRD)	1Q2014	1Q2014					M2																							
8	Implementation of the (P)FS (incl. ESIA)	(P)FS Contractor	2Q2014	4Q2014					M3																							
9	T4.2 Conclusion of financing agreement for project implementation	GoM (MoE)	1Q2015	1Q2015					M3																							
10	T4.3 Obtaining permits and approval								M4																							
11	Obtaining permits and expropriation of land for the gas pipeline	MoE	2Q2015	3Q2015					M4																							
12	Geodesy works (mapping land, etc.)	MoE	2Q2015	3Q2015					M5																							
13	T4.4 Tendering for development of project documentation (PD)	MoE	4Q2015	1Q2016					M5																							
14	T4.5 Elaboration of PD								M6																							
15	Selection/contracting of consultants to prepare the PD	MoE	2Q2016	3Q2016					M6																							
16	Preparation of PD	PD Contractor	4Q2016	1Q2017					M7																							
17	T4.6 Tendering for construction	MoE	2Q2017	3Q2017					M7																							
18	T4.7 Construction incl. commissioning																															
19	Preparation and conclusion of the Financing Agreement	MoE	4Q2017	1Q2018																												
20	Selection/contracting of Works Supervision Consultant	MoE	4Q2017	1Q2018																												
21	Selection/contracting of Project Contractor	MoE	4Q2017	1Q2018																												
22	Procurement for goods and services	Contractors	4Q2017	1Q2018																												
23	Project implementation/construction works	Contractors	2Q2018	3Q2018																												
24	T4.8 Commissioning (start by 1 October 2018)	Contractors	4Q2018	1Q2019																												

Milestones:

- M1 - Completion of the Iasi –Ungheni project
- M2 - Completion of the Preparatory phase
- M3 - Financing agreements signed
- M4 - Permits and approval obtained
- M5 - Tender for development of project documentation (PD) completed
- M6 - Project documentation for the selected technical solution elaborated
- M7 - Tender(s) for construction of gas pipeline Ungheni-Chisinau completed
- M8 - Construction of gas pipeline completed
- M9 - Commissioning of gas pipeline completed, start-up of commercial operation

Work Package 5: Other security of gas supply improvement related measures

					2014				2015				2016				2017				2018				2019				2020			
	Tasks, Activities and Milestones	Responsibility	Start	End	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	T5.1 Implementation of Development Plan of Moldovagaz SA (2013-2015)	Moldovagaz SA	1Q2014	4Q2015																												
2	T5.2 Introduction, development and implementation of rolling 10-year Development Plans at gas system operators																															
3	Introduction and preparation of long-term 10-year development plan for gas system operator(s) (2016-2025); adoption of such plans and publishing of plans on website of the enterprise(s)	Moldovagaz SA in cooperation with MoE and ANRE	3Q2014	4Q2015																												
4	Implementation of development plans and regular update every two years	Moldovagaz SA (gas system operator(s))	1Q2016	Onwards																												
5	T5.3 Studying, development and introduction of the Entry-Exit method for tariffing of transport and transit																															
6	Study of introduction of Entry-Exit method in Moldova	Moldovagaz SA ANRE	3Q2014	2Q2015																												
7	Implementation of Entry-Exit method	Moldovagaz SA	3Q2015	Onwards																												
8	T5.4 Research of possible indigenous gas resources																															
9	Preparation of tender and granting of concession for gas exploratory works in southern part of Moldova	MoE	1Q2015	4Q2015																												
10	Implementation of exploratory works	Concessionaire	1Q2016	Onwards																												
11	T5.5 Research of possible underground gas storage																															
12	Feasibility study and additional geological research works on possible development of indigenous underground gas storage facility	FS Consultant	1Q2016	4Q2017																												
13	Possible preparation of tender for the implementation should the feasibility study show clearly positive results	MoE	1Q2017	4Q2019																												
14	T5.6 Participation of Moldova in international LNG facility development																															
15	Close follow-up of relevant development in the region and identification of possible participation of Moldova in the project of construction of new LNG terminal at the Black Sea	MoE	1Q2014	4Q2016																												
16	Preparation of adequate decision on involvement of Moldova in the project	GoM (MoE)	1Q2015	Onwards																												

Milestones:

- M1 – First rolling Development Plan (2016-2024) is prepared
- M2 – First rolling Development Plan (2016-2020) is adopted and published
- M3 – 1st update of the Development Plan (2018-2026) prepared, adopted and published
- M4 – 2nd update of the development Plan (2020-2030) prepared, adopted and published

IV. IMPLEMENTATION TIMELINE

Implementation of the NGSR will ask for intensive involvement of all gas sector stakeholders. Deployment of available and new personnel resources will be needed, including training as required. The related costs are standard running costs of the public institutions and enterprises in the sector. Apart from these, financial resources will be needed for external technical assistance (TA) and investment projects. The following table describes the type of such additional costs and the likely financing sources if identified (in brackets).

Work Package	Type, amount of costs and financing
Work Package 1: Development of legal-regulatory framework in the gas sector	<ul style="list-style-type: none"> TA required to support MoE and possibly ANRE in transposition of Third legislative Package
Work Package 2: Strengthening of institutional and organisational framework in the gas sector including unbundling of Moldovagaz SA	<ul style="list-style-type: none"> TA required to support Moldovagaz SA in the unbundling process by 1.1.2020
Work Package 3: Natural gas market development	<ul style="list-style-type: none"> TA required to support MoE and ANRE in gas market development
Work Package 4: Major gas infrastructure investment projects	<ul style="list-style-type: none"> Iasi-Ungheni gas pipeline -26.m EUR (various sources, loans and grants, financing ensured) Ungheni–Chisinau gas pipeline including regulation station and gas ring around Chisinau – 70m EUR (sources: 30m EUR EIB and 30m EUR EBRD (both loans), 10m EUR GoM, financing subject to positive results of the FS)
Work Package 5: Other security of gas supply improvement related measures	<ul style="list-style-type: none"> Implementation of the Development Plan of Moldovagas SA (2013-2015) (investments and capital repairs) - 64.9m EUR (own sources of Moldovagaz SA) TA for the development of an implementation model for Entry-Exit method in Moldovan circumstances Cost of exploratory works for indigenous gas reserves TA for the feasibility study and additional research works on underground gas storage development Investment cost of the potential underground gas storage facility (Cazaclia) (estimated cost: 650m EUR, source: NA)

V. PERFORMANCE INDICATORS

The Energy Strategy stipulates the major quantitative and qualitative performance indicators.

ENERGY SUPPLY SECURITY			
Indicators	MU	2015	2020
Energy interconnections:			
- Power lines	km		139
- Natural gas pipelines			40
Alternative natural gas supply sources: long-term supplier, relevant use of internal resources, short-term market		2	3

ENERGY SUPPLY SECURITY			
Indicators	MU	2015	2020
Stimulating the use of energy produced from RES in the gross internal consumption	%	10	20
Ensuring the biofuel share in the total used fuel	%	4	10
Use of energy from renewable sources in all forms of transport: - volume of ethanol and petrol mix in the sold petrol amount - volume of biodiesel mix in the volume of sold diesel	%	6 5	10
Increasing the internal power generation capacity	MW		By 800
Ensuring the share of annual generation of power from RES	%		10
OPENING OF MARKETS AND CONNECTION TO EUROPEAN MARKETS			
Transposing the Third legislative Package		√ (in part)	√ (in full)
Approving the new roadmap and commercial codes for power and gas			√
Approving the regulatory framework on liberalization and competition		√	
Appointing a market operator		√	
Accession of the SE Moldelectrica to the transborder capacities tendering coordination mechanisms		√	
Integration of markets managed by the Market Operator in Moldova to the EIM			√
Official opening of markets	%	100	
Interconnection with EU systems: - Electricity - Gas			√ √

VI. REPORTING

Steering Committee No. 2 will be in charge of coordination of the Natural Gas Roadmap implementation. It will be appointed by the Government, with Parliament's approval. The committee will meet on a monthly basis.

The administration of the committee will be shared between representatives of the Ministry of Economy and National Energy Regulatory Agency, thus reflecting the two parallel authorities that have to participate in the coordination process.

Membership will be assigned to all important actors in the natural gas and environmental protection fields, e.g.:

- 1) MoE (co-chair)
- 2) ANRE (co-chair)
- 3) Ministry of Finance
- 4) Ministry of Environment
- 5) Ministry Regional Development and Construction;
- 6) Moldovagaz SA

- 7) Academy of Science of Moldova
- 8) Chamber of Commerce and Industry
- 9) NGO
- 10) *Other members to be identified by the Government*

Observers to the Steering Committee No.2 will be representatives of the State Chancellery, of the donor community (e.g. Delegation of the EU to Moldova and the Swedish Embassy as the Donor Coordinator) and of the selected IFIS with local offices in Moldova (e.g. EBRD, WB etc.).

The reporting body to the Government of Moldova is the mentioned Steering Committee, which will prepare and submit report on a **semestrial basis**. The reports will be submitted to the MoE, which will in turn submit the reports to the Government of Moldova through the State Chancellery.



The European Union's Programme for Moldova

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Enclosure 1

“Energy Strategy of the RoM until 2030”

**Working document in support of
the ESR for the RoM by 2030**

**Ministry of Economy
of the Republic of Moldova**

Chisinau, February 2014

FOREWORD

Energy Strategy of the Republic of Moldova until 2020 (“the Energy Strategy” or ES2030) was adopted by the Government of Moldova (GoM) in February 2013.

According to the Energy Strategy (Section VI. Paragraph 177), to ensure the achievement of progress indicators in time and in full conformity with the legislation in effect, the management and monitoring responsibilities, as well as reporting duties must be distributed in a legal and efficient way.

As stipulated in ES2030, projects can be in the main areas addressed by the Energy Strategy:

- 1) provide support to the power transmission, including development of interconnections;**
- 2) ensure the natural gas supply security;
- 3) develop new energy generation capacities, including energy production based on renewables;**
- 4) cogeneration, district heating sector and solution of the accumulated debts issue;**
- 5) market liberalization, incentives-based regulation, competitive market framework;**
- 6) corporate governance improvement, including technical and management skills, code of conduct.

Further to ES2030, not all of these areas are approached through policy documents in terms of planning; therefore not all of them belong to the Government (Ministry of Economy). This approach takes into account not only and not necessarily the fact that the Ministry cannot undertake all responsibilities, but also the fact that a different approach might not be compliant with the roles and activities defined by the primary legislation.

In the specific case of the National Energy Regulatory Agency it is clear that it will not be coordinated and monitored by the Ministry, but by the Parliament. These plans will be well defined at the individual level and will be comprehensive, coherent and consistent with other plans.

Along with an internal coordination of projects' development within these plans and taking into consideration the different vertical structure of the hierarchic coordination, a horizontal coordination of plans is also necessary, by including the monitoring, reporting and assessment aspects. Diverse plans will contribute to the achievement of the same major or specific objective and will imply interaction with institutions that are or not in a hierarchic relation.

General policy documents will allow the coordination of several plans for achieving the main objective and specific objectives. According to ES2030, these policy documents are:

- the “**Electricity sector roadmap for the Republic of Moldova until 2030,**” covering the above areas 1), 3), 4) and 5),
- the “Natural gas sector roadmap for the Republic of Moldova until 2030,” covering the area 2) and
- a specific action plan for the area 6) under the integral coordination of the Ministry of Economy and monitored by the State Chancellery.

The other two main national action plans in the field of energy, notably ‘On energy efficiency’ (NEEAP) and ‘On renewable energy’ (NREAP) are rather standard documents, implying a double reporting/monitoring process: to the Government and to the Energy Community Secretariat. Provisions of these two documents will be in line with provisions with the Energy Strategy and of other legal and normative acts in force, and with the reporting / planning standards arising from the commitments of joining the Energy Community Treaty. Therefore, elements included in NEEAP and NREAP are not duplicated and part of the roadmaps (ESR and NGSR).

The time horizon of the roadmaps is “by 2030” which complies with the planning period applied in the Energy Strategy. However, it is quite obvious that for many reasons the current focus of the roadmaps should be put on the short- to medium-term period of 3-5 years (2014-2016/2018) with an important milestone year of 2020, by when most currently set strategic targets should be fulfilled. The period beyond 2020 remains relatively vague, also in terms of energy strategy in the European Union. As a consequence, it is sensible that the roadmaps are regarded as **living documents**, subject of necessary update and possible change at least every five years as ES2030, for example.

ACRONYMS AND ABBREVIATIONS

CET	<i>Centrale electrice de termoficare</i> (CHP)
CHP	Combined heat and power plant (<i>CET</i>)
CP	Contracting Party (to the ECT)
CPA	Central public authorities
DoESEE	Department of Energy Security and Energy Efficiency
ECT	Treaty Establishing the Energy Community (Energy Community Treaty)
ECRB	Energy Community Regulatory Board
ECS	Energy Community Secretariat
EnC	Energy Community
ES2030	Energy Strategy of the RoM until 2030 ("Energy Strategy")
DSO	Distribution system operator
GoM	Government of Moldova
ICS	<i>Intreprindere capital strain</i> (Foreign capital company)
IEM	Internal European Market
IS	<i>Intreprinderea de Stat</i> (State enterprise)
JSC	Joint stock company
LoE	Law on Electricity (No. 124 of 2 July 2010)
LoEE	Law on Energy Efficiency (No. 142 of 2 July 2010)
LoNG	Law on Natural Gas (No. 123 of 23 December 2009)
LoRE	Law on Renewable Energy (No. 160 of 12 July 2007)
LPA	Local public authorities
MC-EnC	Ministerial Council of the Energy Community
MD	Moldova
MDL	Moldovan lei
MoE	Ministry of Economy
NBM	National Bank of Moldova
NCFM	National Commission for Financial Markets
PD	Project documentation
RE	Renewable energy
RES	Renewable energy sources
RO	Romania
RoM	Republic of Moldova
SA	<i>Societate pe actiuni</i> (Joint stock company)
SE	State enterprise
SRL	<i>Societate cu raspundere limitata</i> (Limited liability company)
WSC	Works Supervision Consultant

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Annex: Outline of procedures for planning and construction of energy infrastructure projects

1 INTRODUCTION

1.1 OBJECTIVE AND SPECIFIC GOALS OF THE ROADMAP

The objective of the Electricity Sector Roadmap of the Republic of Moldova by 2030 (referred as »Electricity Sector Roadmap« or ESR) is to **ensure the electricity supply security** through a clear vision how the electricity sector policy objectives stipulated in the Energy Strategy of the Republic of Moldova until 2030 (referred as »Energy Strategy«), adopted by the Government of Moldova (GoM) in February 2013, shall be achieved.

In addition, the roadmap is as a basis for establishment and implementation of effective progress monitoring mechanism. The roadmap identifies major work packages and tasks, allocates responsibilities among the key stakeholders, determines the major milestones and estimates the associated timelines, assesses type of costs and quantifies costs of major investment projects. It determines the coordination and progress monitoring mechanisms, and the ultimate supervision over the whole process.

The following main specific goals of the Energy Strategy shall be achieved through successful implementation of the ESR:

- 1) Legal and regulatory framework in the electricity sector of Moldova is developed and adopted in full compliance with the Third legislative Package of the EU in the electricity sector;
- 2) Institutional and organisational framework in the electricity sector is implemented in line with Directive 2009/72/EU; Central Electricity Buyer is successfully established on time;
- 3) Electricity market in Moldova is developed in line with sound market design rules and merged with Internal Energy Market (IEM) of the ENTSO-E interconnected system;
- 4) Security of electricity supply in the country is increased by (i) implementation of electricity infrastructure projects including new 400 kV interconnections with Romania and (ii) reinforcement of internal electricity transmission and distribution networks;
- 5) Investment projects increasing own electricity generation in Moldova and possibilities for secured, reliable and energy efficient cogeneration (heat and electricity production) are promoted and implemented in line with the Energy Strategy objectives.

1.2 SUMMARY OF KEY ENERGY POLICY AND STRATEGY OBJECTIVES BY 2030 (ES2030)

In ES2030, the GoM has defined three main objectives:

- 1) to ensure the energy supply security

- 2) to develop competitive markets and ensure their regional and European integration
- 3) to ensure the energy sector's sustainability and combat climate changes

In further detail, Moldova's strategic goals for 2013-2020 are as follows:

- 1) to ensure the natural gas supply safety, by diversifying the supply routes and sources, of carrier types (conventional, non-conventional gas, LNG) and by storage facilities, together with strengthening Moldova's role of natural gas transmission corridor;
- 2) to strengthen Moldova's role of power transmission corridor, by building new interconnectors, connected to the ENTSO-E system, and by consolidating the internal power transmission network;
- 3) to create a strong power and heat generation platform, through retrofitting, efficient district heating and advanced marketing;
- 4) to improve the energy efficiency and increase the use of renewable energy sources (RES);
- 5) to provide legal, institutional and operational framework for a real competition, to effectively open the market, set up energy prices in a transparent and fair way, integrate the Moldovan energy market into the EU internal market;
- 6) to provide a modern and competitive institutional framework for the energy industry development.

Several quantitative targets included in ES2030 have been inherited from the National Development Strategy „Moldova 2020” and the National Energy Efficiency Programme 2011-2020:

- 1) in the energy security specific domain:
 - a) to perform energy interconnectors: 139 km of power lines and 40 km of natural gas pipelines in 2020 will be constructed;
 - b) to stimulate the use of energy produced from renewable sources, in relation to the total gross final energy consumption (GFEC): 20% in 2020, with an intermediate objective of 10% in 2015;³
 - c) to ensure a 10% share of biofuels in the total fuels by 2020, with an intermediate objective of 4%;
 - d) to increase the internal power production capacities up to 800 MW by 2020;
 - e) to ensure a 10% annual share of power produced from renewable sources by 2020.⁴
- 2) in the energy efficiency specific domain:
 - a) to reduce the energy intensity by 10% in 2020;
 - b) to reduce losses in the transmission and distribution networks by up to 11% in 2020 (up to 13% in 2015) for power, by 39% in 2020

³ Moldova has to distinguish between: (A) the only legally binding RES-related targets set by the MC-EnC decision on 18 October 2012 (17% in GFEC and 10% share of RES in transport and (B) voluntarily-imposed targets set by ES2030 as above.

⁴ Another self-imposed target by Moldova.

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(by 20% in 2015) for natural gas and by 5% in 2020 (by 2% in 2015) for thermal energy;

- c) to reduce greenhouse gas emissions (compared with 1990) by 25% in 2020;
- d) to reduce the energy consumption in buildings by 20% in 2020;
- e) to achieve a 10% share of refurbished public buildings in 2020.

2 ROADMAP BY AREA

2.1 LEGISLATIVE-REGULATORY FRAMEWORK DEVELOPMENT IN THE ELECTRICITY SECTOR

2.1.1 International obligations

All international obligation of the Republic of Moldova in the electricity sector arise from obligations of the RoM as Contracting Party to the ECT (for detail, see Table 2.1).

Table 2.1: International obligations of the RoM in the electricity sector (*Acquis* on electricity)

Directives and regulations	Implementation deadlines for Contracting Parties of the Energy Community
Third legislative Package	
Directive 2009/72/EC of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC adopted by D/2011/02/MC-EnC (Decision of the Ministerial Council of the Energy Community)	The laws, regulations and administrative provisions necessary to comply with the Third legislative Package have to be brought into force by 1 January 2015. (For certain Articles and provisions D/2011/02/MC-EnC determines longer deadlines: Article 9(1): 1 Jun 2016, Article 9(4): 1 June 2017 and Articles 11: 1 Jan 2017. The market opening for households is 1 Jan 2015, whilst the general implementation deadline of market opening for non-households was set for 1 Jan 2008.)
Regulation (EC) No 714/2009 of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity and repealing Regulation (EC) No 1228/2003 adopted by D/ 2011/02/MC-EnC	
Second legislative Package	
Directive 2005/89/EC of 18 January 2006 concerning measures to safeguard security of electricity supply and infrastructure investment	31 December 2009
Commission Decision 2006/770/EC of 9 November 2006 amending the Annex to Regulation (EC) No 1228/2003 on conditions for access to the network for cross-border exchanges in electricity	27 June 2008
Directive 2003/54/EC of 26 June 2003 concerning common rules for the internal market in electricity	1 July 2007 (repealed by adoption of Directive 2009/72/EC)
Regulation 1228/2003/EC of 26 June 2003 on conditions for access to the network for cross-border exchanges in electricity	1 July 2007

2.1.2 Laws and regulations

By passing Law on Electricity (No. 124-XVIII) on 2 July 2010, Moldova transposed Directive 2003/55/EC concerning common rules for the internal market in natural

gas which provides general framework, prescribes roles of GoM and ANRE, provisions, rights and obligations of TSO, DSOs, suppliers, consumers; regulates access to the grid, licensing conditions, and guarantees the right of every consumer to conclude contracts with any (including foreign) supplier.

However, the completion of transposition of Directive 2004/67/EC of 26 April 2004 of the European Parliament and of the Council concerning measures to safeguard security of natural gas supply is being implemented only now. Draft Law amending and supplementing the Law on Natural Gas awaits government decision and final promulgation by the Parliament.

In addition, the decisions of ANRE on adoption of the following items of secondary legislation in the field of electricity are relevant:

- Rules of the natural gas market;
- Regulation on supply and use of natural gas;
- Regulation on natural gas measuring for commercial purposes;
- Regulation on extension of natural gas network;
- Technical norms for gas transportation / transmission network;
- Technical norms of gas distribution networks;
- Methodology of calculation and application of gas tariffs;
- Methodology of calculation and application of natural gas tariffs;
- Methodologies of calculation of natural gas losses in transportation and distribution networks.

2.1.3 Implementation of the Third legislative Package with special attention to the electricity sector

The implementation of the Third legislative Package for Moldova is the first and most important issue for the functioning of the energy market which is one of the top priorities of the EU. The Ministerial Council (MC) of the Energy Community (EnC) in October 2011 adopted Third legislative Package for an internal EU gas and electricity market for implementation in EnC. Whilst the general implementation deadline was set for 1 January 2015, Article 11 of Directive 2009/72/EC and of Directive 2009/73/EC, respectively, shall apply from 1 January 2017.

The content of the Third legislative Package encompasses two EC directives: 2009/72/EC⁵ and 2009/73/EC⁶ which have to be implemented into national law and two EC regulations: 714/2009⁷ and 715/2009.⁸

⁵ **Directive 2009/72/EC** of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC

⁶ **Directive 2009/73/EC** of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC

⁷ **Regulation (EC) No 714/2009** of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity and repealing Regulation (EC) No 1228/2003

The Regulation (EC) 713/2009 which defines the powers of ACER is not implemented but replaced by a Decision of the MC of the Energy Community.⁹ As Moldova is a full member of the EnC, it is to be analysed whether or not this decision has to be amended and if so, how.

In the next step after preparing for implementation of the Third legislative Package, it is recommended to analyse also other pieces of EU energy and related *acquis communautaire* (especially environment). Therefore it is suggested to proceed as follows:

- e) To proceed a gap analysis for implementation of the Third legislative Package. The results shall identify the necessary further amendments to the Moldovan:
 - i. Law on Energy (No. 1525 of 1998) (as amended);
 - ii. Law on Electricity (No. 124 of 2 July 2010) (after the planned amendment most probably by 1Q2014)¹⁰;
 - iii. Law on Natural Gas (No. 123 of 23 December 2009) (after the planned amendment most probably in 2Q2014);
 - iv. secondary legislation for electricity and gas.
- f) To prepare the necessary (identified) missing provisions of the legislation, first priority a)-d), second priority e)-f) in the following, respectively.
- g) To prepare an analysis what are the potentially necessary amendments or new pieces of legislation in order to implement other parts of the EU energy acquis:

First priority:

- a) ITC Regulation (Regulation (EU) No 838/2010)¹¹
- b) Regulation (EU) 994/2010 on Security of Gas Supply¹²

⁸ **Regulation (EC) No 715/2009** of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks

⁹ **Regulation (EC) 713/2009 No 713/2009** of the European Parliament and of the Council of 13 July 2009 establishing an Agency for the Cooperation of Energy Regulators (ACER)

The regulation defines the powers of ACER related to the EU, however, which is not directly transferrable to the EnC. The scope of transferred powers from the Regulation 713/2009 is defined by the Ministerial Council of the EnC which by its decision allocates the powers to the EnC Secretariat. (Note: In the same way also regulations 714/2009 and 715/2009 are implemented.)

¹⁰ Aimed at completion of transposition of specific directives (Directive 2005/89/EC and 2004/67/EC for electricity and gas, respectively, and Regulation (EC) No 1775/2005) related to the 2nd Energy Package.

¹¹ Commission **Regulation (EU) No 838/2010** of 23 September 2010 on laying down guidelines relating to the inter-transmission system operator compensation mechanism and a common regulatory approach to transmission charging

¹² **Regulation (EC) No. 994/2010** of the European Parliament and of the Council of 20 October 2010 concerning measures to safeguard security of gas supply and repealing Council Directive 2004/67/EC

- c) RES-e directive (Directive 2009/28/EC)¹³
- d) TEN-e Regulation on Trans-European energy infrastructure (Regulation (EU) No 347/2013)

Second priority:

- e) New directive on energy efficiency (2012/27)¹⁴

On 24 October 2013 at the 11th MC-EnC meeting in Belgrade, the MC-EnC adopted a Recommendation to implement Directive 2012/27/EU in the Energy Community with certain adaptations, with a view to adopt a binding decision for the Energy Community in 2014.

- f) REMIT (Regulation (EU) No 1227/2011)¹⁵

Apart from this, EnC Contracting Parties will have to prepare for the implementation of the Energy Infrastructure Package, i.e. Regulation on guidelines for trans-European energy infrastructure. This activity shall consist of (i) implementation of the Regulation and (ii) preparing for participation in the process of determining the list of Projects of Common Interest and its implementation (on-going).

The numbers above are the steps to go and at the same time also the order of priorities for the implementation of the transposition, which should be reflected in both roadmaps (for electricity and natural gas sector).

Regarding the electricity sector in particular, the Law on Electricity (2009) established the basic legislative framework for the gas market in line with the Second legislative Package, in particular, with Directive 2003/54/EC.

2.2 INSTITUTIONAL-ORGANISATIONAL FRAMEWORK IN THE ELECTRICITY SECTOR

2.2.1 Current stakeholders and split of line responsibilities

Apart from the executive branch of state administration powers designated to Government of Moldova (GoM), the line ministry responsible for energy is *Ministry of Economy* (MoE), which is according to the Law on Energy empowered with energy sector administration and being primarily in charge of energy sector policies and legal framework development. As *Central Government Authority*, the MoE

For the time being, it is not clear yet how this regulation will be implemented, directly or again via the decision of the MC of the EnC.

¹³ **Directive 2009/28/EC** of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC

¹⁴ On 25 October 2012, the EU adopted the **Directive 2012/27/EU** on Energy Efficiency, amending Directive 2009/125/EC and 2010/30/EU and repealing directives on cogeneration (Directive 2004/8/EC) and the ESD (Directive 2006/32/EC).

¹⁵ **Regulation (EC) No 1227/2011** of the European Parliament and of the Council of 25 October 2011 on wholesale energy market integrity and transparency

through its Department for Energy Security and Energy Efficiency (DoESEE) is also in charge of SoS of energy (electricity, gas, oil, district heating etc.). Other responsibilities of MoE/DoESEE include:

- elaboration and promotion of state policies in energy sector;
- elaboration of concepts and programs on energy sector development;
- monitoring the implementation of development and investments programs;
- elaboration of normative documents in the field of energy;
- development of international energy relations, including on acquisition of strategic energy resources, attracting investments, development of energy interconnections, and development of the energy market;
- management of state energy property;
- supporting competition and limiting the monopolistic presence in the energy sector.

Related to SoS, the MoE elaborates and implements measures to ensure the energy security in the country.

The *National Agency for Energy Regulation* (ANRE) was established in 1997 and is a permanent central public regulatory authority having the status of a legal entity which is not subordinated to any other public or private authority. ANRE as an independent authority to support the introduction of market mechanisms in the energy sector, while protecting the interests of consumers and investors has the following competences:

- supervision of the enforcement of energy laws;
- promotion and insurance of fair competition and efficient operation of energy markets;
- issuance of licenses for licensed energy activities on energy market (according to Law on Natural Gas, Law on Electricity and Law on Petroleum Products Market);
- monitoring the fulfilment by licensees of their obligations and application of provisions of laws listed above;
- promotion of an adequate tariff policy following the interest of both producers and consumers;
- approving tariffs calculated based on approved methodologies and monitoring of their application;
- supervising the application of necessary and justified costs principle by regulated operators for regulated activities;
- supervising the consumers rights protection.

The specific role of ANRE in achieving SoS is in approving costs of power system maintenance and planned investments by regulated companies.

The *Competition Council* is the authority for safeguarding that provisions of the Law on Competition are implemented properly.

On the other side is power industry. The key market players are power system undertakings – legal persons are:

1) Generation:

- *CET-1 SA*, *CET-2 SA* in Chisinau and *CET-Nord SA* in Balti (all CHPs are regulated producers of electricity);
- *Nodul Hidroenergetic Costesti IS* (HPP Costesti – regulated producer);
- Moldavskaya GRES or CERMS;
- CHPs in sugar industry.

2) Transmission (incl. central dispatch): *Moldelectrica IS* is the state-owned single power transmission system operator (TSO) of RoM, which also provides market operator functions however in a limited scope at present.

Moldelectrica IS manages the internal transmission network on the right bank of the Dniester River. With respect to SoS, the TSO is typically responsible for:

- Ensuring ancillary services (reserve, load-frequency control and balancing energy) (not included in the licence or in the law) required for operation of the power system;
- Dispatching of power generation units connected to the transmission network (not included in the licence or in the law);
- Congestion management;
- Purchasing energy for covering transmission system losses (not in place yet);
- Maintenance and planning / construction of power transmission system.

3) Distribution and supply at regulated tariffs¹⁶ consists of 3 distribution system operators (DSO): *RED Nord SA*, *RED Nord-Vest SA* (both state-owned) and *ICS RED Union Fenosa SA* (privately-owned), the latter covering about 70% of the overall electricity supply on the right bank of the Dniester River. With respect to SoS, the DSOs are typically responsible for:

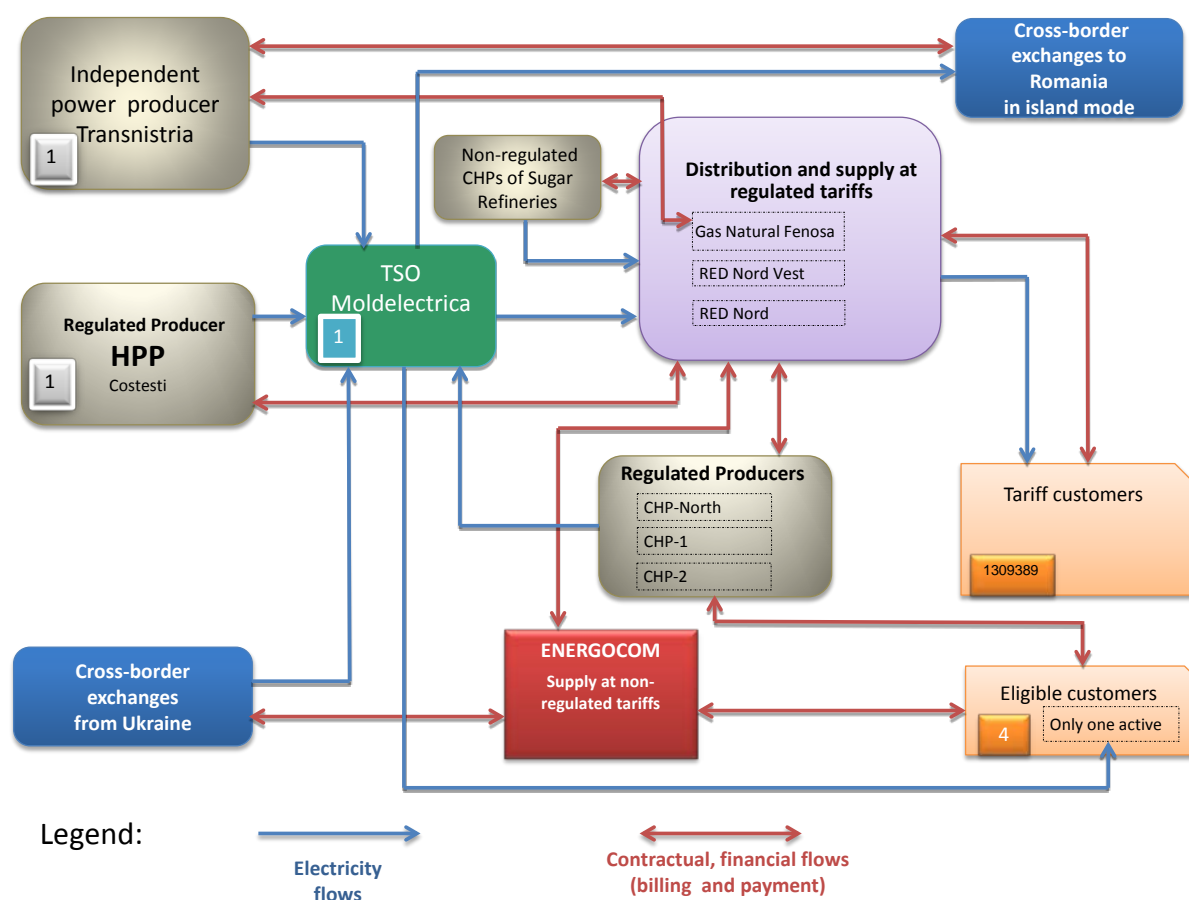
- Ensuring balancing energy required for their consumers;
- Dispatching of power generation units connected to the distribution system;
- Purchasing energy for covering distribution system losses;
- Maintenance and planning / construction of power distribution system.

¹⁶ Note: According to Law on Electricity (No. 124) Distribution and Supply should have had separate accounts and become legally unbundled by 1.1.2013. However, in reality, the accounts are separated while legal unbundling has not been achieved yet as this is now postponed by 1.1.2015, in accordance with Draft Law amending and supplementing Law on Electricity.

- 4) Supply at non-regulated tariffs: *Energocom SA* is a state-owned electricity supplier and trader on the wholesale market in charge of managing electricity import contracts with Ukraine. In addition, there are 7 smaller suppliers currently licensed by ANRE, however, their scope of activity is rather marginal;
- 5) Mixed (network/generation) functions: are performed by *Dnestrenergo JSC* company of Tiraspol, which operates Eastern electricity networks in Dubasari city, South Eastern electricity networks in Tiraspol city and HPP Dubasari;
- 6) Final consumers (since 1 January 2013):
 - Eligible consumers: all non-households consumers, however, only one of them is active and actually uses its eligibility right to freely choose its supplier on the market;
 - Non-eligible (household) consumers: 1,207,731 (as of end 2012).

In summary, on the electricity market there are 6 licensed generators, 3 suppliers at regulated tariffs, 8 suppliers at non-regulated tariffs, 3 distribution system operators and 1 transmission system operator (status as of 2 July 2013). The three distribution system operators act as default suppliers and play the role of the "supplier of the last resort" in their respective supply area.

The institutional set-up of the electricity market of Moldova (status of mid 2013) is shown in Figure 2.1.



Source: Annual Implementation Report, Energy Community Secretariat, 1 September 2013.

Figure 2.1: Institutional set-up of the electricity market of Moldova

2.2.2 Sector development plans in the future

There are two principle challenges of legal & regulatory and institutional development in the electricity sector in the future, which both are related to: (i) electricity market development, (ii) buying and reselling of electricity generated by RES-E and existing CHPs with regulated prices and guaranteed purchase. The expected results are:

- 1) **Central Electricity Supplier (CES)** established (i.e. selected, appointed, legally registered and functional entity by the **end of 2014**, and
- 2) **Market operation** activities transferred from Moldelectrica IS and transferred to the CES by the **beginning of 2015**.

The area of major investment projects in the gas sector are addressed in Section 5.

The institutional set-up in the electricity sector after the full market opening, e.g. status of 2020 is shown in Figure 2.2.

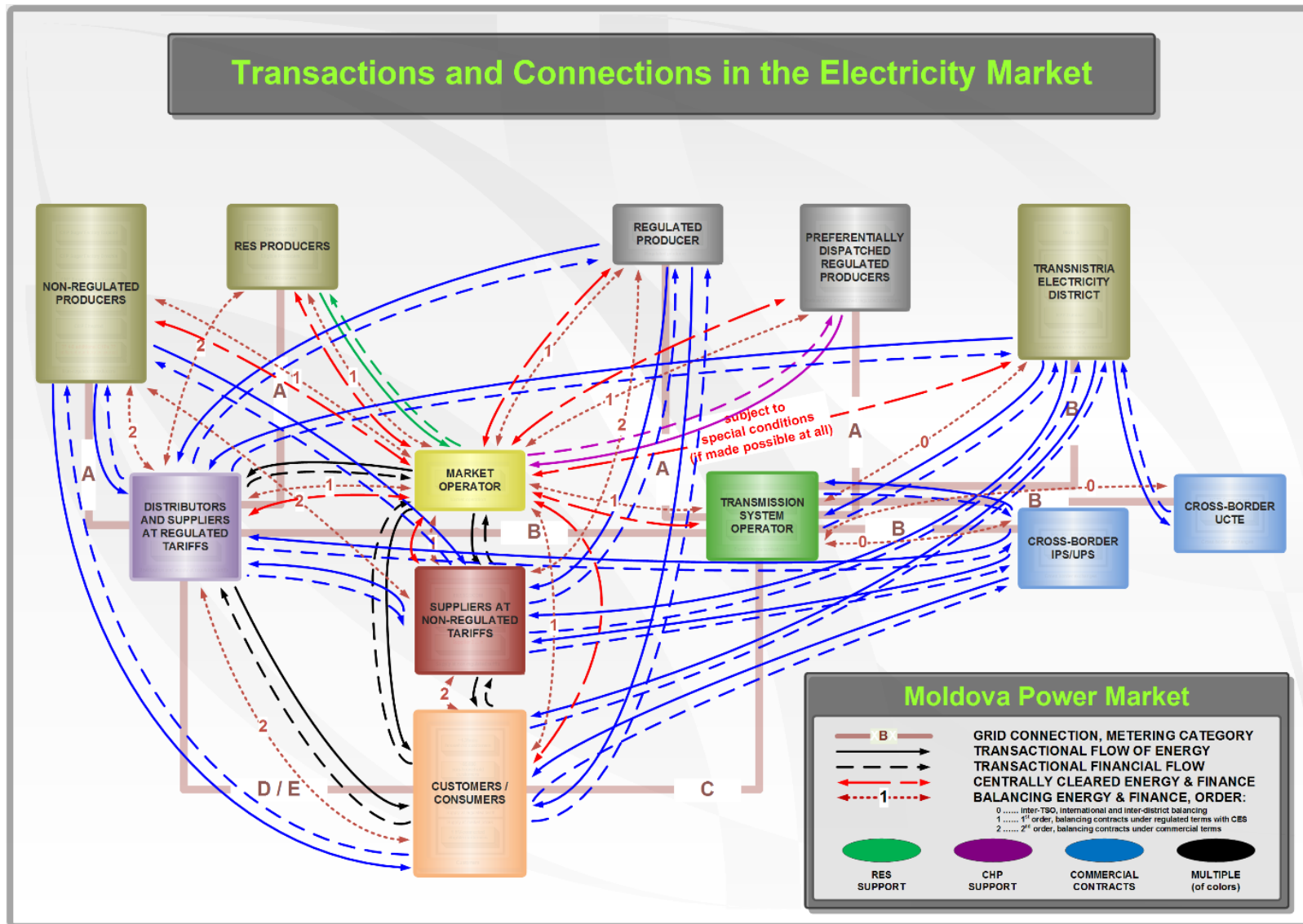


Figure 2.2: Institutional set-up of the electricity market of Moldova (year 2020)

3 ELECTRICITY MARKET DEVELOPMENT CONCEPT

3.1 MARKET LIBERALISATION

The present market arrangements provide for a very low market opening level, but already in the year 2015 all electricity consumers are to become eligible consumers. On the production side the fixed tariffs for priority dispatched generation (CHPs and existing contracted RES producers) are likely to remain for some time and shall be either phased and maybe introduce a bonus scheme (at least for the cogeneration after the transition period) or replaced by tenders (for the renewable energy sources).

Within transition to the fully liberalised market creation of the institutional framework and system wide training shall be performed. Supporting evolution of competition and entry of new market participants an appropriate mix of long and short term contracting/commitments has to be made available in order to enable management of the market risks appropriately. All price formation mechanisms are to be compliant with the free market and consumers' (human/civilisation) rights and general public interest shall be protected also by the implementation of the concepts of vulnerable consumer and supplier of last resort.

One of the pillars of the liberalised electricity market is its legislative-regulatory and institutional-organizational framework. For sound development and efficient operation of the electricity market the legislative-regulatory framework needs to be continuously developed, adjusted and implemented. For efficient operation of liberalised electricity market it is of utmost importance to define sound market design and ensure proper market environment for market participants.

By means of institutional-organizational framework it is crucial, to ensure the full capacity of market institutions in formal and operational way.

Implementation of new market institutions such as market operator and clearing by 2018 and market coupling office and national power exchange (day ahead market) till 2020 are foreseen, either by setting them up independently or by joining/hiring existing international service institutions. Power exchanges are organized and regulated trading venues where prices are formed in transparent way based on principle of best bid and ask.

First steps in direction of establishing organized and transparent trading venue could be achieved by introducing transparent balancing or/ intra-day market that could efficiently supplement with long term bilateral contracts.

Interconnection capacity shall be allocated to the market parties in regular tendering procedures for standard products, organised jointly with the neighbouring TSO(s) or even in a wider coordination by 2015. Every market participant, being it eligible customer, supplier, system operator, trader or producer, shall have the right to participate in tendering and use the capacity allocated to execute market transactions across respective interconnections. Market coupling, as a method for integration of the market into the European-wide one, is to be provided for by 2020, subject to availability of operative (i.e. not in island mode only) interconnections with ENTSO-E, either in synchronous or asynchronous operation.

One important aspect of liberalisation has to be addressed explicitly, even though it may seem self-evident: in order to make the market as interesting to the investors as possible, all the legislative and regulative acts, forms and documents have to be made available in English language as well, since it has become the 'lingua franca' (the functional working language) of the electricity industry within the EU and EnC. Besides allowing for formal communication and submission of any documents requested in English language without it being required to be translated into Romanian, all the market operations and helpdesk activities should be accessible in English as well.

3.2 INCENTIVES-BASED REGULATION

The free market framework requires of all the market participants to act as (economically) efficient (within the limits of their own interests) as possible, but that does not always correspond sufficiently to the general public interest. Various kinds of incentives addressing diverse levers of motivation may be introduced to align the market participants' behaviour driven by the free market parameters with the desired objectives of the state.

The incentive mechanisms implemented so far have been focusing containment of the cost increase for the final consumer of electricity by externalisation of the system's true cost in the price paid by the final consumer and its accumulation with the infrastructure services providers (the system operators), effectively incentivising the use of electrical energy by making it more accessible to all, including those with low disposable income levels. By implementation of the free market framework including implementation of the concept of vulnerable consumer the need for such practice will cease to exist and all consumers not fitting within the criteria of vulnerability will have the right to consume as much as they are willing/able to pay for in accordance with the true cost of their own consumption determined by regulated internalisation of the actual cost of infrastructure and market set up on one hand and by free price determination governed by the liberalised market forces on the other. This primary liberalised market mechanism will annul the negative incentive on the infrastructure investments (presently resulting in less than minimal return on investment) and simultaneously incentivise both eligible consumers to engage in choosing the best market offers (looking for the best price, solid service and brand image; being aware that the supplier of last resort is there for them should anything go wrong) and competition to emerge (responding to consumers' expectations and trying to get ahead of competitors; recognising the requirement for their offer being more attractive than the one by the supplier of last resort).

Incentives are introduced for investing in and/or availability of generation capacity from renewable sources and cogeneration. These both benefit of present incentives schemes consisting of preferential dispatch, fixed tariffs and purchase obligations and shall cease for the cogeneration after the transition period and for the renewable sources generation after expiry of the contracts concluded under present legislation. Incentives for cogeneration may be replaced by a kind of (capacity) bonus scheme, while the concept of incentivising investment into renewable sources generation shall continue to be based on preferential dispatch and be granted either on the basis of tendering or subject to opting into the net metering scheme with yearly calculation of volume surplus paid at the average price of electricity purchased for regulated supply of tariff consumers.

The availability of transmission capacity for the purposes of security of supply shall be subject to incentives in the future, as well. By recognition of the actual cost (including regulated return on investment) in the transmission fees the systems operators will be significantly more interested in investing into the grid for the purposes of ensuring market integrity and access to the renewable energy resources, taking into consideration optimality not only on the national but also on the regional level.

3.3 COMPETITIVE MARKET FRAMEWORK

Electricity market in Republic of Moldova has yet to provide for a genuine competition. The present arrangements set the market entry barriers high, the institutional framework remains to be built (not least due to the unresolved consequences of Transnistrian secessionism), the operative market risks cannot be managed properly, and the market opening level is low. The resulting competition is weak on every side of the market, from eligible consumers to generators and suppliers/traders, and its effects have spread over to the contracting for imports of electricity in the form of continuous increase of prices.

The major improvement for the competition to evolve will be granting eligibility to all electricity consumers in the year 2015, allowing them to directly contract for electricity from any supplier/trader, including from abroad. The competition is expected to rise in all the other sectors as well, namely the generation by both phasing out the priority dispatch under fixed tariff scheme for the cogeneration (freeing up almost 15% of the consumption on the energy purchase side after the transition period – subject to be further approved by the GoM) and new/replacement investments within downstream integration of gas providers, and supply/trading by entry of new (foreign) actors.

Roles and responsibilities of ANRE and TSO are to be aligned with the liberalised market development and their skills and competences built accordingly. The institutional framework (primarily the market operator) shall be developed in order to support and execute the day to day operations needed on the electricity market, including operation of reliable, transparent and liquid market based price formation mechanisms for electrical energy, system services and balancing. Electricity market shall first be provided with bilateral contracts tendering, progressing with short term trading by 2018, and introduction of the complete set of the products needed on the market by 2020. Balancing market, at least in a very basic form, is to be set up as soon as possible in order to provide the actors with an active option to manage their energy market risks effectively. Nevertheless, a significant share of the market will remain under the regulated prices regime at least on the purchase side, due to the support mechanism incorporating obligatory purchase quotas for renewable sources generation and, until expiry of the transition period, for cogeneration, decided by the GoM.

Transparent and reliable price formation of short and long term electricity products is one of the basic preconditions for efficient competition and ensures proper generation and investment decisions. It provides for the larger part of the risk structure underlying the investment decisions as it should properly reflect **the system marginal cost on the long run**, enabling the investors to recover both marginal and investment costs. Such transparent and reliable price formation is required and can be ensured primarily by means of trading venues, such as power exchanges and brokerage platforms, integrated into wider area markets by means of market coupling, if possible. By doing so the competitive level should increase, stimulating also CERMS/MGRES to transform itself into a responsible, active and

relevant market participant on the Moldovan market, with its role being particularly valuable in the balancing market.

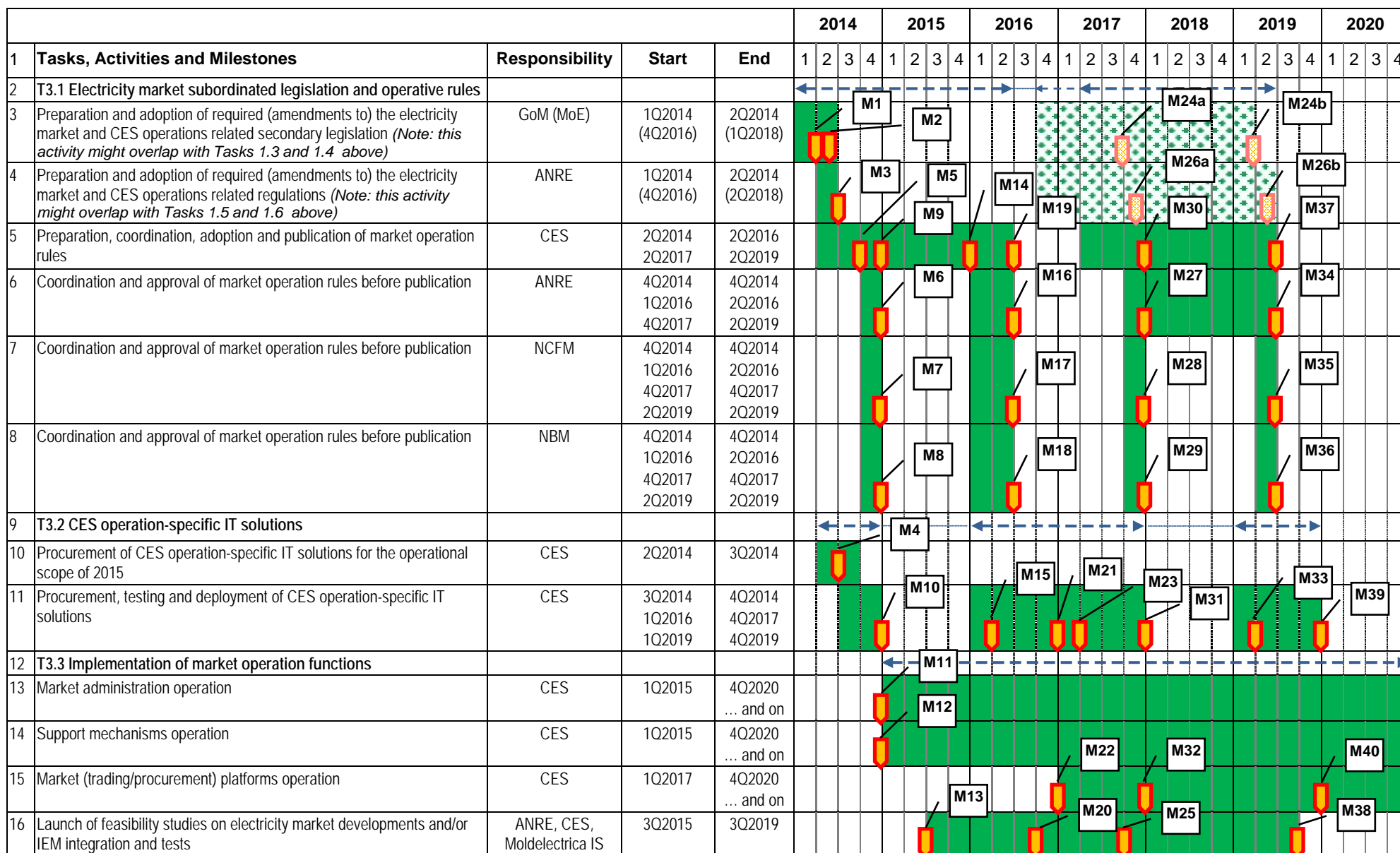
Development of balancing market is of major importance to the future Moldovan market. Adequate mechanisms respecting the system's realities should be set up as soon as possible. Presently the balancing services are possible to obtain only across the interconnections, either in Ukraine or by CERMIS/MGRES, requiring interconnection capacity being reserved for these (system services) purposes.

Congestion management shall be addressed adequately by introduction of interconnection capacity allocation mechanisms together with the neighbouring TSOs and possibly even in a wider coordination by 2015. The allocations shall be harmonised with the electricity trading schedules in both markets in order to allow the market actors to seize the best cross border trading opportunities. Also to this end, planning of the transmission system development shall be done in coordination with the neighbouring TSOs to support the regional market development.

With the introduction of differentiated market related imbalance pricing demand response can be of particular value in Moldova due to scarcity of internal balancing resources; with a large enough pool of dispatch-able load an important internal flexibility could be added. Moreover, after the year 2020 the intelligent networks and intelligent metering is planned to be introduced on a wide scale and besides multiple benefits to the grid management itself, it will enable an entirely different dimension of demand response possibilities.

An important part of liberalisation efforts consists of a special attention being paid to vulnerable consumers that cannot realistically afford to pay for even the most essential energy needs. Assurance of them being supplied with the essential energy services has been recognised as being in general public interest; therefore they have to be effectively protected. A very much different aspect of roughly the same need for continuous access to energy services is the supplier of last resort concept. Its objective is not in provision of limited cheap service for those that cannot afford it, but in assurance of provision of continuous energy services to eligible consumer in case of errors/disruptions in contracting or default/bankruptcy of supplier. Additionally, certain objectives aimed at ensuring the market functions properly, are to be addressed by separate state measures, like, for example, the non-payments issues.

Figure 3.1: Timeline for electricity market development in Moldova



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Milestones:



- M1 - finalisation of the proposed changes to the secondary legislation needed for operation of the market
- M2 - adoption of the (amendments to) secondary legislation required for operation of the market
- M3 - adoption of the (amendments to) regulations required for operation of the market
- M4 - start of the (operational scope of 2015) operation-specific-IT procurement procedures
- M5 - draft of the CES operation rules (scope limited to the 2015 functions) submitted to regulatory coordination and public consultation procedures (initially drafted by the team within Moldelectrica IS)
- M6 - approval of the CES 2015 operation rules by ANRE
- M7 - approval of the CES 2015 operation rules by NCFM
- M8 - approval of the CES 2015 operation rules by NBM
- M9 - publication of the CES 2015 operation rules
- M10 - deployment of (operational scope of 2015) operation-specific-IT
- M11 - start of market schedule administration and balancing mechanism operation
- M12 - start of support mechanisms operation
- M13 - feasibility studies on short term trading markets (balancing, intra-day) launched
- M14 - draft of the CES operation rules amendments (scope adjusted for the 2017 functions) submitted to regulatory coordination and public consultation procedures
- M15 - start of the (operational scope of 2017) operation-specific-IT procurement procedures
- M16 - approval of the CES 2017 operation rules by ANRE
- M17 - approval of the CES 2017 operation rules by NCFM
- M18 - approval of the CES 2017 operation rules by NBM
- M19 - publication of the CES 2017 operation rules
- M20 - initialisation of conceptual work on market coupling with Ukraine (intra-day) and/or ENTSO-E (day-ahead)
- M21 - deployment of (operational scope of 2017) operation-specific-IT
- M22 - start of operation of: system services procurement platform, balancing market platform, and intra-day market platform
- M23 - start of the (operational scope of 2018) operation-specific-IT procurement procedures
- M24 - adoption of the (amendments to) secondary legislation required for operation of the market in integration with connected markets, if needed, for (a) intra-day market coupling with Ukraine and (b) day-ahead market coupling with Romania
- M25 - finalisation of market coupling tests with Ukraine
- M26 - adoption of the (amendments to) regulations required for operation of the market in integration with connected markets, if needed, for (a) intra-day market coupling with Ukraine and (b) day-ahead market coupling with Romania

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- M27 - approval of the CES 2018 operation rules by ANRE
- M28 - approval of the CES 2018 operation rules by NCFM
- M29 - approval of the CES 2018 operation rules by NBM
- M30 - publication of CES 2018 operational rules (addition of intra-day market coupling East / Ukraine)
- M31 - deployment of (operational scope of 2018) operation-specific-IT
- M32 - coupling the intra-day markets with Ukraine
- M33 - start of the (operational scope of 2020) operation-specific-IT procurement procedures
- M34 - approval of the CES 2020 operation rules by ANRE
- M35 - approval of the CES 2020 operation rules by NCFM
- M36 - approval of the CES 2020 operation rules by NBM
- M37 - publication of CES 2020 operational rules (addition of day ahead market and market coupling West / Romania)
- M38 - finalisation of market coupling tests with Romania
- M39 - deployment of (operational scope of 2020) operation-specific-IT
- M40 - start of operation of day-ahead market platform, including market coupling with Romania

4 SETTING UP OF CENTRAL ELECTRICITY SUPPLIER (CES)

4.1 MISSION, KEY RESPONSIBILITIES AND FUNCTIONS

By providing quality services in the field of electricity markets, CES's mission shall be to ensure transparent and efficient operation for all participants. As the administrator and promoter of the development of the electricity market, CES shall strive towards a regulated and competitive electricity market in Moldova and to support the RES production.

The vision of CES shall be to act as the Moldovan juncture of knowledge and ideas, as well as providing quality services in the field of electricity markets. The services shall evolve from initial simple ones and gradually evolve into more sophisticated services. CES is to start as a supplier at regulated tariff, to build up additional electricity market administration services (becoming the market operator) and to eventually evolve into a national/regional energy trading venue.

The law and regulations should provide for the following functions and tasks to be allocated to the CES, together with the authority to issue operative rules for their performance, in accordance with the adopted roadmap timeline:

A. Support mechanisms operation:

1. purchase of all the electricity produced by co-generation plants and/or power plants generating from RES,
2. risk management of the support mechanisms operated,
3. sell of purchased electricity by obligatory quotas to suppliers and eligible customers;

B. Coordination of balancing obligations:

1. contracting obligation for imbalances at regulated conditions as the central counterparty,
2. central balancing services contracting for the system services procured across interconnections,
3. administering the official registries of balance groups and respective hierarchies of market participants and of individual metering points,
4. risk management of the balancing mechanism in regard to the contracting parties (direct contract on imbalances with CES),
5. management of individual and joint collaterals by the contracting parties,
6. management of potential financial surpluses of the imbalance settlement mechanism as a joint collateral (in the case individual collaterals do not suffice for the settlement after a market participant's default);

C. Operation of platforms for (electrical) energy and energy products-related trading, including market coupling, and clearing house services:

1. operation of platforms for trading imbalances, balancing, intraday, day-ahead and longer term products,
2. operation of system services procurement platforms,
3. operation of bilateral contracts clearing platform,
4. contracting for participation in the clearing and settlement system of the transactions concluded over the cleared platforms operated as the central counterparty,
5. risk management of the clearing and settlement mechanism,
6. management of individual and joint collaterals by the trading participants;

D. Administration of market schedules:

1. registering volumes transacted over the platforms operated,
2. registering exchanged volumes under bilateral contracts,
3. registering cross-border exchanges using allocated capacity rights,
4. registering balancing services across interconnections requests,
5. registering dispatch of system services, including those procured over interconnections using the capacity reserved;

E. Administration of imbalances and system services:

1. calculation of electricity consumed by consumers (withdrawals) and electricity delivered by producers (injections) at individual metering points attributed to balance groups in every delivery hour,
2. calculation of imbalances (volume) for every balance group in every delivery hour,
3. calculation of imbalance prices for every delivery hour in the settlement period based on regulatory overseen cost incurred by the balancing system services;

F. Financial settlement:

1. imbalances settlement for direct contractual parties of CES – collection from net debtors and payment to net creditors,
2. support mechanism settlement – collection from the suppliers and eligible customers and payment to co-generation and RES power plants,
3. financial settlement within the clearing house services,
4. settlement for the balancing services procured across interconnections.

All of the above functions are to be regulated and have to be performed efficiently, transparently and in non-discriminatory manner. In order to achieve this, CES shall have the authority to issue operation rules defining detailed procedures for execution of rights and obligations in accordance with the applicable laws and regulations. These operation rules

shall be approved by the respective authorities (ANRE, maybe also financial regulator and/or Central Bank) before entering into force.

4.2 PROPOSED BUSINESS ORGANISATION FORM AND INTERNAL STRUCTURE

The company should be established in the form of a capital company, in accordance with the rules governing financial institutions. To be state owned, either directly or indirectly by the companies owned by the state, for example the TSO(s), or to designate existing private company (by means of concession). If the latter solution would be selected, then especially the issue of conflict of interest (simultaneously running conflicting activity within one legal person e.g. trading) needs to be addressed. CES's position on the electricity market must be neutral (no open interest).

Introduction of thoroughly regulated and effectively enforced mechanisms of limitations information flows and transitions of employees (setting up so called 'Chinese walls') between the market operations and other company divisions is required.

Business organisation should cope with the following organizational structure (main tasks):

- Management

Managing the company.

- Administration

Administrative tasks.

- Legal & HR

Handling legal issues that may come up in the course of daily business. Maintenance and surveillance of general business conditions, legislation and regulation (market rules, electricity rules, clearing rules and regulations). Maintaining business contracts, co-operation agreements and others.

Providing labour law compliance, record keeping, hiring and training, compensation, employee relations and help with handling specific performance issues (e.g. employee performance improvement plans).

- IT

Responsible for the architecture, hardware, software and networking of computers in the company. Development and maintenance of special administration/trading platforms.

- Finance

The finance department of a business takes responsibility for organizing the financial and accounting affairs including the preparation and presentation of appropriate accounts, and the provision of financial information for the management and supervision tasks.

The main areas covered by the financial department include book-keeping procedures, creation of balance sheet and profit and loss account, reporting, management of wages, raising of finance.

- Risk management (financial and legal)

Identification, assessment, prioritization, treatments and monitoring of risks. Preparing scenario analysis, risk reports and risk management plan (policies) and procedures.

- Analysis & Research & Development

Analyzing past operations, business environment and electricity sector development (regional wide). Creating and designing new products & services and improving on existing products & services. The process is finally resulted by means of market rules.

- Operations

Operations mainly related to support scheme operations, balancing scheme operations, administration of imbalances settlement, administration of schedules and administration related to operation of trading platforms.

- Help desk

Support (technical, other) for users of IT (trading) platforms.

4.3 PREREQUISITES AND CONDITIONS FOR APPOINTMENT BY GOM

4.3.1 Governance and absence of conflicts of interest

The company to be appointed CES functions shall have no other open interest in the market it is to operate than those pertaining execution of the functions of the CES. This extends to the possibility to influence its decisions by the shareholders, being it the government or the TSOs or any other. The governance model shall ensure its independence and provide for ability to serve the market professionally in avoidance of conflicts of interest.

4.3.2 Capital adequacy

CES as a financial institution for the purposes of its role of a clearing house, and as well as balance responsible, will have to provide for capital adequacy in accordance with the laws and regulations applicable. In any case, its capital adequacy relates mainly to its ability to cope with the exposure towards market participants with reference to their credit rating (trustworthiness in terms of their ability to settle debts due in the future) for all possible cases of default, fulfilling its debts in due time under any circumstances. It should be noted that, for transparency purposes, CES as operator of the support mechanisms, has to have specific reservations of its own capital made (that do not count into the capital for capital adequacy calculations) for the purposes of these mechanisms not being liquid enough to fulfil all the debts in due time, especially with the obligations relating to the imbalances settlement and to the buying and selling for pre-emptive balancing purposes.

In order to do so, operation rules and contractual provisions shall provide for adequacy in terms of amount and liquidity of the collateral requested of the clearing participants, but these can rarely cover for the whole potential exposure (otherwise the clearing system is too expensive), and that is when the losses should be compensated by CES. In such cases the quality of capital is of great importance and cash at hand is certainly best and the guarantees issued by the state or by other institutions (primarily banks) with investment grade rating coming next. Other types of capital have a very limited effect on the capital adequacy as they are illiquid and/or their value is too volatile.

4.4 APPLIED RULES AND REGULATORY REGIME

The role of CES is mentioned in draft Law on Electricity¹⁷ and is to be defined in more detail by existing legislation. There is the need to amend the Law on Electricity and the Electricity Market Rules in order to define the role and responsibilities of CES.

CES shall be regulated in a multitude of its roles, primarily by ANRE as the energy industry regulator. Taking a number of functions related to financial market, it would probably have to be regulated by the financial market regulator and be subject to oversight by the Central Bank of Moldova.

4.4.1 Energy regulation

The primary role of CES is to offer services to the electricity market and so is its financing being linked to the electricity market transactions/deliveries.

ANRE should have the following roles and responsibilities regarding CES:

- receiving regular reports on the market activity,
- approving yearly report on services performed,
- approving the operational rules related to electricity trading.

4.4.2 Financial regulation and oversight by the Central Bank

The settlement systems are regulated by financial services regulator and CES will (probably) have to obtain a regulated financial institution status due to its operation of payment/settlement mechanisms that may even grow to systemic importance for the financial system of Republic of Moldova. Having this possibility in mind, its accounts for regulated services (financial settlement, pledged accounts by market participants for collateral purposes, etc.) should be opened at the Central Bank of Moldova in order for the market not to bear the risk of default of a commercial bank that would otherwise have been chosen to provide these services.

4.5 FINANCING OF CES OPERATIONS

It is important that the operative financing is ensured by a fee defined in absolute financial terms per quantity and not as percentage of the uniform price of electricity in order to ensure the neutrality of the institution.

The universal fee, as a part of / addition to the grid fee, should be calculated on the budget needed for the operation of the company. The fee should be provided by the consumers (in equal amount per consumed energy) and should be transparently collected together with the grid fee (by respective suppliers/system operators).

¹⁷ Draft law amending and supplementing Law on Electricity (No. 124) has been approved by GoM in December 2013 and has been passed to the Parliament for final adoption, likely in Quarter I of 2014.

The fee should be set by MoE.

4.5.1 Liabilities and risk management

In order to properly design the electricity market design of Moldova and the business model of CES the clearing house role including the respective risk management functions needs to be assigned to CES due to the following roles:

- support mechanism operator: buying various quantities of electricity from many producers at different prices and resell different quantities of electricity to many buyers at a uniform price:
 - selling the forecasted volumes to be bought some time ahead of the delivery time,
 - buying and selling for pre-emptive balancing purposes some time before delivery,
 - buying the actually delivered volumes at the very moment of generation,
 - ex-post trading of the estimated imbalances,
 - paying/receiving for the imbalances,
 - receiving payments for the energy sold and paying the supported generation for the energy delivered;
- balancing scheme operator: buying and selling any surplus and missing volumes (as established after the time of delivery) from/to balancing contract parties at regulated prices (and possibly including potential penalisation factors/amounts; as established in compliance with the rules and based on the actual system cost):
 - accounting for the balancing contracts as if they were commodity put/call options for the possible volumes needed to balance the portfolio, according to the accumulated risk exposure towards the individual contractual party and in line with the party's credit rating, for the period within the time before delivery that equals the effective contract cancellation notice period and up to the time of settlement,
 - estimation of imbalances for every contract party for single hour,
 - establishing the prices of imbalances for every single hour after the gate closure for trading of estimated imbalances,
 - establishing the volumes of imbalances for every single hour within the billing period,
 - calculation of imbalance settlement amounts for contract parties,
 - receiving the payments for imbalances by the debtors,
 - execution of collaterals needed to cover for the missing settlement amount due to defaulting debtors,
 - paying the payments for imbalances to the creditors;

- clearing house for the transactions concluded over the platforms operated as the central counterparty:
 - accounting for the contracts entered into according to the accumulated risk exposure towards the individual contractual party and in line with the party's credit rating, as defined for each individual product trading time and settlement day,
 - receiving the daily settlement amounts by individual debtors on the day of settlement,
 - execution of collaterals needed to cover for the missing settlement amount due to defaulting debtors,
 - paying the daily settlement amounts to creditors on the day of settlement.

By definition, the role of clearing house as a central counterparty to all trades executed is to carry out clearing, collateralisation and settlement of these transactions. Clearing house thereby guarantees to secure all market procedures, ensures the physical and financial fulfilment of all contracts to buyers and sellers and administers the settlement:

- The physical side of the contract is executed by entering the transaction in the market schedule: the volumes of exchanged electricity are accounted for in the market schedule in opposite directions for the seller and for the buyer. The individual party's (and its balance group's) obligation regarding the volumes to be either delivered to or off-took in an individual hour changes accordingly.
- The financial part side of the contract is executed by transfer of financial funds within a relevant payment system, being it the banking system or a clearing mechanism such as CES.

In regard to the CES's role of clearing house, two issues are of paramount importance: concept of finality of payment/fulfilment and derogation of any rights to annul/reverse finally settled transactions under any circumstances (e.g. bankruptcy procedures). The first issue can, in the absence of any mandatory provisions disallowing it, be dealt with within the operative rules and contractual arrangements between the clearing house and participants, while for the latter, the Law on Electricity (and maybe any other laws as well) has to be amended.

4.5.2 Balancing responsibility

The nature of the support mechanism requires the volumes of the supported electricity to be sold to the market being known well in advance in order for the market participants, obliged to buy the electricity, being able to manage their portfolios. This requirement has four important consequences/tasks for the CES:

- the volumes of supported CHP and RES generation have to be forecast some time before the gate closure for scheduling nomination,
- the forecast volumes of electricity are finally sold bilaterally some time before the gate closure for nomination of the schedules,

- the output of the supported CHP and RES generation has to be closely monitored and CES has to act on the preventive balancing measures (buying and selling the electricity to balance the forecast volumes with the actually produced volumes),
- the imbalances between the actual output including the executed preventive balancing measures and the forecast volumes of the CHP and RES generation have to be settled.

The first and the third are certainly complex – the forecasting and the execution of preventive balancing measures require quite some operational prowess and a really good understanding of the underlying principles. The fourth task is simple to operate, but challenging to define properly, if the producers are not to be charged for the balancing services.

The imbalances between the supported electricity sold in advance and the portfolio of the electricity produced (and bought and sold, for preventive balancing purposes) have to be settled. As the exclusive buyer of the supported energy CES shall assume the imbalances of the supported producers and CES has to recuperate the cost incurred in its entirety. It appears that the present regime enables only a sort of ex-post re-evaluation of the possible cost and increase of the price of supported energy for the future¹⁸.

4.5.3 Operation of the imbalances settlement mechanism

Centralised assumption of all the imbalances by all the market participants makes the system efficient, but that efficiency comes at a certain price. The contracting parties on imbalances with CES will have to present various kinds of collaterals for their obligations toward CES as the central counterparty.

Exposure of CES towards individual and all of market participants may be quite high. Therefore, special attention is to be paid to the timings defining exposure periods. The shorter the exposure periods are, the lesser is potential exposure and lower requirements apply to the CES capital adequacy and to the collaterals by the market participants, whatever their credit rating.

Of course, the credit rating alone is not the only measure CES is to evaluate and monitor about an individual contracting party in order to manage its risk exposure. The size of the balance group, the nature of members, the historical behaviour and many more come into picture. Risk management is a very comprehensive and demanding task that one can never say is done and forget about it – continuity/recurrence of the task and constant improvements of both methods and tools are its imperative.

¹⁸ As a side note: on the free market the mechanism presently applied to cover the cost of technical losses in the transmission grid may not be the right approach since it is transaction based and uncertain in advance, effectively disabling proper risk management by the market participant, since the circumstances governing the cost incurred by the transaction are outside market participant's control.

4.6 ROADMAP FOR CES ESTABLISHMENT INCLUDING TIMELINE

On the level of market operation infrastructure set-up the Energy Strategy of Republic of Moldova until 2030 foresees:

- Initial set up of CES and developing its administrative capacity and framework for initial tasks by 2015;
- developing short and very short term trading framework by 2018;
- integration of the power market into the regional market by 2018 / 2020.

In order to fulfil the objectives stated in the Energy Strategy until 2030 the proposed functional and capacity building roadmap for the CES is the following:

In the short term period (the first 3 years) the following actions are to be performed:

- 2014 Q1
 - finalisation of the proposed changes to the laws and regulations needed for CES and the market,
 - establishment of the project team (within the designated entity) to set up the CES, including provision of sufficient resources needed,
- 2014 Q2
 - adoption of all the laws, regulations and decisions required for the CES to be set up,
 - human resources search (and plan of training / capacity build up) within the project team,
 - outline/first draft of the CES operation rules (scope limited to the 2015 functions) submitted to regulatory coordination,
 - specification and start of the operation specific IT procurement procedures,
- 2014 Q3
 - establishment of CES, its formal designation, transfer of the project team and beginning of business as usual scenario for CES internal organisation,
 - initialisation of setting up contractual framework (public tendering, where applicable) with service providers needed for the CES operations,
 - second draft of the CES operation rules (scope limited to the 2015 functions) submitted to regulatory coordination and public consultation procedures,
 - organisation of an international conference on Moldovan market opening and 1st workshop for the market participants,
- 2014 Q4
 - publication of the CES 2015 operation rules,
 - initial training of market participants before start of operations,
 - finalisation of operation specific IT followed by comprehensive testing,

- 2015 Q1
 - start of market schedule administration,
 - start of balancing mechanism operation,
 - start of support mechanisms operation,
- 2015 Q2
 - Feasibility studies for short term trading markets (balancing, intra-day) launched,
- 2015 Q3
 - drafting system services procurement and balancing market rules,
 - public discussions with market participants,
- 2015 Q4
 - draft of the CES operation rules amendments (scope adjusted for the 2017 functions) submitted to regulatory coordination and public consultation procedures,
- 2016 Q1
 - specification and start of the (2017) operation specific IT procurement procedures,
- 2016 Q2
 - publication of the CES 2017 operation rules,
- 2016 Q3
 - initialisation of conceptual work on market coupling with Ukraine (intra-day) and/or ENTSO-E (day-ahead)
 - training of market participants before start of operations
- 2016 Q4
 - finalisation of operation specific IT followed by comprehensive testing,
 - training of market participants before start of operations

In the subsequent periods the following development is foreseen:

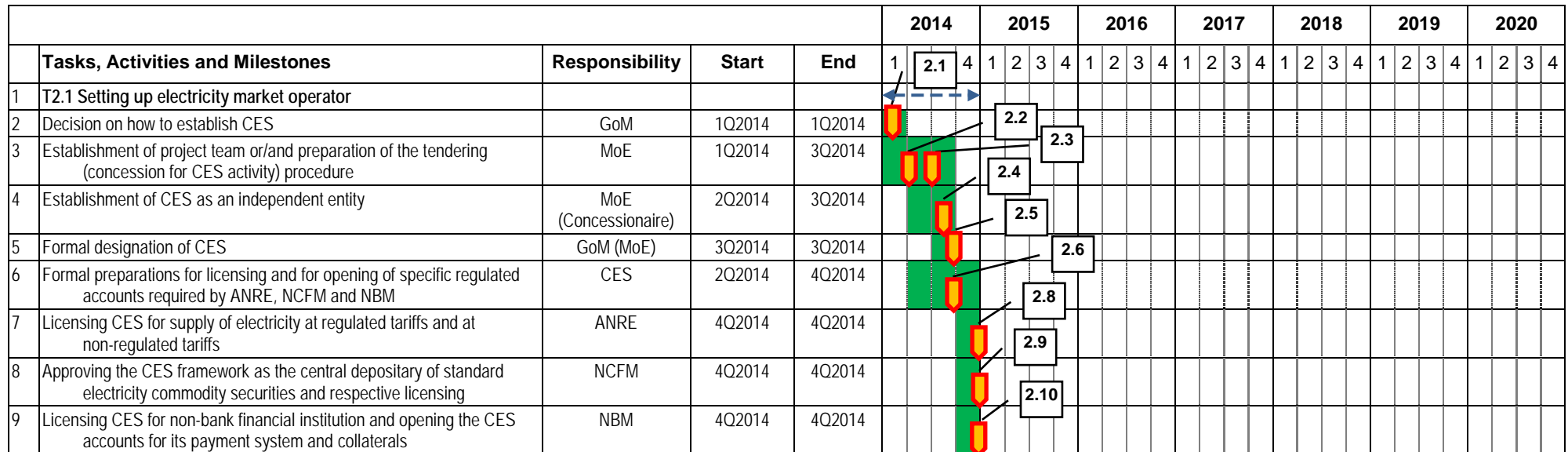
- 2017
 - start of system services procurement platform operation,
 - start of balancing market platform operation,
 - start of intra-day market platform operation,
 - preparation of CES 2018 operational rules (addition of intra-day market coupling East)
 - specification and execution of the (2018) operation specific IT procurement procedures,

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- 2018
 - first tests of coupling the intra-day markets with Ukraine (if at all possible)
- 2019
 - preparation of CES 2020 operational rules (addition of day ahead market and market coupling West)
 - specification and execution of the (2020) operation specific IT procurement procedures,
 - coupling the intra-day markets with Ukraine (if at all possible)
 - first tests of coupling the day-ahead markets with Romania (if at all possible)
- 2020
 - start of day ahead market platform operation
 - coupling the day-ahead markets with Romania (if at all possible)
- by 2025
 - intelligent networks specific market development (e.g. demand response products platform)
- by 2030

The timeline for the establishment of Central Electricity Supplier including associated milestones is shown in Figure 4.1.

Figure 4.1: Timeline for establishment of Central Electricity Supplier (CES)



Milestones:



2.1 - adoption of decision on how to establish CES

2.2 – Dependent on the way of establishment: setting up project team for CES establishment or preparation of tendering procedure for the granting of CES concession

2.3 – preparation of project/tender documentation

2.4 - establishment of CES, including transfer of the project team, other resources and contracts

2.5 - formal designation of CES

2.6 - submission of applications for issuance of required licenses and provision of specific services

2.8 - issuance of license(s) for supply of electricity at regulated tariffs and at non regulated tariffs

2.9 - approval of CES' framework as the central depository of standard electricity commodity securities and respective licensing

2.10 - issuance of license for non-bank financial institution and opening of accounts for CES operations

5 SUMMARY OF STRATEGIC INVESTMENT PROGRAMMES AND PROJECTS

In this section, only the major investment projects identified in the Energy Strategy in the area of natural gas are addressed.

5.1 ELECTRICITY GENERATION AND DISTRICT HEAT PRODUCTION

5.1.1 Construction of 650 MWe combined cycle gas turbine cogeneration plant

A. Project description

For increasing own electricity generation and heat production capacity, and thus considerably increasing energy (electricity and district) supply security, the RoM plans to construct a 650 MWe gas-fired combined-cycle gas turbine (CCGT) cogeneration plant in the Energy Strategy. The CCGT will replace the existing cogeneration plants CET-1 (66 MW) and CET-2 (240 MW), which are obsolete and operate at low energy efficiency.

The new CCGT will be able to generate about 2.85 TWh of electricity annually at power factor of 0.5. The CCGT is planned to be constructed in Chisinau at the site of the existing CET-2. The exact location and technical conditions will be established in the planned feasibility study.

Apart from the standard techno-economic analysis, the feasibility study shall put attention and explore possible financing models and schemes that could attract future strategic investors that remain unknown for the time being and that could in principle be public, private or mixed, not even excluding Public-Private-Partnership and various implementation models. The prevailing unfavourable conditions of poor technical and financial performance of the district heating sector in Chisinau, the associated debt in the gas sector and lack of progress in corporate restructuring of Termocom and the two CHPs in Chisinau do not reflect positively. As a prerequisite for possible implementation of this project by 2020, most of these issues should be satisfactorily solved as soon as possible in 2014. The project implementation period, from a moment when the strategic investor is selected and the respective agreements signed up to commission, is estimated at 4 years, with pure construction period of 2 years.

Based on results of the feasibility study, GoM shall make a strategic decision how to go ahead and whether to be involved as (co)investor in the project. The subsequent activities will depend who the investor is going to be. If the investor is not the RoM State, the Energy permit has to be obtained. Because the plant exceeds 20 MW of installed capacity, the Energy permit has to be issued by the Government (either by direct authorisation or tender). After that the investor (project owner) has to follow the formal procedure prescribed in local legislation and to obtain all necessary permits and approvals, among others the final Construction permit. The operation license for the facility is issued by ANRE.

The new CCGT will consume about 496 m³ of natural gas per year. The entire infrastructure needs to be reconstructed on site (thermal network, gas pipeline, electricity network, SSs etc.). Due to replacement of capacities on the same site, it will be necessary to take out of service the existing boilers which will thus temporarily limit the supply of thermal energy to consumers. Therefore, all implementation works have to be well coordinated and tuned not to endanger the security of district heat supply to vulnerable consumers during the winter period.

B. Activity plan

Tasks and description of activities		Responsibility
0	Consolidation of the district heating sector: <ul style="list-style-type: none"> Corporate restructuring of Termocom and the two CHPs (CET-1 and CET-2) in Chisinau area, establishment of a new company (merger) in line with Government Decision 983 of 22/12/2011 Settlement / reprogramming of outstanding debt in connection with the new company 	GoM (CPA and LPA of Chisinau)
1	Comprehensive feasibility study implemented by the State <ul style="list-style-type: none"> Conceptualisation of the project Ensured financing of the feasibility study Implementation of the feasibility study for construction of the CCGT, including Environmental and Social Impact Assessment (ESIA) 	MoE, GoM FS Consultant
2	Selection of financing and implementation models based on results of the FS	GoM (MoE)
3	Selection of future investor and issuance of Energy permit on a basis of (i) direct authorization or (ii) tender launched by the State <ul style="list-style-type: none"> Signing of Financing or Project Implementation Agreement with the selected strategic investor 	GoM (MoE)
4	Tendering for and development of Project documentation (PD) <ul style="list-style-type: none"> Tendering for development of PD Development of documentation for obtaining necessary approvals and permits in accordance with laws and regulations of the RoM (development of Project for obtaining Construction Authorisation and Documentation for obtaining approval of fire security authority, Development of Basic design documentation for civil works (resistance, architecture, internal installations, land development works, roads and platforms, underground pipelines, Execution documentation for civil works) Obtaining approvals and permits incl. Construction permit 	Investor PD Contractor under Investor's contract
5	Tendering for construction <ul style="list-style-type: none"> Selection of company for construction of the CCGT Selection of Works Supervision Consultant (WSC) 	Investor (MoE or non-RoM State investor)
6	Implementation of construction <ul style="list-style-type: none"> Building of the CCGT and SS, including the associated power lines Supervision of works 	Main Contractor WSC
7	Commissioning, trial run and start-up of commercial operation <ul style="list-style-type: none"> Performance testing, grid compliance testing, reliability run 	Main Contractor and WSC

C. Milestones

No.	Milestones	Expected results	Deadline
1	Consolidation of the district heating sector in Chisinau is completed in line with Government Decision 983 of 22/12/2011	Corporate restructuring plans for merging Termocom and the two CHPs in Chisinau are successfully completed; the new company is able to attract a strategic investor for the 650 MWe CCGT	End 4Q2014
2	The CCGT concept and the feasibility study are developed	Financing ensured for the feasibility study; feasibility study (incl. ESIA) completed and the results and the proposed concepts adopted by the stakeholders	End 3Q2015 ¹⁹
3	Government decisions on financing and implementation models taken	The following decisions to be made by the GoM: <ul style="list-style-type: none"> • How the new company will participate? • Which implementation model will be chosen? • How the strategic investor will be selected (by authorisation – energy permit based on direct Expression of Interest or by tendering procedure organised by the State)? 	End 4Q2015
4	The strategic investor is selected and future cooperation formalised	The strategic investor is selected or investors' structure is determined; Financing or Project Implementation Agreements among the involved parties are signed	End 3Q2016
5	Project documentation completed and adopted by the authorities	Technical project, specification (tasks description), details (drawings) execution, execution project (*) prepared as per valid laws and regulations and adopted by the authorities	End 4Q2017 ²⁰
6	All formalities completed before the construction start-up	All necessary permits and approvals obtained by the investor	End 1Q2018
7	Selection and contracting of main Contractor and Works Supervisory Consultant	Main Contractor – company that will implement the CCGT project on a turnkey principle and as per PD specifications is selected based on a competitive procedure (tender) and contract signed; Contract with Works Supervisory Consultant concluded	End 2Q2018
8	Construction of the CCGT	Laying of the foundation stone, installation of	End 2Q2020 ²¹

¹⁹ Usually necessary time for realisation of feasibility study for CCGT of installed capacity in the range of (400-800) MW is about 12 months. For example, the feasibility study for 450 MW CCGT <http://www.china-power-contractor.cn/Technical-and-Economic-Feasibility-Study-for-450mw-CCGT-Power-Generating-Facility.html>

²⁰ From practice it is seen that the construction of CCGT with capacity (400-800)MW (in case of enough money) starting from feasibility study and finishing with commissioning of unit layout in range of 4-5 years. The half of time is spent usually for feasibility study, tenders, PD. The Marchwood Power CCGT 840MW (UK) was built in 18 months <http://www.caverion.com/APFImages/7e4b9a86-6145-4e7f-9f10-ff2f3ae2d6da/>

²¹ An 800 MW CCGT plant consisting of two gas turbines has been built in the Knapsack Chemiepark, near Cologne in North Rhine-Westphalia in 2 years (2005 – 2007), the cost was around €400m. The Knapsack plant was constructed by Siemens. (<http://www.power-technology.com/projects/knapsackccgt/>)

The Marchwood Power CCGT 840 MW (UK) was built in 18 months <http://www.caverion.com/APFImages/7e4b9a86-6145-4e7f-9f10-ff2f3ae2d6da/> (only construction itself)

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No.	Milestones	Expected results	Deadline
	650 MWe	turbines and generators, realisation of gas connection, realisation of connection with DH system, realisation of system for electricity transmission, including transformer station: <ul style="list-style-type: none"> - <i>Site mobilisation</i> - <i>Civil works</i> - <i>Structural steel erection</i> - <i>Mechanical works start</i> - <i>Main equipment delivery</i> - <i>Main equipment installation</i> - <i>Electrical back feed</i> - <i>First fire gas turbine</i> 	
9	Commissioning of CCGT	Performance testing, grid compliance testing, reliability run, commercial operation	End 4Q2020

Notes

The PD was elaborated by ISPE and consisted of 4 stages:

Stage I: Elaboration of documentation for Permits

Stage II: Elaboration of Project for Construction Permit (PAC) and for Firefighting Permit

Stage III: Elaboration of documentation for Basic Design for Civil works, Architecture, Indoor Installation, site preparation for the civil works, roads and platforms, underground piping networks

Stage IV: Execution Works for civil works

*NCM A.07.02-99. (Moldova Construction Normative - NCM) Instruction for elaboration, proving and approbation of PD.

D. Ecological and social effects

It is necessary to make Environmental and Social Impact Assessment (ESIA). ESA, as rule, is part of FS. The environmental impact is analysed in PD according to NCM A.07.02-99 (6.2.10. Environment protection). Concentration of pollutants should be in line with EU Directive for industrial emissions 2010/75/EU.

The construction of 840 MW CCGT in Czech Republic took about 5 years. The EPC Contractor of the entire project and construction was ŠKODA PRAHA Invest; the Investor was ČEZ. <http://www.skodapraha.cz/en/files/Pocerady-EN.pdf>. The construction also took 2 years, and rest of steps about 3 years.

An 860 MW CCGT plant was constructed in Romania (Brazi) in about 3 years (2008-2010), by private investor OMW Petrom. <http://www.ispe.ro/en/combined-cycle-cogeneration-power-plant-rated-860-mwe-in-brazi/>. The capital cost was about €500m.

E. Time-plan including milestones

					2014				2015				2016				2017				2018				2019				2020			
	Tasks, Activities and Milestones	Responsibility	Start	End	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	T4.1.0 Consolidation of the district heating sector: <ul style="list-style-type: none"> Corporate restructuring of Termocom and the two CHPs (CET-1 and CET-2) in Chisinau area, establishment of a new company (merger) Settlement / reprogramming of outstanding debt for the new company 	GoM (CPA and LPA of Chisinau) (MoE)	1Q2013	4Q2014																												
2	Preparation for and implementation of the CCGT project	MoE (GoM)	4Q2014	4Q2020																												
3	T4.1.1 Comprehensive feasibility study implemented by the State <ul style="list-style-type: none"> Conceptualisation of the project; ensured financing of the feasibility study Implementation of the feasibility study for construction of the CCGT, including Environmental and Social Impact Assessment (ESIA) 	MoE FS Consultant	4Q2014	3Q2015																												
3	T4.1.2 Selection of financing and implementation models based on results of the feasibility study	GoM (MoE)	3Q2015	4Q2015																												
4	T4.1.3 Selection of future investor and issuance of Energy permit on a basis of (i) direct authorization or (ii) tender launched by the State <ul style="list-style-type: none"> Signing of Financing or Project Implementation Agreement with the selected strategic investor 	GoM (MoE)	1Q2016	3Q2016																												
5	T4.1.4 Tendering for and development of Project documentation (PD) <ul style="list-style-type: none"> Tendering for development of PD Development of PD for obtaining necessary approvals and permits in accordance with laws and regulations of the RoM Obtaining approvals and permits incl. Construction permit 	Investor PD Contractor	4Q2016	4Q2017																												
6	T4.1.5 Tendering for construction <ul style="list-style-type: none"> Selection of company for construction of the CCGT Selection of the Works Supervision Consultant (WSC) 	Investor (MoE or non-RoM State investor)	4Q2017	2Q2018																												
7	T4.1.6 Implementation of construction Building of the CCGT and SS, including the associated power lines.	Main Contractor WSC	3Q2018	2Q2020																												
8	T4.1.7 Commissioning, trial run and start-up of commercial operation Performance testing, grid compliance testing, reliability run	Main Contractor and Works Supervisory Consultant	3Q2020	4Q2020																												

- Milestones:**
- M1 – Successful completion of the corporate restructuring plan in the district heating sector of Chisinau by the GoM
 - M2 – Comprehensive feasibility study completed and the results and the proposed concepts adopted by the stakeholders
 - M3 – Financing and implementation models decided by the GoM
 - M4 – Financing or Project Implementation Agreements signed with the selected strategic investor
 - M5 – Project documentation prepared
 - M6 – Main Contractor for construction and Works Supervision Consultant selected and contracted
 - M7 – Construction completed successfully
 - M8 – Commissioning of CCGT completed, start-up of commercial operation

5.2 TRANSMISSION OF ELECTRICITY

By deploying own generation capacity of the RoM not more than about 30% of electricity demand can be met. Most of this energy is produced by obsolete CHPs (CET-1 (66 MW) and CET-2 (240 MW)) in Chisinau whose electricity generation efficiency is in the range of 30-35%. Due to that and the non-optimal technical operation of CHPs which primarily follow the demand for heat in cogeneration mode the cost of produced electricity, which is regulated by ANRE, is substantially higher than imported one. In order to increasing energy security and ensure diversification of electricity supply the RoM adopted a strategy to join ENTSO-E **by 2020**, which is clearly stated in Energy Strategy.

The implementation of this strategic orientation can be done in several ways. The exact model will depend on results of the on-going feasibility study, the results of which will be made available by the ENTSO-E consortium by the **end of 2015**. Generally, there are several scenarios of joining ENTSO-E identified (synchronous or asynchronous), but the preferable one is the maximum configuration of the scenario of ***asynchronous connection with Romania and synchronous with Ukraine***.

Realisation of this scenario will allow the RoM to import / export electrical energy both from Romania as well as Ukraine and in such a manner ensure diversification of electricity sources. The abovementioned scenario includes the lines:

- Balti – Suceava (400 kV, 500 MW transfer capacity);
- Straseni-Ungheni-Iasi (400 kV, 500 MW capacity);
- Balti-HPP Novodnistrovsk (330 kV); and
- reinforcement of internal network (second circuit 330 kV Balti–Straseni-Chisinau).

In addition, due to the asynchronous connection with Romania it will be necessary to install 3 AC/DC convertor stations to ensure “back-to-back” operation with Romania, of which 2 new 400 kV interconnections with Romania and 1 on the existing 400 kV interconnection Vulkanesti (RoM) – Isaccea (RO), which is currently not exchanging electricity with Romania. The planned investment costs for this scenario are estimated at around 346 mill. EUR (Table 5.1).

Table 5.1: Measures and planned cost (Scenario: maximum configuration of asynchronous connection with Romania and synchronous with Ukraine)

No	Measure	Cost (mill. EUR)	
1	Feasibility study on joining ENTSO-E (on-going) *)	7.1	
2	4400 kV interconnection line Suceava (RoM) - Balti (Romania) (planned)	39.9	314.1
3	400 kV interconnection line Straseni-Ungheni (RoM) - Iasi (Romania) (planned)	44.2	
4	330 kV interconnection line Balti (RoM) - HPP Novodnistrovsk (Ukraine) (planned)	20.0	
5	AC/DC convertors for “back-to-back” solutions (3 units a 70 mill. EUR per unit) (planned)	210.0	
6	Rehabilitation of HV transmission system (lines and SSs) of	31.5	

No	Measure	Cost (mill. EUR)
	Moldelectrica IS by loans (EBRD, EIB) and grant of EC NIF (39 mill. EUR in total) (ongoing) *)	
	Total Scenario (1-6), of which	352.7
	Investment costs (2-6)	345.6

Note: *) These costs are part of any scenario.

In order to reduce investment cost but still to keep diversification of electricity sources it is enough to implement the following measures (***minimal configuration of asynchronous connection with Romania and synchronous with Ukraine***):

- Balti - Suceava (400kV);
- Balti – HPP Novodnistrovsk (330 kV);
- the second circuit 330 kV Balti-Straseni-Chisinau and install two AC/DC convertor stations in Vulkanesti (existing 400 kV line) and in Balti (new 400 kV line).

The installation of AC/DC units in Vulcanesti makes sense only if Isaccea (Romania) network of 400 kV will be connected to the Romania power system. Now, the Isaccea is supplied in an island mode from Moldavskaya GRES (CERMS). There are two generators in CERMS that operate only for this part of Romania. It should be noted that in Iasi (Romania) there is no 400 kV network at the moment and for this reason premature building of the 400 kV line Ungheni-Straseni-Iasi makes no sense. Also, it is necessary to be mentioned that the line Balti-Suceava is included in PCI, which guarantees access to more favourable financing and simplified regulatory regimes of its construction. As a consequence, due to omitting the Ungheni-Straseni-Iasi line and one AC/DC units the cost of this sub-scenario can be reduced to **231.4 mill. EUR** as compared to 345.6 mill. EU in the scenario with maximum configuration.

5.2.1 400 kV interconnection line Suceava (RoM) – Balti (Romania)

A. Project description

On 18 February 2011, Moldelectrica SE and Transelectrica JSC concluded a Memorandum of Understanding on the construction of the OHL-400kV Balti (RoM) – Suceava (Romania). The already completed feasibility study was funded by the EBRD. The study was finalized, the project implementation costs are estimated at 66.4 mill. EUR, of which 36.9 mill. EUR represent the project costs for the Moldovan side (52 km through the country, or the total of 115 km of the extension of the Balti Power Station to accommodate a 400kV OHL, 400kV distribution installation and 400/330kV autotransformers). The project is on hold due to lack of financing and uncertainty/delay of the RoM/UA to ENTSO-E interconnection project.

B. Activity plan

Activity description		Responsibility
1	Preparatory phase *) <ul style="list-style-type: none"> Realisation of Environmental and Social Impact Assessment (ESIA) Realisation of a study regarding payment capacity of consumers and impact of project implementation on the tariff **) Obtaining permits and expropriation of land for the transmission corridor 	ESIA Consultant Moldelectrica IS Moldelectrica IS
2	Tendering for project documentaion (PD)	Moldelectrica IS
3	Elaboration of PD (Moldova side 52 km)	PD Consultant
4	Tendering / selection and contracting of the Main Contractor and of the Works Supervision Consultant	Moldelectrica IS
5	Construction works <ul style="list-style-type: none"> Construction of the line Construction of the back-to-back station Commissioning (by end 2019) 	Main Contractor and Works Supervision Consultant

Note: *) The Feasibility Study has been completed.

**) It is mandatory necessary to make a Study regarding payment capacity of consumers for different scenarios of jointing ENTSO-E. In case if for some adopted scenarios the energy tariff will increase too much, the consumers will not be able to pay for services.

C. Milestones

For milestones, see table under E).

No.	Milestones	Expected results	Deadlines
1	Studies completed and funding mechanisms determined, technical variant selected / approved; permits obtained	Feasibility study, Environmental and Social Impact Assessment (ESIA), Study of consumer's payment capacity, Establishment of financing line for ascending ENTSO-E ¹⁾ , (who will pay for implementation of selected scenario: budget, private investors, loan, grant etc.); approving the selected technical alternative by all interested stakeholders (operators, distributors, research organisation, etc.); permits and approval obtained	End 4Q2014 ²⁾
2	Tendering procedure for elaboration of project documentation (PD) completed and the contract signed	Selection of company for elaboration of PD	End 2Q2015
3	PD for the selected technical alternative prepared	Technical project, specification (tasks description), details (drawings) execution, execution project. *	End 2Q2016 ³⁾
4	Tenders for construction of lines, back-to-back units and transformer stations completed and contracts signed	Providing of tenders for selection of companies which will build the constructive elements of selected scenario (lines, substations, AC/DC units etc.).	End 4Q2016
5	Construction of project elements completed	Construction of line Suceava-Balti 400kV, including back-to-back unit, construction of line Balti-Novodnestrovsk including transformer station 330kV, reinforcement of internal transmission lines, installation of back-to-back units in Vulcanesti**.	End 2Q2019 ⁴⁾

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No.	Milestones	Expected results	Deadlines
6	Commissioning of project elements completed	Testing of power system after integration in ENTSO-E, commercial operation	End 4Q2019

Notes

1. The line Balti-Suceava (400kV) was included in List of Projects of Energy Community Interest (PECI), that means will not be problem with financing of this line. http://www.energy-community.org/portal/page/portal/ENC_HOME/INST_AND_MEETINGS?event_req.category=E13237

2. The ENTSO-E Consortium planned to elaborate FS till the 2015, according to ES2030. <http://lex.justice.md/md/346670/>

3. The ES2030 planned 1 year for elaboration of PD, however, it can be much longer based on the prevailing practice. For example, the ISPE needed about 2 years to prepare PD for the Romanian part of the Balti-Suceava line.

4. Construction of all selected components can be made in time if involving more companies. In ES2030 the 3 years is allocated for construction.

*In frame of technical execution documentation the following tasks should be solved:

- Allocation of land (construction normative CH 465-74);
- Selection of transmission corridor in accordance with normative PD 34.20.102

**The back-to-back unit in Vulcanesti have no sense if doesn't reinforce line Chisinau-Straseni-Balti

D. Ecological and social effects

The project must be complied with all local regulations and EU directives regarding environmental protection.

E. Time-plan including Milestones

Project 2: 400 kV interconnection line Suceava (RoM) - Balti (Romania)

					2014				2015				2016				2017				2018				2019				2020			
	Tasks, Activities and Milestones	Responsibility	Start	End	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	Total project implementation period		1Q2014	4Q2019																												
1	T4.2.1 Preparatory phase		1Q2014	4Q2014																												
2	Realisation of ESIA	ESIA Consultant	1Q2014	2Q2014																												
3	Realisation of study regarding payment capacity of consumers and impact of project implementation on the tariff	Moldelectrica IS	1Q2014	2Q2014																												
4	Obtaining permits and expropriation of land for the transmission corridor	Moldelectrica IS	3Q2014	4Q2014																												
5	T4.2.2 Tendering for PD	Moldelectrica IS	1Q2015	2Q2015																												
6	T4.2.3 Elaboration of PD (Moldova side 52 km)		3Q2015	2Q2016																												
7	T4.2.4 Tendering / selection and contracting of the Main Contractor and of the Works Supervision Consultant	Moldelectrica IS	3Q2016	4Q2016																												
8	T4.2.5 Construction works		1Q2017	4Q2019																												
9	Construction of the line	Main Contractor	1Q2017	4Q2018																												
10	Construction of the back-to-back station	Main Contractor	3Q2018	2Q2019																												
11	Commissioning (by end 2019)	Main Contractor and Works Supervision Consultant	3Q2019	4Q2019																												

- Milestones:**
- M1 – All permits are obtained and land expropriated
 - M2 – Consultant for preparation of PD selected and contract signed
 - M3 – PD completed and adopted
 - M4 – Main Contractor and Works Supervision Consultant selected and contracted
 - M5 – Construction of all project components completed
 - M6 – The line enters into commercial operation after successful commissioning

5.2.2 400 kV interconnection line Straseni-Ungheni (RoM) – Iasi (Romania)

A. Project description

A feasibility study is still required for the Straseni-Ungheni-Iasi line, in order to establish the technical conditions and related costs. This project also requires the identification of funding sources. The cost of this line accounts for approximately 64 mill. EUR, of which 28 mill. EUR are for the Romanian side and 36 mill. EUR for the Moldova side.

B. Activity plan

Tasks and description of activities		Responsibility
1	Preparatory phase <ul style="list-style-type: none"> Obtaining financing for FS+PD+project implementation, conclusion of Financing Agreement Realisation of ESIA Realisation of study regarding payment capacity of consumers and impact of project implementation on the tariff Obtaining permits and expropriation of land for the transmission corridor 	GoM (MoE) ESIA Consultant Moldelectrica IS Moldelectrica IS
2	Tendering for PD	Moldelectrica IS
3	Elaboration of PD (Moldova side 70 km)	PD Consultant
4	Tendering / selection and contracting of the Main Contractor and of the Works Supervision Consultant	Moldelectrica IS
5	Construction works <ul style="list-style-type: none"> Construction of the line Construction of the back-to-back station Commissioning (by end 2019) 	Main Contractor and Works Supervision Consultant

C. Milestones

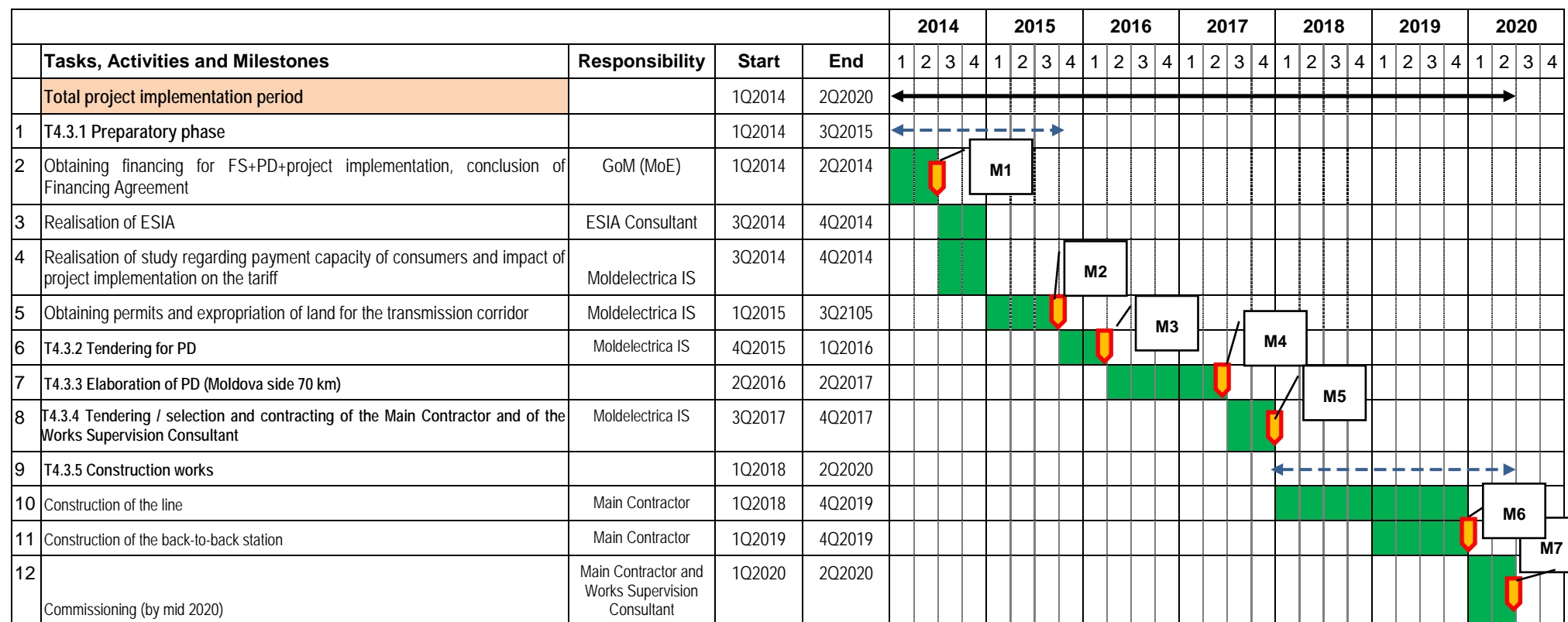
Similar to C) in Section 5.2.1, for detail, see table under E) below.

D. Ecological and social effects

It is necessary to make Environmental and Social Impact Assessment (ESIA). ESA, as rule, is part of FS. The environmental impact is analysed in PD according to NCM A.07.02-99 (6.2.10. Environment protection). Concentration of pollutants should be in line with EU Directive for industrial emissions 2010/75/EU.

E. Time-plan including Milestones

Project 3: 400 kV interconnection line Straseni-Ungheni (RoM) - Iasi (Romania)



- Milestones:**
- M1 – Financing ensured and Financing Agreement signed
 - M2 – After all permits are obtained and land expropriated
 - M3 – Consultant for preparation of PD selected and contract signed
 - M4 – PD completed and adopted
 - M5 – Main Contractor and Works Supervision Consultant selected and contracted
 - M6 – Construction of all project components completed
 - M7 – The line enters into commercial operation after successful commissioning

5.2.3 330 kV interconnection line Balti (RoM) – HPP Novodnестrovsk (Ukraine)

A. Project description

Length: 123 km, of which 87 km in RoM; feasibility study finalised on the RoM side; overall cost min. 15 mill. EUR, of which 9 mill. EUR for RoM, decision depends on the ENTSO-E CE Power System Interconnection project and financing options; earliest possible date for completion of project implementation: end 2019.

B. Activity plan

Activity description		Responsibility
1	Preparatory phase <ul style="list-style-type: none"> Obtaining financing for FS+PD+project implementation, conclusion of Financing Agreement Realisation of ESIA Realisation of study regarding payment capacity of consumers and impact of project implementation on the tariff Obtaining permits and expropriation of land for the transmission corridor 	GoM (MoE) ESIA Consultant Moldelectrica IS Moldelectrica IS
2	Tendering for PD	Moldelectrica IS
3	Elaboration of PD (Moldova side 87 km)	PD Consultant
4	Tendering / selection and contracting of the Main Contractor and of the Works Supervision Consultant	Moldelectrica IS
5	Construction works <ul style="list-style-type: none"> Construction of the line Construction of the back-to-back station Commissioning (by end 2019) 	Main Contractor and Works Supervision Consultant

C. Milestones

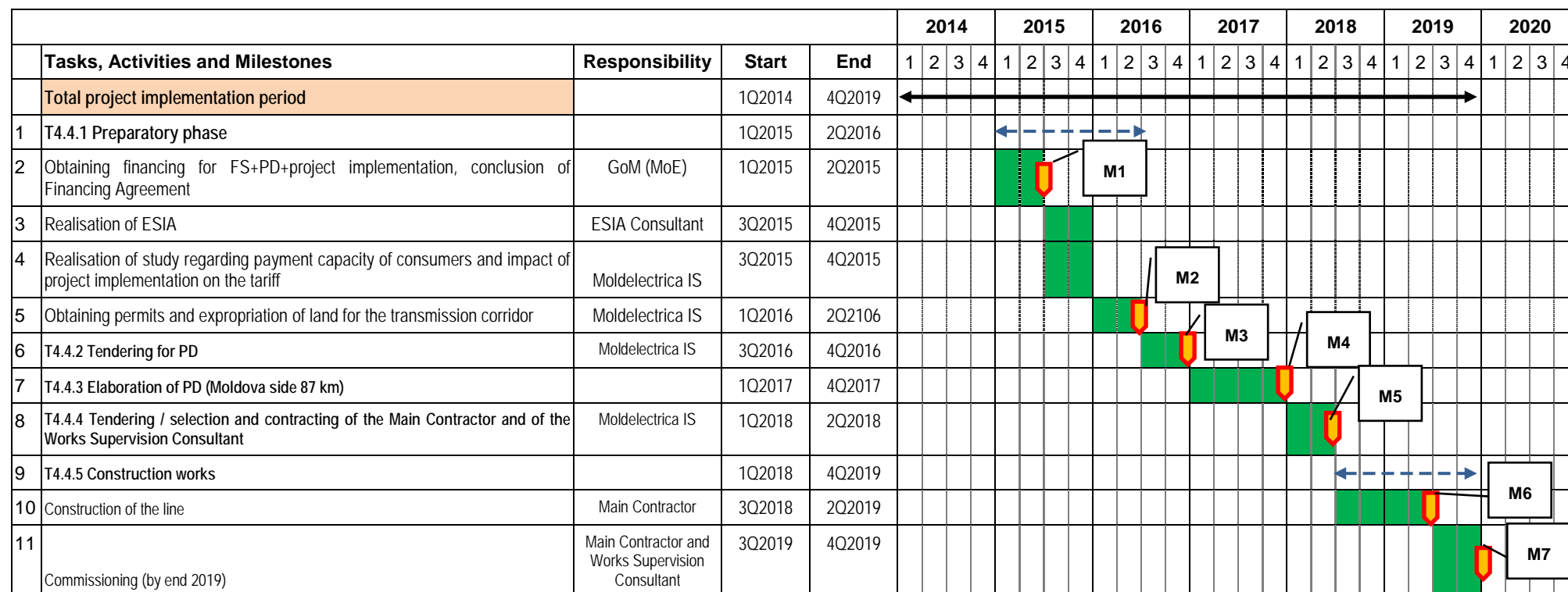
Similar to C) in Sections 5.2.1, for detail, see table under E) below.

D. Ecological and social effects

It is necessary to make Environmental and Social Impact Assessment (ESIA). ESA, as rule, is part of FS. The environmental impact is analysed in PD according to NCM A.07.02-99 (6.2.10. Environment protection). Concentration of pollutants should be in line with EU Directive for industrial emissions 2010/75/EU.

E. Time-plan including Milestones

Project 4: 330 kV interconnection line Balti (RoM) - HPP Novodnistrovsk (Ukraine)



Milestones: M1 - Financing ensured and Financing Agreement signed



M2 – After all permits are obtained and land expropriated

M3 – Consultant for preparation of PD selected and contract signed

M4 – PD completed and adopted

M5 – Main Contractor and Works Supervision Consultant selected and contracted

M6 – Construction of all project components completed

M7 – The line enters into commercial operation after successful commissioning

5.3 CAPITAL REPAIRS AND PRIORITY SHORT-TERM INVESTMENT PLANS IN ELECTRICAL TRANSMISSION / DISTRIBUTION AND DISTRICT HEATING NETWORKS

5.3.1 Moldelectrica power network rehabilitation programme

Total budget – 39.3 mill. EUR, of which: NIF grant – 8 mill. EUR (of which: 2 mill. EUR for TA), EBRD loan – 14.3 mill. EUR; implementation period: 2012-2017, EIB loan – 17.0 mill. EUR. Scope of activities:

- The reconstruction of one 400/100kV substation;
- The reconstruction of two 110/10kV substations;
- The reconstruction of three 110kV transmission lines;
- New transformer at substation Chisinau and upgrade Vulcanesti substation with associated rehabilitation works;
- Change of 110/35/10kV transformers and 110/10kV transformers at various substations;
- Transmission line upgrade, reconstruction of switchyard and switchgear and new substation Telenesti etc.

5.3.2 Energy project II

Under the “Energy project II” addressed to the electricity and district heating sectors, coordinated by the Ministry of Economy, capital repairs and maintenance interventions have been undertaken during the implementation period of 2003-2012. Total budget: 39.93 mill. US\$ (30.25 mill. EUR), of which contributions by: IDA 35 mill. US\$, SIDA 0.6 mill. US\$, SE Moldelectrica - 4.33 mill. US\$. Interventions included:

- Improvement of power transmission network;
- Upgrade of the energy equipment and a new measuring system;
- Installation of a new SCADA system at SE Moldelectrica;
- Rehabilitation of heating, DHW and other relevant systems in the Pediatrics Department of the ‘Mother and Child Hospital’.

5.3.3 Energy project III

A new “Energy project III” is being planned to start in 2015, which will be addressed to the district heating sector. The available budget is 106.14 mill. Lei (6.3 mill. EUR) and the implementation period: 2015-2016. The planned intervention includes implementation of the Investment Plan on short-term measures for improved energy efficiency of the district heating system in Chisinau (developed by SWECO consulting company in 2012-2013).

5.4 OTHER POSSIBLE MEASURES TO IMPROVE SECURITY OF ELECTRICITY SUPPLY

Feasibility analysis and possible construction of a 250 MW CFB coal-fired power plant

The possible coal-fired thermal power plants would have at least 250 MW of installed capacity and utilise the circulated fluidised bed (CFB) combustion technology coupled with additional standard measures to fully comply with EU environmental standards.

The state of the art of CFB today typically does not exceed 300-350 MW of installed capacity per generation unit. The investor /owner of the plant is envisaged as IPP operating under market conditions, however, with a possibility to conclude a PPA for a period not exceeding 5 years under the negotiated terms, provided the Energy Community would endorse such derogation from the prevailing principles which do not allow PPAs, typically distorting the market. The standard economic lifetime would be 40 years

Such TPP would generate approx. 1,750 GWh per annum (at 7,000 operating hours or at capacity factor of 0.8, 42% of net efficiency and investment cost of 1,200 EUR/kW or total cost of approx. 300m EUR excl. cost of connection to the power network), which represents approx. 44% of average gross electricity demand of Moldova on the right bank of the Dniester River of 3,987 GWh in the last 3 years (2010-2012) or twice as much as the indigenous total power generation was in the same period (840 GWh). If, theoretically, such TPP sold all generated electricity to the Moldovan power system the present electricity dependence of approx. 80% could be reduced to 35%. In reality, however,

It is worth stating that the power sector of Moldova has practically no power reserve of any kind, as well as no power system regulation capabilities, the services of which have to be provided by the Ukrainian system at unpredictable prices in the future. Equally, the Moldovan power system has no capability to provide any ancillary services to generators of RES-E electricity in the future. In some summer months, all power generation units in Moldova generate not more than 40-60 MW as against the typical summer loads in the range of approx. 250-550 MW and winter ones of approx. 330-750 MW.

In the above conditions, the security of electricity supply to Moldova is extremely low in case of any failure on interconnections to Transnistria and the Ukraine that may result in disastrous consequences.

Despite PPAs with IPPs are principally forbidden in the electricity market concepts in the Energy Community, Moldova with its specific power supply situation represents an exceptional case. Therefore, ways of possible derogation from the existing rules should be studied, which would encourage strategic investors to enter into the Moldovan power market under special conditions. In case of problems in finding a strategic investor for the 650 MWe CCGT, due to very difficult and unpromising situation in the heat and gas sectors, construction of the 250 MW TPP could be an pillar for certain improvement towards the electricity market in Moldova, where practically no power generation unit can participate on an open market because of its specific role and inherited unfavourable conditions.

Table 5.1: E. Time-plan for measures in Sections 5.3-5.4

					2014				2015				2016				2017				2018				2019				2020			
	Tasks, Activities and Milestones	Responsibility	Start	End	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	T5.1 Feasibility study on joining ENTSO-E	ENTSO-E Cons.	3Q2012	4Q2015																												
2	T5.2 Capital repairs and priority short-term investment plans in electrical transmission / distribution and district heating networks	Moldelectrica IS	2012	4Q2017																												
3	Implem. of Molelectrica power network rehab. programme (2012-2017)	Moldelectrica IS	2012	4Q2017																												
4	Preparation for and Implementation of Energy project III (2015-2016)	Termocom	1Q2015	4Q2016																												
5	T5.3 Introduction, development and implementation of rolling 10-year Development Plans at gas system operators		2Q2014	4Q2020																												
4	Introduction and preparation of long-term 10-year development plans for electricity system operator(s) (2016-2025); adoption of such plans and publishing of plans on website of the enterprise(s)	Moldelectrica IS in cooperation with MoE and ANRE	3Q2014	4Q2015																												
5	Implementation of develop. plans and regular update every two years	Moldelectrica IS (TSO and DSOs)	1Q2016	Onwards																												
	Feasibility study and possible construction of a 250 MW coal-fired thermal power plants probably based on CFB technology		3Q2014	4Q2020																												
6	T5.4 Preparation of the pre- and feasibility study for construction of a coal-fired thermal power plant of approx. 250 MW capacity <ul style="list-style-type: none">Ensuring financing of the pre- and feasibility studyImplementation of the pre- and feasibility study including ESIA	MoE FS Consultant	3Q2014	4Q2015																												
7	T5.5 Selection of strategic investor for the 250 MW TPP project <ul style="list-style-type: none">By authorisation of the GoM based on expressed direct interestBy a tender procedure prepared and implemented by the GoM (MoE)Signing of the Project Implemenattion Agreement with the State	GoM (MoE)	4Q2015	2Q2016																												
8	T5.6 Implementation of the 250 MW TPP project (implementation period 4-5 years) <ul style="list-style-type: none">Preparation of Project documentation for a 250 MW CFB technologyObtaing permits and approvalsSelection and contracting of Main Contractor and Works Supervisory ConsultantConstructionCommissioning and start-up of Commercial operations	Investor	3Q2016	4Q2020																												

Milestones: M1 – Results of the ENTSO-E study available, decision on on joining ENTSO-E taken
M3 – First rolling Development Plan (2016-2020) is adopted and published
M5 – 2nd update of the development Plan (2020-2030) prepared, adopted and published

M2 – First rolling Development Plan (2016-2024) is prepared
M4 – 1st update of the Development Plan (2018-2026) prepared, adopted and published
M6 – Feasibility study completed and decision of the GoM taken on possible implementation of the project

6 IMPLEMENTATION MONITORING, FOLLOW-UP AND UPDATES OF THE ROADMAP

6.1 STEERING COMMITTEE No. 2

Steering Committee No. 2 will be in charge of coordination of the electricity sector Roadmap implementation. It will be appointed by the Government, with Parliament's approval.

The administration of the committee will be shared between representatives of the Ministry of Economy and National Energy Regulatory Agency, thus reflecting the two parallel authorities that have to participate in the coordination process.

Membership will be assigned to all important actors in the electricity and environmental protection fields. The committee will meet monthly as part of the strategy's implementation and will report on a semestrial basis to the Government upon the Energy Strategy implementation in the respective area.

6.2 REPORTING LINES

For each **investment project**, the institution mandated with the implementation of the respective project will appoint a Project Manager, who will report on a regular basis to the institution's Board on the progress. Project's technical documents shall be subject to approval by the technical-economic committee of each institution mandated with project's development.

Regarding reporting on the overall progress in implementation of the Natural gas Sector Roadmap by 2030, the Steering Committee No. 1 will report regularly – on a semestrial basis to the GoM.

6.3 PROJECT INDICATORS TO MONITOR PROGRESS

The Energy Strategy, Section VII, stipulates the principles of ES2030 implementation reporting and monitoring, in detail:

178. General progress indicators for projects, representing the simplest elements of the strategy's implementation, are the feasibility studies, technical design development and execution process of the project itself. Project development represents a serial process, and the conformity of achievements with the deadlines of the progress indicators represents a condition for the start of the work in due time for the following progress indicator. Every fulfilment of a progress indicator in the planned time increases project's chances to be finalized in a timely and appropriate manner. The appointment of a project manager for each project apart represents an attribute of the administration of every institution mandated with the project development, the project's administration being in charge with reporting on a regular basis to the institution's Board. Project's technical documents shall be subject to approval by the technical-economic committee of each institution mandated with project's development.

181. Along with an internal coordination of projects' development within these plans and taking into consideration the different vertical structure of the hierarchic coordination, a horizontal coordination of plans is also necessary, by including the monitoring, reporting and assessment aspects. Diverse plans will contribute to the achievement of the same major or specific objective and will imply interaction with institutions that are or not in a hierarchic relation.

184. Once approved by the Government, the Strategy and the two roadmaps resulting from the Strategy as action plans, the administration, representativeness and responsibility for their implementation shall be distributed to some different entities, as will be the tasks for reporting and monitoring. When the implementation levers and deadlines are connected to the energy policies, the monitoring task will be assigned to the Government. This is the case of domains 3) and 4). Because the administration and monitoring tasks of these plans will be in direct conflict and the project development requires special management capacities, there where public property is involved it is necessary to establish a legal entity to fulfil an objective defined on a limited time period (Special Purpose Entity (SPE)), and there, where only private property is involved (for certain this is the case of the renewable energy-based generation), the organization of tenders and monitoring of plans will be under the responsibility of different departments from the Ministry of Economy.

185. For the cases where the implementation aspects are related to the compliance with regulation, administrative tasks will be assigned to the National Energy Regulatory Agency. An Institutional Strategy Plan of the ANRE shall be developed based on the definition of the domain and implementation schedule, with the approval and monitoring tasks being with the Parliament.

187. In the natural gas supply security domain, all responsibilities related to planning and implementation are with the Moldovagaz SA. Following the implementation of the separation of activities, roles will be divided according to the institutional separation of the transport, distribution and supply. From the policy perspective, the monitoring responsibility is performed by the Government (Ministry of Economy) through its representatives in the Board, as from the regulation perspective (including financial aspects line investments, use of the congestion rate and transport tariff) responsibilities are assigned to the National Energy Regulatory Agency.

188. Assessment of progress indicators is a both qualitative and quantitative process. The quantitative assessment activity will be assigned to the independent authorised entities, while collection of primary and process data will be performed by specialised public entities, like the National Energy Regulatory Agency. Assessment of qualitative progress indicators will represent the result of the activity of entities carrying out the monitoring on the basis of the reporting by the implementation entities.

The list of performance indicators included in ES2030 are shown in Table 6.1.

Table 6.1: List of performance indicators

ENERGY SUPPLY SECURITY			
Indicators	MU	2015	2020
Energy interconnections: - Power lines - Natural gas pipelines	km		139 40
Alternative natural gas supply sources: long-term supplier, relevant use of internal resources, short-term market		2	3
Stimulating the use of energy produced from RES in the gross internal consumption	%	10	20
Ensuring the biofuel share in the total used fuel	%	4	10
Use of energy from renewable sources in all forms of transport: - volume of ethanol and petrol mix in the sold petrol amount - volume of biodiesel mix in the volume of sold diesel	%	6 5	10
Increasing the internal power generation capacity	MW		By 800
Ensuring the share of annual generation of power from RES	%		10
OPENING OF MARKETS AND CONNECTION TO EUROPEAN MARKETS			
Transposing the Third legislative Package		√ (in part)	√ (in full)
Approving the new roadmap and commercial codes for power and gas			√
Approving the regulatory framework on liberalization and competition		√	
Appointing a market operator		√	
Accession of the SE Moldelectrica to the transborder capacities tendering coordination mechanisms		√	
Integration of markets managed by the Market Operator in Moldova to the EIM			√
Official opening of markets	%	100	
Interconnection with EU systems: - Electricity - Gas			√ √

Annex**Outline of procedures for planning and construction of energy infrastructure projects**

This annex outlines the required procedures for preparation for and construction of power or combined heat and power plant (CHP) in Moldova that follow the requirements stipulated in laws and regulations

The procedures are a bit different for energy production facilities (e.g. power plants and CHPs) and energy transportation lines (power lines and gas pipelines). Both procedures are shown in Figure A-1 and Figure A-2, respectively.

Figure A-1: Procedure for construction of power plants of CHP in Moldova

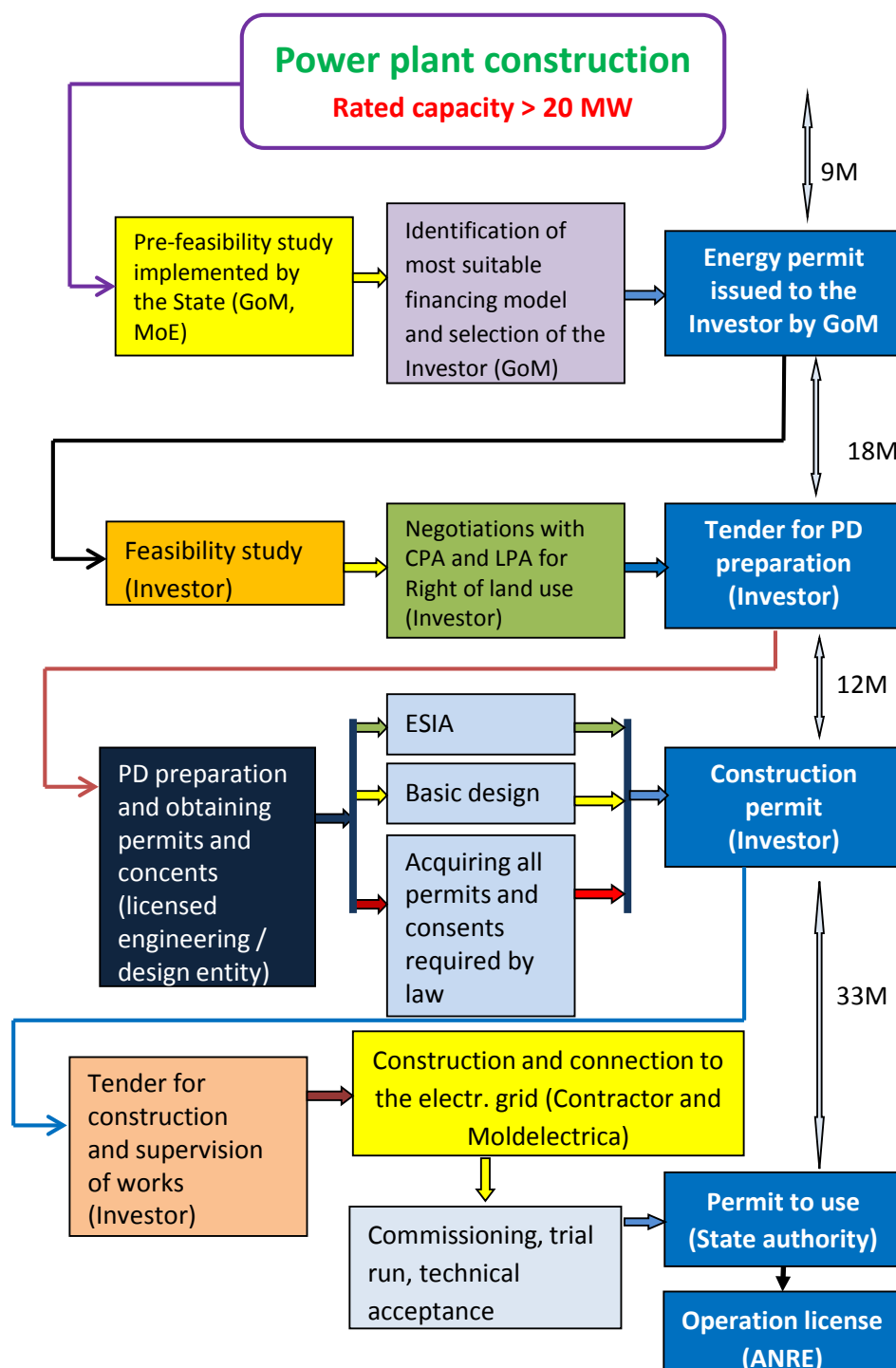
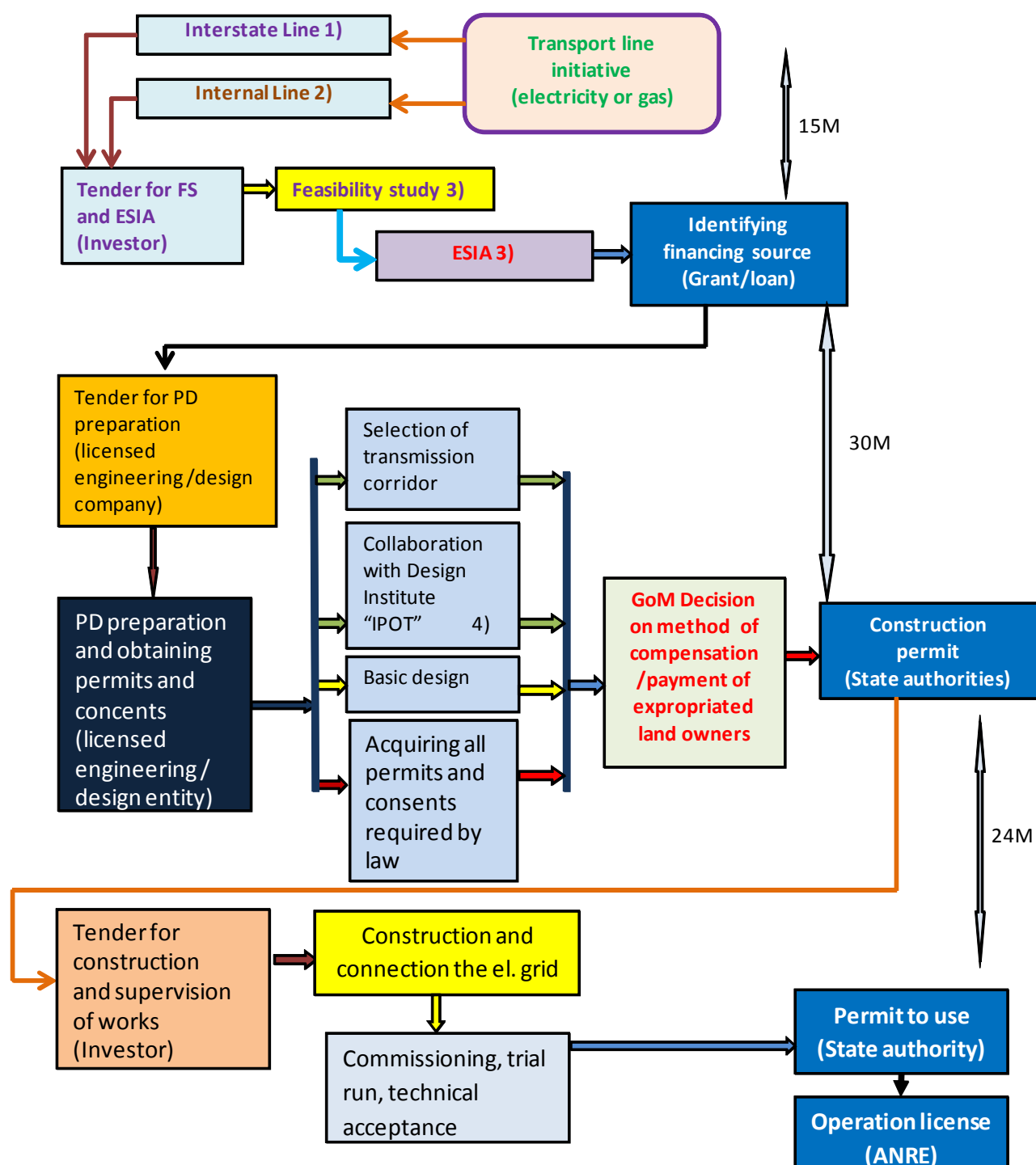


Figure A-2: Procedure for construction of energy transport lines in Moldova



Notes:

- 1) For interstate line (electricity or gas) the State Authority Decision is necessary, including Memorandum of Understanding
- 2) For internal electrical line Decision is adopted by Moldelectrica IS after prior coordination with MoE and ANRE In case of gas line Decision is adopted by State Authority
- 3) Already done for the Balti-Suceava line
- 4) The Design Institute "IPOT" (Institute for territorial organisation) is main state body responsible for land expropriation (this can be a very long time procedure, sometime through Judgment/court)

Explanatory notes:

- a) For energy transport lines, the impacted land around has to be expropriated from the current owners in order that the line operator has unlimited and unconditional access to the facility, can maintain the line as well as for safety reasons. The main state entity responsible for land expropriation is the Design Institute "IPOT". As a rule, this entity, on behalf of the State undertakes all necessary works for land expropriation (e.g. negotiation with owners about price, preparation and signing contracts, preparation of all documents related to changing the land status from private to public etc.). In case a certain owner does not agree with expropriation terms he can approach the court in accordance to law. Sometimes the State can lose the case, which may lead to changing the line corridor and that causes delays due to long procedures involved.
- b) In case of interstate energy transport lines, such lines need to be planned and included in adequate state program or strategy of future development (e.g. ES2030). The decision about construction is brought by GoM and after prior signing of Memorandum of Understanding with the respective counterpart state. After the FS and ESIA are completed, the State looks for the suitable financing model (grant, loan or a combination thereof).
- c) In case of internal energy transport lines on the territory of Moldova, the decision about construction is taken by the investor – Moldelectrica, however, after prior consultation with the owner (MoE) and obtained approval by ANRE, because the investment increases the transport tariffs.

The related legislation include:

- Law no.1525 from 19.02.1998 regarding energy
- Law no.124 from 23.12.2009 regarding electricity
- Law no.123 from 23.12.2009 regarding natural gas
- Law no.488 from 08.07.1999 on land expropriation for public service
- Government Decision no.420 from 11.05.1999 on State Energy Supervision Regulation
- Government Decision no.514 from 23.04.2002 on protection of power network Regulation
- ANRE Decision no.266 from 20.11.2007 on Technical Norms of electrical transport networks
- ANRE Decision no.393 from 15.12.2010 on Regulation of electrical energy supply and utilization
- ANRE Decision no.75 from 12.02.2003 on Rules of electrical energy market

The role of institutions and key responsibilities, together with references to legislation is given in Table A-1.

Table A-1: Relevant references to legislation

Institution	Role / responsibility	Reference to legislation
CPA attributions in energy	Attracting investments, extension of interconnections, management of state property	Law no.1525, from 19.02.1998, art.4
ANRE	Main body in regulation and monitoring of energy sector activities	Law no.1525, from 19.02.1998, art.4 ¹

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Institution	Role / responsibility	Reference to legislation
ANRE attributions	Issues operation licenses for carrying out energy activities on the energy markets	Law no.1525, from 19.02.1998, art.4 ¹ (§.2.c)
LPA attributions	Construction of energy objects of local importance, solving problems on land expropriation for energy objects	Law no.1525, from 19.02.1998, art.5 (§.2.a)
Property in energy	They are state property: power transmission grids and energy objects of strategic importance	Law no.1525, from 19.02.1998, art.7 (§.3)
State Energy Supervision (SEI)	State Energy Inspectorate supervises the compliance with regulations, normative-technical rules in construction of energy objects	Law no.1525, from 19.02.1998, art.13 (§.2)
SEI attributions	Issues acts for putting energy installations in exploitation	Law no.1525, from 19.02.1998, art.13 ¹ (§.1.c)
Government Competence	Approves construction of power plants with a rated capacity greater than 20 MW	Law no.124, from 23.12.2009, art.5 (§.1.c)
	Approves types of fuels to be used in power plants with a capacity greater than 20 MW	Law no.124, from 23.12.2009, art.5 (§.1.d)
	Launces tenders according to law	Law no.124, from 23.12.2009, art.5 (§.1.f)
LPA Competence	Issues, upon request, Construction permits for power system objects, including power plants, in accordance with law	Law no.124, from 23.12.2009, art.6 (§.1)
	Considers the issue of allocation of land for power system objects according to procedure prescribed by law	Law no.124, from 23.12.2009, art.6 (§.3)
ANRE competence	Issues licenses for electricity generation, electricity transmission, electricity distribution, electricity supply at regulated tariffs or non-regulated tariffs	Law no.124, from 23.12.2009, art.8 (§.1.a)
	The license for generation of electrical energy and license to supply electricity at regulated tariffs or non-regulated tariffs are issued for individual entrepreneurs and legal entities.	Law no.124, from 23.12.2009, art.15 (§.3)
	The licenses for transmission and distribution of electrical energy are issued for legal entities.	
	The licenses are issued for 25 years.	Law no.124, from 23.12.2009, art.17 (§.6)
Right on the land	Right of use the property (land) of a third party for construction, renovation of electrical transport, distribution grid is established by contract with owner.	Law no.124, from 23.12.2009, art.23 (§.1)

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Institution	Role / responsibility	Reference to legislation
Expropriation	The land required for the construction of electrical networks as a property belonging to third parties may be expropriated for the public by the competent authority under the procedure prescribed by law, as a just and prior compensation to land owners.	Law no.124, from 23.12.2009, art.26 (§.1)
Approval of building power plants	GoM approves construction of power plant with rated capacity greater than of 20 MW	Law no.124, from 23.12.2009, art.33 (§.1)
	<p>Procedure for approving construction of PP should be described in Regulation designed by ANRE and taking in consideration the following:</p> <ul style="list-style-type: none"> - safety and security of the electricity system, installations and associated equipment - health and public security - environment - land use and siting - use of public domain property - energy efficiency - nature of the primary sources - specific characteristics of the applicant, as are technical, economic and financial - policies on small and / or distributed 	Law no.124, from 23.12.2009, art.33 (§.2)
Tender	The tender is organised by GoM or by CPA in Energy by Decision of GoM	Law no.124, from 23.12.2009, art.34 (§.3)
	Details of the tender for the construction of power plants is published in the Official Monitor of the RM at least six months before the date of the Bid	Law no.124, from 23.12.2009, art.34 (§.4)
Extension of transport and distribution network	The TSO extend their networks according to a regulation drafted and approved by the ANRE	Law no.124, from 23.12.2009, art.40 (§.1)
	The costs for extension are supported by TSO, and are included in tariff	Law no.124, from 23.12.2009, art.40 (§.2,3)
Public utility	The installation for electricity generation, systems for supplying with energy and gas	Law no.488 from 08.07.1999, art.5
Moldelectrica IS	Coordinating planning and development NPS based on National Energy Policy	ANRE Decision no.266 from 20.11.2007. Technical Norms of electrical transport network, art.7, p.b
	Operation of international interconnections and electricity transit	ANRE Decision no.266 from 20.11.2007. Technical Norms of electrical transport network, art.9, p.d
	Technical connection approval to the transport grid	ANRE Decision no.266 from 20.11.2007. Technical Norms of electrical transport network, art.126
Moldelectrica IS	Stages of transport grid connection are:	ANRE Decision no.266 from

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Institution	Role / responsibility	Reference to legislation
	<ul style="list-style-type: none"> - issuing technical connection approval - execution of the works themselves Connection - user testing facilities, to prepare commissioning - preparation of documents for delimitation of installations - concluding the contract - commissioning backhaul facilities - powering the system user 	20.11.2007. Technical Norms of electrical transport network, art.127
	The technical connection approval is issued in maximum 45 days.	ANRE Decision no.266 from 20.11.2007. Technical Norms of electrical transport network, art.135
After receiving license	Any legal entity after receiving Operation license from ANRE is required to registering with System Operator in maximum 10 days.	ANRE Decision no.75 from 12.02.2003. Rules of electricity market, art.3.1



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Enclosure 2

“Energy Strategy of the RoM until 2030”

**Working document in support of
the NGSR for the RoM by 2030**

**Ministry of Economy
of the Republic of Moldova**

Chisinau, February 2014

FOREWORD

Energy Strategy of the Republic of Moldova until 2020 (“the Energy Strategy” or ES2030) was adopted by the Government of Moldova (GoM) in February 2013.

According to the Energy Strategy (Section VI. Paragraph 177), to ensure the achievement of progress indicators in time and in full conformity with the legislation in effect, the management and monitoring responsibilities, as well as reporting duties must be distributed in a legal and efficient way.

As stipulated in ES2030, projects can be in the main areas addressed by the Energy Strategy:

- 1) provide support to the power transmission, including development of interconnections;
- 2) ensure the natural gas supply security;**
- 3) develop new energy generation capacities, including energy production based on renewables;
- 4) cogeneration, district heating sector and solution of the accumulated debts issue;
- 5) market liberalization, incentives-based regulation, competitive market framework;
- 6) corporate governance improvement, including technical and management skills, code of conduct.

Further to ES2030, not all of these areas are approached through policy documents in terms of planning; therefore not all of them belong to the Government (Ministry of Economy). This approach takes into account not only and not necessarily the fact that the Ministry cannot undertake all responsibilities, but also the fact that a different approach might not be compliant with the roles and activities defined by the primary legislation.

In the specific case of the National Energy Regulatory Agency it is clear that it will not be coordinated and monitored by the Ministry, but by the Parliament. These plans will be well defined at the individual level and will be comprehensive, coherent and consistent with other plans.

Along with an internal coordination of projects' development within these plans and taking into consideration the different vertical structure of the hierarchic coordination, a horizontal coordination of plans is also necessary, by including the monitoring, reporting and assessment aspects. Diverse plans will contribute to the achievement of the same major or specific objective and will imply interaction with institutions that are or not in a hierarchic relation.

General policy documents will allow the coordination of several plans for achieving the main objective and specific objectives. According to ES2030, these policy documents are:

- the “Electricity sector roadmap for the Republic of Moldova until 2030,” covering the above areas 1), 3), 4) and 5),

- the “**Natural gas sector roadmap for the Republic of Moldova until 2030,**” covering the area 2) and
- a specific action plan for the area 6) under the integral coordination of the Ministry of Economy and monitored by the State Chancellery.

The other two main national action plans in the field of energy, notably ‘On energy efficiency’ (NEEAP) and ‘On renewable energy’ (NREAP) are rather standard documents, implying a double reporting/monitoring process: to the Government and to the Energy Community Secretariat. Provisions of these two documents will be in line with provisions with the Energy Strategy and of other legal and normative acts in force, and with the reporting / planning standards arising from the commitments of joining the Energy Community Treaty. Therefore, elements included in NEEAP and NREAP are not duplicated and part of the roadmaps (ESR and NGSR).

The time horizon of the roadmaps is “by 2030” which complies with the planning period applied in the Energy Strategy. However, it is quite obvious that for many reasons the current focus of the roadmaps should be put on the short- to medium-term period of 3-5 years (2014-2016/2018) with an important milestone year of 2020, by when most currently set strategic targets should be fulfilled. The period beyond 2020 remains relatively vague, also in terms of energy strategy in the European Union. As a consequence, it is sensible that the roadmaps are regarded as **living documents**, subject of necessary update and possible change at least every five years as ES2030, for example.

ACRONYMS AND ABBREVIATIONS

CET	<i>Centrale electrice de termoficare</i> (CHP)
CHP	Combined heat and power plant (<i>CET</i>)
CP	Contracting Party (to the ECT)
CPA	Central public authorities
DoESEE	Department of Energy Security and Energy Efficiency
ECT	Treaty Establishing the Energy Community (Energy Community Treaty)
ECRB	Energy Community Regulatory Board
ECS	Energy Community Secretariat
EnC	Energy Community
ES2030	Energy Strategy of the RoM until 2030 ("Energy Strategy")
DSO	Distribution system operator
GoM	Government of Moldova
ICS	<i>Intreprindere capital strain</i> (Foreign capital company)
IEM	Internal European Market
IS	<i>Intreprinderea de Stat</i> (State enterprise)
JSC	Joint stock company
LoE	Law on Electricity (No. 124 of 2 July 2010)
LoEE	Law on Energy Efficiency (No. 142 of 2 July 2010)
LoNG	Law on Natural Gas (No. 123 of 23 December 2009)
LoRE	Law on Renewable Energy (No. 160 of 12 July 2007)
LPA	Local public authorities
MC-EnC	Ministerial Council of the Energy Community
MD	Moldova
MDL	Moldovan lei
MoE	Ministry of Economy
NBM	National Bank of Moldova
NCFM	National Commission for Financial Markets
PD	Project documentation
RE	Renewable energy
RES	Renewable energy sources
RO	Romania
RoM	Republic of Moldova
SA	<i>Societate pe actiuni</i> (Joint stock company)
SE	State enterprise
SRL	<i>Societate cu raspundere limitata</i> (Limited liability company)

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1. INTRODUCTION

1.1 OBJECTIVE AND SPECIFIC GOALS OF THE ROADMAP

The objective of the Natural Gas Sector Roadmap of the Republic of Moldova by 2030 (referred as »Natural Gas Sector Roadmap« or NGSR) is to **ensure the natural gas supply security** through a clear vision how the gas sector policy objectives stipulated in the Energy Strategy of the Republic of Moldova until 2030 (referred as »Energy Strategy«), adopted by the Government of Moldova (GoM) in February 2013, shall be achieved.

In addition, the roadmap is as a basis for establishment and implementation of effective progress monitoring mechanism. The roadmap identifies major work packages and tasks, allocates responsibilities among the key stakeholders, determines the major milestones and estimates the associated timelines, assesses type of costs and quantifies costs of major investment projects. It determines the coordination and progress monitoring mechanisms, and the ultimate supervision over the whole process.

The following main specific goals of the Energy Strategy shall be achieved through successful implementation of the NGSR:

- 1) Legal and regulatory framework in the gas sector of Moldova is developed and adopted in full compliance with the Third legislative Package of the EU in the energy sector;
- 2) Institutional and organisational framework in the gas sector is implemented in line with Directive 2009/73/EU; Moldovagaz SA is successfully unbundled and functional by 1.1.2020;
- 3) Natural gas market in Moldova is developed in line with sound market design rules and merged with Internal Energy Market (IEM);
- 4) Security of gas supply in the country is increased by (i) implementation of major gas infrastructure projects including new interconnection with Romania and (ii) reinforcing of internal gas distribution network;
- 5) Potential for own gas resources and possibilities for the development of underground gas storage facilities are explored and developed if found economic;
- 6) Gas sector system operators comply with best European development planning principles and applied methodologies.

1.1 SUMMARY OF KEY ENERGY POLICY AND STRATEGY OBJECTIVES BY 2030 (ES2030)

In ES2030, the GoM has defined three main objectives:

- 4) to ensure the energy supply security
- 5) to develop competitive markets and ensure their regional and European integration

- 6) to ensure the energy sector's sustainability and combat climate changes

In further detail, Moldova's strategic goals for 2013-2020 are as follows:

- 7) to ensure the natural gas supply safety, by diversifying the supply routes and sources, of carrier types (conventional, non-conventional gas, LNG) and by storage facilities, together with strengthening Moldova's role of natural gas transmission corridor;
- 8) to strengthen Moldova's role of power transmission corridor, by building new interconnectors, connected to the ENTSO-E system, and by consolidating the internal power transmission network;
- 9) to create a strong power and heat generation platform, through retrofitting, efficient district heating and advanced marketing;
- 10) to improve the energy efficiency and increase the use of renewable energy sources (RES);
- 11) to provide legal, institutional and operational framework for a real competition, to effectively open the market, set up energy prices in a transparent and fair way, integrate the Moldovan energy market into the EU internal market;
- 12) to provide a modern and competitive institutional framework for the energy industry development.

Several quantitative targets included in ES2030 have been inherited from the National Development Strategy „Moldova 2020” and the National Energy Efficiency Programme 2011-2020:

- 3) in the energy security specific domain:
 - f) to perform energy interconnectors: 139 km of power lines and 40 km of natural gas pipelines in 2020 will be constructed;
 - g) to stimulate the use of energy produced from renewable sources, in relation to the total gross final energy consumption (GFEC): 20% in 2020, with an intermediate objective of 10% in 2015;²²
 - h) to ensure a 10% share of biofuels in the total fuels by 2020, with an intermediate objective of 4%;
 - i) to increase the internal power production capacities up to 800 MW by 2020;
 - j) to ensure a 10% annual share of power produced from renewable sources by 2020.²³
- 4) in the energy efficiency specific domain:
 - f) to reduce the energy intensity by 10% in 2020;
 - g) to reduce losses in the transmission and distribution networks by up to 11% in 2020 (up to 13% in 2015) for power, by 39% in 2020 (by 20% in 2015) for natural gas and by 5% in 2020 (by 2% in 2015) for thermal energy;

²² Moldova has to distinguish between: (A) the only legally binding RES-related targets set by the MC-EnC decision on 18 October 2012 (17% in GFEC and 10% share of RES in transport and (B) voluntarily-imposed targets set by ES2030 as above.

²³ Another self-imposed target by Moldova.

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- h) to reduce greenhouse gas emissions (compared with 1990) by 25% in 2020;
- i) to reduce the energy consumption in buildings by 20% in 2020;
- j) to achieve a 10% share of refurbished public buildings in 2020.

2. ROADMAP BY AREA

2.1 LEGISLATIVE-REGULATORY FRAMEWORK DEVELOPMENT IN THE NATURAL GAS SECTOR

2.1.1 International obligations

All international obligation of the Republic of Moldova in the natural gas sector arise from obligations of the RoM as Contracting Party to the ECT (for detail, see Table 2.1).

Table 2.1: International obligations of the RoM in the gas sector (*Acquis* on gas)

Directives and regulations	Implementation deadline for Contracting Parties of the Energy Community
Third legislative Package	
Directive 2009/73/EC of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC adopted by D/2011/02/MC-EnC	The laws, regulations and administrative provisions necessary to comply with the Third legislative Package have to be brought into force by <u>1 January 2015</u> . (For certain Articles and provisions D/2011/02/MC-EnC determines longer deadlines: Article 9(1): 1 Jun 2016, Article 9(4): 1 June 2017 and Articles 11: 1 Jan 2017. The market opening for households is 1 Jan 2015, whilst the general implementation deadline of market opening for non-households was set for 1 Jan 2008.)
Regulation (EC) No 715/2009 of 13 July 2009 on conditions for access to the gas natural transmission networks and repealing Regulation (EC) No 1775/2005 adopted by D/ 2011/02/MC-EnC	
Second legislative Package	
Directive 2004/67/EC of 26 April 2004 concerning measures to safeguard security of natural gas supply	31 December 2009
Directive 2003/55/EC of 26 June 2003 concerning common rules for the internal market in natural gas and repealing Directive 98/30/EC	1 July 2007(repealed by adoption of Directive 2009/73/EC)
Regulation (EC) No 1775/2005 of 28 September 2005 on conditions for access to the natural gas transmission networks	31 December 2008

2.1.2 Laws and regulations

By passing Law on Natural Gas (No. 123-XVIII) on 23 December 2009, Moldova transposed Directive 2003/55/EC concerning common rules for the internal market in natural gas which provides general framework, prescribes roles of GoM and ANRE, provisions, rights and obligations of TSO, DSOs, suppliers, consumers; regulates access to the grid, licensing conditions, and guarantees the right of every consumer to conclude contracts with any (including foreign) supplier.

However, the completion of transposition of Directive 2004/67/EC of 26 April 2004 of the European Parliament and of the Council concerning measures to safeguard security of

natural gas supply is being implemented only now. Draft Law amending and supplementing the Law on Natural Gas awaits government decision and final promulgation by the Parliament.

In addition, the decisions of ANRE on adoption of the following items of secondary legislation in the field of natural gas are relevant:

- Rules of the natural gas market;
- Regulation on supply and use of natural gas;
- Regulation on natural gas measuring for commercial purposes;
- Regulation on extension of natural gas network;
- Technical norms for gas transportation / transmission network;
- Technical norms of gas distribution networks;
- Methodology of calculation and application of gas tariffs;
- Methodology of calculation and application of natural gas tariffs;
- Methodologies of calculation of natural gas losses in transportation and distribution networks.

2.1.3 Implementation of the Third legislative Package with special attention to the gas sector

The implementation of the Third legislative Package for Moldova is the first and most important issue for the functioning of the energy market which is one of the top priorities of the EU. The Ministerial Council (MC) of the Energy Community (EnC) in October 2011 adopted Third legislative Package for an internal EU gas and electricity market for implementation in EnC. Whilst the general implementation deadline was set for 1 January 2015, Article 11 of Directive 2009/72/EC and of Directive 2009/73/EC, respectively, shall apply from 1 January 2017.

The content of the Third legislative Package encompasses two EC directives: 2009/72/EC²⁴ and 2009/73/EC²⁵ which have to be implemented into national law and two EC regulations: 714/2009²⁶ and 715/2009.²⁷

The Regulation (EC) 713/2009 which defines the powers of ACER is not implemented but replaced by a Decision of the MC of the Energy Community.²⁸ As Moldova is a full member

²⁴ **Directive 2009/72/EC** of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC

²⁵ **Directive 2009/73/EC** of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC

²⁶ **Regulation (EC) No 714/2009** of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity and repealing Regulation (EC) No 1228/2003

²⁷ **Regulation (EC) No 715/2009** of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks

²⁸ **Regulation (EC) 713/2009 No 713/2009** of the European Parliament and of the Council of 13 July 2009 establishing an Agency for the Cooperation of Energy Regulators (ACER)

The regulation defines the powers of ACER related to the EU, however, which is not directly transferrable to the EnC. The scope of transferred powers from the Regulation 713/2009 is defined by the Ministerial Council of the

of the EnC, it is to be analysed whether or not this decision has to be amended and if so, how.

In the next step after preparing for implementation of the Third legislative Package, it is recommended to analyse also other pieces of EU energy and related *acquis communautaire* (especially environment). Therefore it is suggested to proceed as follows:

- a) To proceed a gap analysis for implementation of the Third legislative Package. The results shall identify the necessary further amendments to the Moldovan:
 - i. Law on Energy (No. 1525 of 1998) (as amended);
 - ii. Law on Electricity (No. 124 of 2 July 2010) (after the planned amendment most probably by 1Q2014)²⁹;
 - iii. Law on Natural Gas (No. 123 of 23 December 2009) (after the planned amendment most probably in 2Q2014);
 - iv. Other secondary legislation for electricity and gas.
- b) To prepare the necessary (identified) missing provisions of the legislation, first priority a)-d), second priority e)-f) in the following, respectively.
- c) To prepare an analysis what are the potentially necessary amendments or new pieces of legislation in order to implement other parts of the EU energy *acquis*:

First priority:

- a) ITC Regulation (Regulation (EU) No 838/2010)³⁰
- b) Regulation (EU) 994/2010 on Security of Gas Supply³¹
- c) RES-e directive (Directive 2009/28/EC)³²
- d) TEN-e Regulation on Trans-European energy infrastructure (Regulation (EU) No 347/2013)

Second priority:

- e) New directive on energy efficiency (2012/27)³³

EnC which by its decision allocates the powers to the EnC Secretariat. (Note: In the same way also regulations 714/2009 and 715/2009 are implemented.)

²⁹ Aimed at completion of transposition of specific directives (Directive 2005/89/EC and 2004/67/EC for electricity and gas, respectively, and Regulation (EC) No 1775/2005) related to the 2nd Energy Package.

³⁰ Commission **Regulation (EU) No 838/2010** of 23 September 2010 on laying down guidelines relating to the inter-transmission system operator compensation mechanism and a common regulatory approach to transmission charging

³¹ **Regulation (EC) No. 994/2010** of the European Parliament and of the Council of 20 October 2010 concerning measures to safeguard security of gas supply and repealing Council Directive 2004/67/EC

For the time being, it is not clear yet how this regulation will be implemented, directly or again via the decision of the MC of the EnC.

³² **Directive 2009/28/EC** of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC

On 24 October 2013 at the 11th MC-EnC meeting in Belgrade, the MC-EnC adopted a Recommendation to implement Directive 2012/27/EU in the Energy Community with certain adaptations, with a view to adopt a binding decision for the Energy Community in 2014.

f) REMIT (Regulation (EU) No 1227/2011)³⁴

Apart from this, EnC Contracting Parties will have to prepare for the implementation of the Energy Infrastructure Package, i.e. Regulation on guidelines for trans-European energy infrastructure. This activity shall consist of (i) implementation of the Regulation and (ii) preparing for participation in the process of determining the list of Projects of Common Interest and its implementation (on-going).

The numbers above are the steps to go and at the same time also the order of priorities for the implementation of the transposition, which should be reflected in both roadmaps (for electricity and natural gas sector).

Regarding the gas sector in particular, the Law on Natural Gas (2009) established the basic legislative framework for the gas market in line with the Second legislative Package, in particular, with Directive 2003/55/EC. Several acts of secondary legislation – namely the Regulation on Natural Gas Supply and Use, the Technical Rules for Networks and the Regulations on Quality of Natural Gas Transportation and Distribution Services - define technical rules in the gas sector.

The implementation process of the Third legislative Package in the natural gas sector of the RoM has to be considered in the context of the current as well as medium- and short-term developments on the ground of the existing contractual and ownership realities in the country.

The new gas market Directive 2009/73/EC provides for a new unbundling regime with three models as options: (i) ownership unbundling, (ii) Independent System Operator (ISO) and (iii) Independent Transmission Operator (ITO). When analysing the steps towards following its obligations under the ECT, the authorities of the RoM came to conclusion that the implementation of any of the 3 models of Directive 2009/73 is linked to concrete difficulties, which might jeopardize not only the implementation process, but the overall economic, financial, political and social developments of the country. Nonetheless, possible failure in the implementation of unbundling of Moldovagaz SA could have irremediable adverse implications, therefore the issue denotes most serious risk for the Security of Supply (SoS) of the country.

The main reasons for proposing the ITO model as the most suitable model of unbundling of Moldovagaz SA are the following ones:

1. **Reversability** – The ITO model allows for the decision to be overturned / reversed at a later stage, should the circumstances require it.

³³ On 25 October 2012, the EU adopted the **Directive 2012/27/EU** on Energy Efficiency, amending Directive 2009/125/EC and 2010/30/EU and repealing directives on cogeneration (Directive 2004/8/EC) and the ESD (Directive 2006/32/EC).

³⁴ **Regulation (EC) No 1227/2011** of the European Parliament and of the Council of 25 October 2011 on wholesale energy market integrity and transparency

2. **TSO remains a vital part of the group** – with exception of the day-to-day business, the supervisory council, in which significant fraction of members can be linked to (not independent of) the vertically integrated company, keeps the oversight on the performance of the TSO; moreover, it is possible for the vertically integrated company to directly appoint and dismiss the management, approve the financial plan (save for expenses and investments in the core TSO-related assets and services) and dividends, etc.
3. **Ability of the vertically integrated company to act on the market not impaired** – The ITO model allows the TSO to execute contracts with the vertically integrated company (provision of services by the TSO to the vertically integrated company, not vice-versa), subject to regulatory approval.

Taking into account the perspective for implementation of the Third legislative Package, and in order to have guarantees for the assets from the gas sector of the RoM, JSC Gazprom has conditioned the position regarding the clarification of situation concerning its assets in Moldovagaz SA and debts which Moldovan supplier owes to Gazprom.

Having regard to Moldova's special situation, as the only Contracting Party to the ECT where a foreign investment in gas infrastructure enjoys protection under a bilateral agreement within the meaning of Article 101 of the Treaty, based on Decision D/2012/04/MC-EnC₁, **Moldova achieved derogation on postponement of implementation of Article 9 of Directive 2009/73/EC concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC by 1 January 2020.**

Thus, this derogation applies solely to unbundling of Moldovagaz SA while the transposition of all other obligations under the Third legislative Package still has to be completed by the abovementioned 1 January 2015.

In January 2013, MoE issued and Action plan for completion of transposition of the Second and transposition of the Third legislative Package in the gas sector to Moldova, which is shown in Table 2.2. However, comparing the Action Plan with the achieved progress as of end 2013, considerable delays can be identified. Therefore, the Action Plan has to be updated before being integrated into the Natural Gas Roadmap.

Table 2.2: Action Plan for the transposition of the Second and Third legislative Package in the gas sector to Moldova (January 2013)

No./or	Action	Acquis on gas of the Energy Community	Deadline	Responsible institution	Comment
II ENERGY PACKAGE					
3.	Amendment of the law no. 123 of 23.12.2009 regarding „the natural gas”	Directive no: 2004/67/CE – regarding the measures to safeguard the security of natural gas supply (art. 3,4)	I quarter 2013	Ministry of Economy	According to the provisions of the II energy package, to be implemented based on the Protocol of accession of the RM to the Energy Community Treaty (Law no. 117-XVIII of 23.12.2009)

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No./or	Action	Acquis on gas of the Energy Community	Deadline	Responsible institution	Comment
2.	Approval of the Regulation regarding the conditions for access to the natural gas transmission networks.	Regulation (EC) no. 1775/2005 on conditions for access to the natural gas transmission networks.	I-II quarter 2013	ANRE	After the amendment of the Law no. 123 of 23.12.2009
3.	Elaboration of the „Conformity (compliance) program” with measures to ensure exclusion of a discriminatory behaviour of the network operators and submitting it for review to ANRE.		II quarter 2013	Enterprises related to „Moldovagaz” S.A., which have licenses for natural gas transmission and distribution	
4.	Separation from the legal point of view, of the natural gas distribution activity from the natural gas supply activity		1 January 2015	MoE SA Moldovagaz	Governing bodies can decide to legally separate the natural gas distribution activity and the natural gas supply activity before the deadline.
III ENERGY PACKAGE					
6.	Elaboration and promotion for approval the Law nr. 123 of 23.12.2009 „on natural gas” under(according) the Third energy package	Directive no. 2009/73/EC - regarding the common rules for the internal market in natural gas sector	1 January 2015	MoE	It may be necessary to develop a new version of the Law on natural gas. Regarding the art. 9 and art. 11 of the Directive, in accordance with the decisions of the Council of Ministers, in the draft Law it will be mentioned that the transposition regulation of the art. 9 shall enter into force on 1 January 2020, but the transposition regulation of the art. 11 – on 1 January 2017.
7.	Elaboration of the transposition/implementation Project of the Regulation (EC) no.715/2009	Regulation no. 715/2009, on conditions for access to the natural gas transmission networks	Semester II 2014	ANRE	After the approval of the natural gas transmission network Code, within the ECT

2.2 INSTITUTIONAL-ORGANISATIONAL FRAMEWORK IN THE NATURAL GAS SECTOR

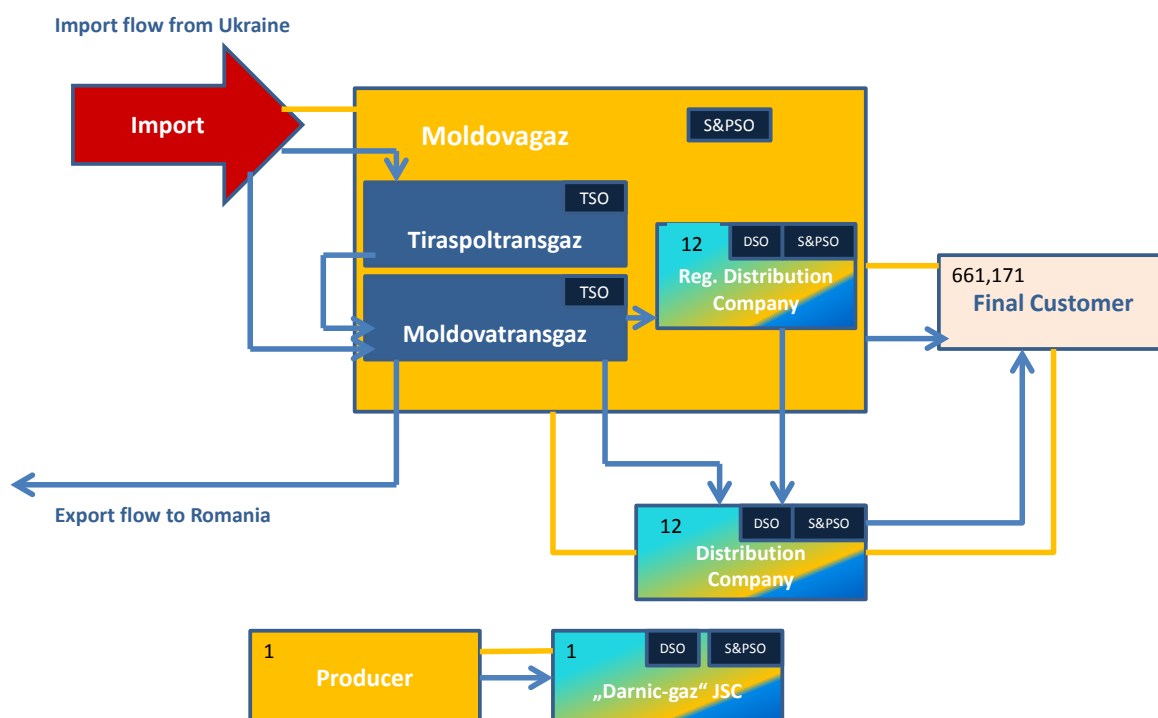
2.2.1 Current stakeholders and split of line responsibilities

Key players in the gas sector as of end 2013 are (Figure 2.1):

- *Moldovagaz SA* is a single vertically integrated company having a monopoly position by controlling the entire chain of gas business (import, transit, transmission, wholesale supply, distribution and retail supply). It is designated as the national operator of the gas system and dominant supplier. It signs import contract with JSC Gazprom and an agreement for the use of gas storage in Ukraine. Its shareholders are JSC Gazprom (50%), central public administration of the RoM (36.6%), regional authorities of the Transnistria region (13.4%);
- 2 transmission system operators: *SRL Moldovatrangaz* and *SRL Tiraspoltrangaz* (all subsidiaries of Moldovagaz SA);
- 12 regional distribution system operators (all subsidiaries of Moldovagaz SA) on the right bank of the Dniester River and 6 distribution system operators in Transnistria;

According to the Rules of the natural gas market adopted by ANRE, the status of the national operator of the gas system was assigned to Moldovagaz SA. As per status of end 2013, on the gas market there are 24 licensed suppliers (S) operating at regulated tariffs, one at non-regulated tariffs, a transmission system operator (TSO) - SRL Moldovatrangaz and 25 licensees for natural gas distribution.

According to the ANRE Decision no. 408 of 6 April 2011, the natural gas market in the RoM is determined as being uncompetitive because of a single import source, with imports being carried out by the supplier at regulated tariffs – Moldovagaz SA.



Source: Annual Implementation Report, Energy Community Secretariat, 1 September 2013.

Figure 2.1: Institutional set-up of the natural gas market of Moldova

In late 2011, the Board of Moldovagaz SA decided on the company's reorganization in line with the Law on Natural Gas. Accordingly, by 2013 Moldovagaz SA should have been transformed into a holding company with separate legally and functionally unbundled daughter companies for (i) supply and (ii) transmission as well as (iii) four distribution companies. However, the actual implementation of the decision has not been implemented yet.

As a temporary option, the MoE has suggested to reorganize only SRL Chisinau-gaz, one of 12 regional distribution system operators (all subsidiaries of Moldovagaz SA), according to the art. 54 (1) b) of Law on Natural Gas, that stipulates the unbundling of distribution and delivery activities for companies that serve more than 100.000 final consumers. This reorganization has been launched from 01.01.2013.

Thus, in order to keep the legal framework, SRL Chisinau-gaz was reorganized, taking into account the proposals presented by the executive body of Moldovagaz SA, in coordination with the Ministry of Economy, ANRE and JSC Gazprom.

2.2.2 Sector development plans in the future

There are two principle challenges of legal & regulatory and institutional development in the gas sector in the future, which both are related to: (i) gas market development in Moldova (addressed in more detail in Section 3), and (ii) implementation of Third legislative Package which primarily involves unbundling of Moldovagaz SA (for detail, see Section 4). The expected results are:

- 1) **Market Operator established** (i.e. appointed, legally registered and functional entity **by end 2015** according to Energy Strategy), and
- 2) **Moldovagaz SA restructured** (i.e. the unbundled TSO from the rest of the present Moldovagaz SA is legally established, certified in accordance to Directive 2009/73/EC and functional by **1.1.2020**).

Regarding the Gas Market Operator, for the purpose of overall energy sector efficiency, the Central Electricity Supplier (CES) is very likely to be the most appropriate entity to perform the market operation activities for both the electricity and the gas markets.

The area of major investment projects in the gas sector are addressed in Section 5.

The institutional set-up in the natural gas sector after the full market opening, e.g. status of 2020 is shown in Figure 2.2.

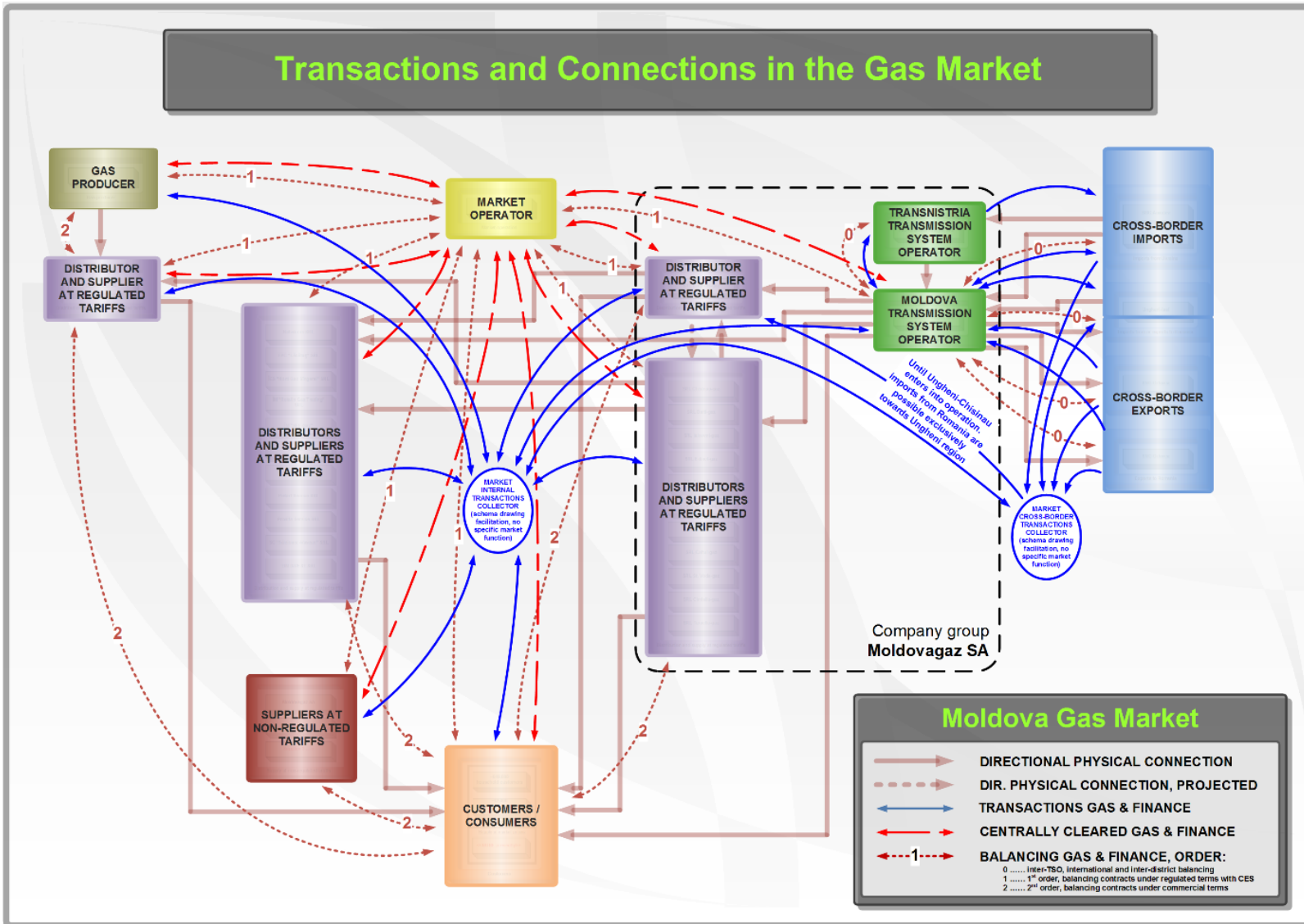


Figure 2.2: Institutional set-up of the natural gas market of Moldova (year 2020)

3 NATURAL GAS MARKET DEVELOPMENT CONCEPT

An efficient natural gas market in the Republic of Moldova is a long term perspective with the primary objective of ensuring security of supply based on loyal competition and sustainability. The size of the market in Moldova is roughly 3 bcm yearly, of which 1 bcm is consumed on the right bank of Dniester river (43% in the energy sector, 30% in households, 21% in commercial activities without energy sector, and 5% in public institutions) with 60% share of the Chisinau area.

The very existence of the gas market in Moldova in real terms on the short horizon depends on the construction of a new connection with Romania (Iasi – Ungheni, 43 km of which 10 km in Moldova, 1,5 bcm yearly capacity, construction started in 2013 and completion planned for mid 2014) and its internal extension to the major consumption area Chisinau (pipeline Ungheni-Chisinau and ring around Chisinau including distribution station, 130 km, subject to finance availability the finalisation is planned for end 2017³⁵) On the longer term by 2020, the market evolution depends also on the coordination of actions among the countries from the region, namely Romania, Bulgaria, Ukraine, Turkey and Hungary, in order to jointly ensure critical volumes for a liquid market as regards the consumption and trade of natural gas, as well as the creation of a bridge with the EU.

In order to enable market development, ensure its credibility and attract private investments the issues of accumulated historical debt of Moldovagaz SA to JSC Gazprom which currently constitutes about 4.4 bill. US\$, of which more than 87% is the debt of Tiraspoltransgaz - the Transnistrian region transport system operator, is to be solved. For the purpose of at least partial settling the debt through a financial solution and, if there is the agreement and proper case, through the successive transfer of state owned assets in gas distribution pipelines is planned along with measures of corporate restructuring in the district heating sector of Chisinau. Consolidation of the outstanding debt needs consideration of all possible options on how the very complicated situation could be remedied, which involves complex reforms in several involved sectors: gas, power and district heating.

The Law on Natural Gas (2009) transposed the majority of the provisions of Directive 2003/55/EC of the Second legislative Package of the EU, with key missing elements and current plans being outlined in Sections 2.1.2- 2.1.4. In particular, the provisions of Directive 2004/67/EC and Regulation (EC) 1775/2005 have not been transposed yet. Transposition of the Directive 2004/67/EC concerning measures to safeguard security of natural gas supply is urgent and in line with its provisions the supply flexibility measures foreseen by the Government of Moldova are diversification of supply sources, cooperation on LNG projects in the neighbourhood and ensuring availability of storage facilities – measures recognised in Energy Strategy of the Republic of Moldova until 2030 (February 2013).

The two existing gas supply routes, both connecting to the Russian gas resources, are presently used only up to the range of 45-55% of their capacity, amounting to roughly 44 bcm yearly. The Northern route, linking two parts of Ukrainian system, is important for connecting Moldova to storage facilities in Ukraine (contracted by Moldovagaz), while the

³⁵ In Section 5.2.1.2, the completion of this project is realistically planned by the end of 2019.

Southern route is a major transit route delivering Russian gas to the South East European region entering from Ukraine and exiting to Romania, but does not allow for reversible gas flows. The strategically important transit corridor role of Republic of Moldova is at some risk due to capacity (gradually/potentially) available on alternative routes for the Russian gas, namely the North Stream and the prospective South Stream, and important uncertainties regarding new negotiations on gas supply contract between Ukraine and Gazprom, for which the present contract is to end by 2019.

Within diversification of gas sources planned, the new supply sources expected to be accessible include both foreign offshore and shale gas developments and LNG projects in Romania (subject to the new interconnection due to uni-directionality of the present interconnection) and Ukraine, while the indigenous gas sources explorations in the South Moldova are going to be given another push also by prudent negotiation for royalties with the companies interested in development.

Regarding consumption on the right bank of Dniester river, it is to double in the energy sector by the year 2020: increase from 0,43 bcm or 43% to the range of 1 bcm per year or roughly 60%, due to the effects of the planned investment in the new 650 MW combined cycle gas turbine (CCGT) cogeneration plant, which will provide 400 MW of additional power capacity and replace the 250 MW in existing obsolete CHPs (CET-1 and CET-2) in Chisinau, substantially increasing the resulting efficiency at the same time. Another factor of increasing the overall energy efficiency are the reductions of the technological gas consumption and technical losses planned to be achieved in excess of 40% for the Moldovagaz's distribution networks and by 30% for the transmission network, both by 2015, and by 39% state wide by 2020.

3.1 MARKET LIBERALISATION

Unbundling, as the core measure on the way to a liberalised market is to be performed by 2020 and until then Moldovagaz SA and Moldovatrabs gaz (TSO) will hold all responsibilities related to planning and implementation, with ANRE regulating its investments, congestion management and tariffs and the Government of Moldova monitoring/influencing its policy decisions via representatives in the Board.

The natural gas market in terms of import, wholesale supply, transit, transmission, distribution and retail supply in Republic of Moldova is presently concentrated within operations of a single vertically integrated company Moldovagaz SA, except the new pipeline to be built with the connection to Romania (Iasi – Ungheni - Chisinau). With the development of interconnections and consolidation of the transit corridor role, the natural gas market will evolve in line with the European gas market model, taking into account the provisions of ENTSO-G codes.

By 1.1.2015 all gas consumers are to become eligible consumers, while the deadline for unbundling of Moldovagaz SA is set to 2020. From the transmission infrastructure point of view, Moldovan gas market is able to meet the conditions for joining the European emerging market relatively soon, even as soon as 2016 might be possible given the right circumstances: the Iasi – Ungheni pipeline is set into operation, market hub Ungheni is established (even though merely provisional market is possible due to technical inaccessibility of transport towards major consumption area Chisinau), the market across the

Romanian border is functioning and able to integrate the Ungheni hub, Moldovan gas market operator is operational and market integration decision is effectuated (earliest planned date is 2016).

Within transition to the fully liberalised market creation of an adequate institutional framework is needed. Supporting evolution of competition and entry of new market participants an appropriate mix of long and short term contracting/commitments has to be made available in order to enable management of the market risks appropriately. All price formation mechanisms are to be compliant with the free market and consumers' (human/civilisation) rights and general public interest shall be protected also by the implementation of the concepts of vulnerable consumer and supplier of last resort.

One of the pillars of the liberalised gas market is its legislative-regulatory and institutional organizational framework. For sound development and efficient operation of the gas market the legislative-regulatory framework needs to be continuously developed, adjusted and implemented. For efficient operation of liberalised gas market it is of utmost importance to define **sound market design** and ensure proper **market environment** for market participants.

By means of institutional-organizational framework it is crucial, to ensure the full capacity of market institutions in formal and operational way.

Implementation of new market institutions such as **market operator** by 2015, short and very short term trading framework (national **gas exchange**) by 2018 and regional **market coupling** by 2016/2018 are foreseen, either by setting them up independently or by joining/hiring existing international service institutions. Gas exchanges are organized and regulated trading venues where prices are formed in transparent way based on principle of bestsell and buy offers.

First steps in direction of establishing organized and transparent trading venue could be achieved by introducing transparent balancing or/ intra-day market that could efficiently supplement with long term bilateral contracts.

Interconnection capacity shall be allocated to the market parties in regular tendering procedures for standard products, organised jointly with the neighbouring TSO(s) or even in a wider coordination by 2015. Every market participant, being it eligible customer, supplier, system operator or trader, shall have the right to participate in tendering and use the capacity allocated to execute market transactions across respective interconnections.

One important aspect of liberalisation has to be addressed explicitly, even though it may seem self-evident: in order to make the market as interesting to the investors as possible, all the legislative and regulative acts, forms and documents have to be made available in English language as well, since it has become the 'lingua franca' (the functional working language) of the gas industry within the EU and EnC. Besides allowing for formal communication and submission of any documents requested in English language without it being required to be translated into Romanian, all the market operations and helpdesk activities should be accessible in English as well.

3.2 INCENTIVES-BASED REGULATION

The free market framework requires from all market participants to act as (economically) efficient (within the limits of their own interests) as possible, but that does not always correspond sufficiently to the general public interest. Various kinds of incentives addressing diverse levers of motivation may be introduced to align the market participants' behaviour driven by the free market parameters with the desired objectives of the state.

The basic precondition for any of the incentives being effective and to raise credibility of the market as a whole is the settlement of the historically accumulated debt. For this purpose a potential successive transfer of state owned gas distribution pipelines is planned to be implemented.

In order to ensure investments in the gas transmission networks, the Government of Republic of Moldova is determined to act swiftly in provisioning the funds necessary, including by the means of loans and grant funding. Consolidation of the network for the purposes of market development, strengthening the transit corridor role, and integration into Internal European Market (IEM) are of highest priority.

Attraction of investments, preferably by foreign investors experienced in the gas supply business, is going to be approached from several perspectives for a viable generation platform (cogeneration and tri-generation) development. Stimulation of downstream integration projects is foreseen as a measure of choice to overcome the eventual slow market evolution, while operational CHP support in the transitional form of preferential dispatch and fixed tariff mechanism is going to be substituted by a kind of bonus scheme at a later stage.

Indigenous gas resources explorations in the Southern Moldova have stalled due to lack of capacity by the concession holder. The issue shall be readdressed by combination of funding the researches of the supposed resources and concession grating policy, with prudence in negotiations of royalties seen as an important aspect in reaching the objectives of implementation of clear leasing policies of deposits for the benefit of the state and citizens.

As regards ability to effectively negotiate energy prices, strategic alliances with other countries and commercial partners are going to be forged. The mechanisms of choice are joint projects that can benefit of state participation in improved accessibility of subventions and loans available.

3.3 COMPETITIVE MARKET FRAMEWORK

Precondition for competition in the natural gas market to emerge is accessibility of alternative supply sources. Due to single gas source available and Moldovagaz vertically integrating the gas industry, gas market in Republic of Moldova is practically non existing. An important improvement for the competition to evolve will be granting eligibility to all gas consumers by 2015, allowing them to directly contract for gas from any supplier/trader, including from abroad, while competition is expected to be further improved by investments in new/replacement CHPs within downstream integration of gas providers, and supply/trading by entry of new (foreign) actors, but the market will still be vertically integrated

within a single company, except Ungheni – Iasi and Ungheni – Chisinau pipeline serving the Ungheni hub, until diverse sources can be effectively accessed.

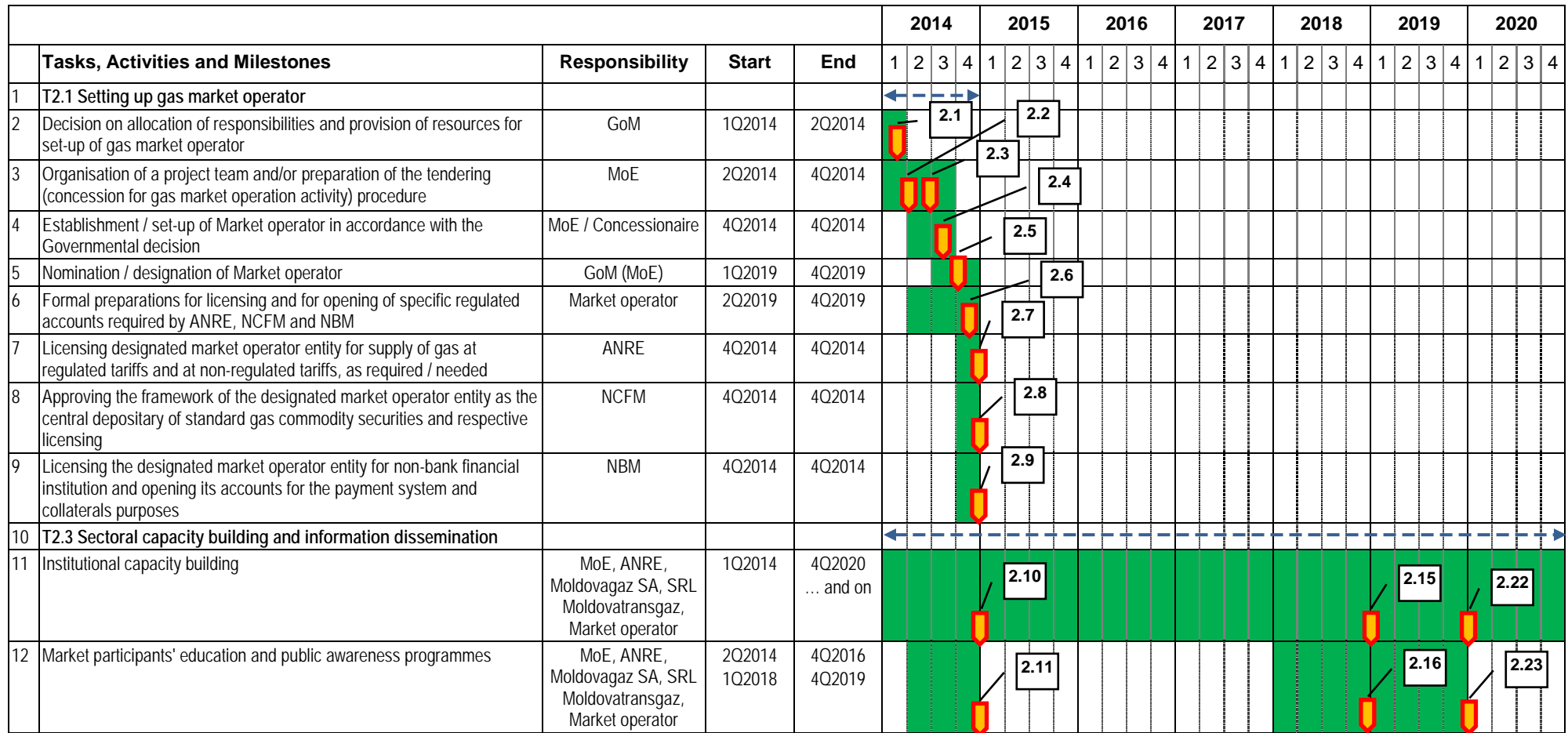
Roles and responsibilities of ANRE and TSO are to be aligned with the liberalised market development and their skills and competences built accordingly. The institutional framework (primarily the market operator) shall be developed in order to support and execute the day to day operations needed on the gas market, including operation of reliable, transparent and liquid market based price formation mechanisms. Gas market shall first be provided with bilateral contracts tendering, progressing with short term trading by 2018, and introduction of the complete set of the products needed on the market by 2020. Balancing market, at least in a very basic form, is to be set up as soon as possible in order to provide the actors with an active option to manage their energy market risks effectively.

Transparent and reliable price formation of short and long term gas products is one of the basic preconditions for efficient competition and ensures proper investment decisions. It provides for the larger part of the risk structure underlying the investment decisions. Such transparent and reliable price formation is required and can be ensured primarily by means of trading venues, such as gas and brokerage platforms, integrated into wider area markets by means of market integration, if possible.

Development of balancing market and interconnection capacity allocation is of great importance to the future Moldovan market. Adequate mechanisms respecting the system's realities should be set up as soon as possible, preferably together with the neighbouring TSOs and possibly even in a wider coordination. The allocations shall be harmonised with the gas trading schedules in both markets in order to allow the market actors to seize the best cross border trading opportunities. Also to this end, planning of the transmission system development shall be done in coordination with the neighbouring TSOs to support the regional market development.

An important part of liberalisation efforts consists of a special attention being paid to vulnerable consumers that cannot realistically afford to pay for even the most essential energy needs. Assurance of them being supplied with the essential energy services has been recognised as being in general public interest; therefore they have to be effectively protected. A very much different aspect of roughly the same need for continuous access to energy services is the supplier of last resort concept. Its objective is not in provision of limited cheap service for those that cannot afford it, but in assurance of provision of continuous energy services to eligible consumer in case of errors/disruptions in contracting or default/bankruptcy of supplier. Additionally, certain objectives aimed at ensuring the market functions properly, are to be addressed by separate state measures, like, for example, the non-payments issues.

Figure 3.1: Timeline for gas market development in Moldova



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					2014				2015				2016				2017				2018				2019				2020			
	Tasks, Activities and Milestones	Responsibility	Start	End	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
13	T3.1 Gas market subordinated legislation and operative rules				←-----→				←-----→				←-----→				←-----→				←-----→				←-----→				←-----→			
14	Preparation and adoption of required (amendments to) the gas market and Moldovagaz SA / SRL Moldovatrangaz (or CES / another entity, if applicable) operations related secondary legislation <i>(Note: this activity might overlap with Tasks 1.5 and 1.6 above)</i>	GoM (MoE)	1Q2014 (4Q2016)	2Q2014 (1Q2018)	3.1				3.2								3.13				3.23											
15	Preparation and adoption of required (amendments to) the gas market and Moldovagaz SA / SRL Moldovatrangaz (or CES / another entity, if applicable) operations related regulations <i>(Note: this activity might overlap with Tasks 1.2, 1.7 and 1.8 above)</i>	ANRE	1Q2014 (4Q2016)	2Q2014 (2Q2018)	3.3				3.5								3.15				3.24				3.25							
16	Preparation, coordination, adoption and publication of market operation rules	Market operator	2Q2014 2Q2017	2Q2016 2Q2019	3.6				3.9								3.16				3.19				3.26							
17	Coordination and approval of market operation rules before publication	ANRE	4Q2014 4Q2018	4Q2014 2Q2019	3.7				3.10								3.17				3.27											
18	Coordination and approval of market operation rules before publication	NCFM	4Q2014 4Q2018 2Q2019	4Q2014 4Q2018 2Q2019	3.8				3.11								3.18				3.28											
19	Coordination and approval of market operation rules before publication	NBM	4Q2014 4Q2018 2Q2019	4Q2014 4Q2018 2Q2019	3.4				3.12								3.20				3.22				3.30							
20	T3.2 Procurement and deployment of market-operation-specific IT solutions				←-----→				←-----→				←-----→				←-----→				←-----→				←-----→				←-----→			
21	Procurement, testing and deployment of market-operation-specific IT solutions	Market operator	2Q2014 1Q2018	3Q2014 4Q2019	3.11				3.14								3.21				3.31											
22	T3.3 Implementation of market operation functions				←-----→				←-----→				←-----→				←-----→				←-----→				←-----→				←-----→			
23	Market administration and (trading/procurement) platforms operation before unbundling	Market operator	1Q2015	4Q2020 ... and on					3.11								3.12				3.13				3.14							
24	Feasibility studies on gas market developments and/or IEM integration and tests	ANRE, Moldovagaz SA, SRL Moldovatrangaz Market operator	(3Q2015) 1Q2017	(4Q2016) 3Q2019																												

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Milestones:



- 2.1 - adoption of decision on allocation of responsibilities and provision of resources for securing timely set-up of gas market operator
- 2.2 - dependent on the way of establishment: setting up project team for gas market operator establishment or preparation of tendering procedure for the granting of gas market operation concession
- 2.3 - preparation of project/tender documentation
- 2.4 - establishment of gas market operator, including transfer of the project team, other resources and contracts
- 2.5 - formal designation as the gas market operator
- 2.6 - submission of applications for issuance of required licenses and provision of specific services
- 2.7 - Market operator issued the required licenses for gas market activities
- 2.8 - Market operator's central depository framework approved and the respective license issued
- 2.9 - Market operator is issued the license to operate its payment system and special accounts at NBM are opened
- 2.10 - capacity of ANRE, Moldovagaz SA, SRL Moldovatrangaz and Market operator built for the 2015 scope of market operative functions status/development
- 2.11 - education of market participants on 2015 scope of market functions and means of operation performed
- 2.12 - finalisation of the unbundling of Moldovagaz SA
- 2.15 - capacity of ANRE, Moldovagaz SA, SRL Moldovatrangaz and Market operator built for the 2020 scope of market operative functions status/development including market integration into wider IEM and implementation of unbundling with respective certifications
- 2.16 - education of market participants on the market integration into wider IEM and on the 2020 scope of market operative functions status/development performed
- 2.22 - capacity of ANRE, ANRE, Moldovagaz SA, SRL Moldovatrangaz and Market operator built for the unbundled market and for 2020 scope of market operative functions status/development
- 2.23 - education of market participants on the unbundled market and on the 2020 scope of market operative functions status/development performed
- 3.1 - finalisation of the proposed changes to the secondary legislation needed for operation of the market
- 3.2 - adoption of the (amendments to) secondary legislation required for operation of the market
- 3.3 - adoption of the (amendments to) regulations required for operation of the market
- 3.4 - start of the (operational scope of 2015) operation-specific-IT procurement procedures
- 3.5 - draft of the market operation rules (scope limited to the 2015 functions) submitted to regulatory coordination and public consultation procedures
- 3.6 - approval of the 2015 market operation rules by ANRE
- 3.7 - approval of the 2015 market operation rules by NCFM
- 3.8 - approval of the 2015 market operation rules by NBM
- 3.9 - publication of the 2015 market operation rules
- 3.10 - deployment of (operational scope of 2015) operation-specific-IT
- 3.11 - start of market schedule administration and balancing mechanism operation in accordance with the 2015 market operation rules
- 3.12 - start of the (operational scope of 2019) operation-specific-IT procurement procedures
- 3.13 - adoption of the (amendments to) secondary legislation required for operation of the market in integration with connected markets, if needed
- 3.14 - finalisation of market integration tests
- 3.15 - adoption of the (amendments to) regulations required for operation of the market in integration with connected markets, if needed
- 3.16 - approval of the 2019 market operation rules by ANRE
- 3.17 - approval of the 2019 market operation rules by NCFM
- 3.18 - approval of the 2019 market operation rules by NBM
- 3.19 - publication of the 2019 market operation rules
- 3.20 - deployment of (operational scope of 2019) operation-specific-IT
- 3.21 - gas market integration into the wider IEM
- 3.22 - start of the (operational scope of 2020) operation-specific-IT procurement procedures
- 3.23 - adoption of the (amendments to) secondary legislation required for operation of the market after unbundling
- 3.24 - adoption of the (amendments to) regulations required for operation of the market after unbundling
- 3.25 - draft of the market operation rules after unbundling submitted to regulatory coordination and public consultation procedures
- 3.26 - approval of the 2020 market operation rules by ANRE
- 3.27 - approval of the 2020 market operation rules by NCFM
- 3.28 - approval of the 2020 market operation rules by NBM
- 3.29 - publication of the 2020 market operation rules
- 3.30 - deployment of (operational scope of 2020) operation-specific-IT
- 3.31 - start of market operations after unbundling

4. UNBUNDLING OF MOLDOVAGAZ SA

4.1 LEGAL BASE

Gas Directive 2009/73/EC, recital 9: *"Any system for unbundling should be effective in removing any conflict of interests between producers, suppliers and transmission system operators, in order to create incentives for the necessary investments and guarantee the access of new market entrants under a transparent and efficient regulatory regime and should not create an overly onerous regulatory regime for national regulatory authorities."*

The rules on ownership unbundling are laid down in Article 9 of Gas Directive under the Third legislative Package. Article 9(1)(b)(i) of Gas Directive requires that the same person cannot 'control' generation, production and/or supply activities, and at the same time 'control' or exercise 'any right' over a TSO or a transmission system. Furthermore, according to Article 9(1)(b)(ii) of Gas Directive, the same person cannot 'control' a TSO or a transmission system, and at the same time 'control' or exercise 'any right' over generation, production and/or supply activities. The concept of 'control' is taken from Council Regulation (EC) No 139/2004 of 20 January 2004 on the control of concentrations between undertakings ('the EC Merger Regulation') and should be interpreted accordingly (recital 10 of Gas Directive). Under Article 3(2) EC Merger Regulation, control is constituted by 'rights, contracts or any other means which, either separately or in combination and having regard to the considerations of fact or law involved, confer the possibility of exercising decisive influence on an undertaking'. Article 9(2) Electricity and Gas Directives clarify that the exercise of 'any right' includes in particular 1) the exercise of voting rights, 2) the power to appoint members of the supervisory board, the administrative board or bodies legally representing the undertaking, or 3) the holding of a majority share. However, Article 9(2) does not exclude the holding of purely passive financial rights related to a minority shareholding, i.e. the right to receive dividends, without any voting rights or appointment rights attached to them. In order to avoid undue influence arising from vertical relations between gas and electricity markets, Article 9(3) of Electricity and Gas Directives determines furthermore that ownership unbundling provisions apply across the gas and electricity markets, prohibiting influence over both an electricity generator or supplier and a gas TSO or a gas producer or supplier and an electricity TSO. Article 9(1)(c) and (d) Electricity and Gas Directives provide for two additional requirements: under subparagraph (c), the same person is not entitled to appoint members of the supervisory board, the administrative board or bodies legally representing the undertaking of a TSO or a transmission system, and directly or indirectly to exercise control or any right over generation, production and/or supply activities. Subparagraph (d) addresses the issue of a conflict of interest for board members by prohibiting the same person from being a member of the board of both a TSO and a generator, producer or supplier.

On 18 October 2012, the RoM submitted a request to MC-EnC for derogation from Article 9 of the Directive. The application has passed the formal procedure and was enforced on 5 December 2012. However, the derogation only postpones the implementation deadline of art. 9(1) of the Directive from 31 June 2016 to 1 January 2020, and does not change the subject of the transposition content-wise. The derogation was supported by the EC and the

EnC Contracting Parties recognising the particular problems of the gas market of the RoM and its dependency on a single supply source from Russia. The Russian side found this as no big difference or “improvement” in terms of securing their previous and future investments in the RoM.

The Energy Community adapted its acquis on energy to the recent changes in the European Union law, taking into account its own institutional framework and the specific situation of each of its Contracting Parties. The Ministerial council of the energy community took decision on 6.10.2011 on the implementation of Directive 2009/72/EC, Directive 2009/73/EC, Regulation (EC) No 714/2009 and Regulation (EC) No 715/2009 and amending Articles 11 and 59 of the Energy Community Treaty.

As regards the certification of transmission system operators the following adaptations have been made:

In Article 3(1) of Regulation (EC) No 714/2009 and of Regulation (EC) No 715/2009:

- the period mentioned in the first subparagraph ('two months') shall read 'four months';
- the second subparagraph shall read as follows: 'When preparing the opinion referred to in the first subparagraph, the Secretariat shall request the Energy Community Regulatory Board to provide its opinion on the national regulatory authority's decision;
- the last sentence of the second subparagraph shall not apply.

In Article 3(6) of Regulation (EC) No 714/2009 and of Regulation (EC) No 715/2009:

- the expression 'the Commission shall take a decision' shall read 'the Secretariat shall issue an opinion';
- the last sentence shall be replaced by the following three sentences: 'The regulatory authority shall take the utmost account of that opinion. Where the final decision diverges from the Secretariat's opinion, the regulatory authority concerned shall provide and publish, together with that decision, the reasoning underlying its decision. Diverging decisions shall be included in the agenda of the first meeting of the Ministerial Council following the date of the decision, for information and discussion.

In the Directive, the EU advises three options: ownership unbundling (OU), independent system operator (ISO) and independent transmission operators (ITO).

Ownership unbundling (OU)

This option is intended to split transmission system operator activities on the one hand, and generation, production and supply activities on the other hand. The purpose of this structural separation is to ensure that the European energy market does not suffer from vertical integration e.g. to avoid conflicts of interest and to make sure that transmission system operators (TSOs) take their decisions independently, ensuring transparency and non-discrimination towards all network users. This is not only relevant for the day-to-day operational decisions of TSOs, but also for their strategic investment decisions.

Regarding the competence of the European Community to introduce ownership unbundling, Article 95 EC Treaty, the internal market competence has been used. Since electricity as well as gas were qualified as goods, this competence title could be consulted since it allows for the creation of a European internal market, i.e. an area where goods as electricity and natural gas circulate freely. The ownership unbundling of vertically integrated companies actually pursues the objective to improve the conditions for a functioning of the internal energy market. The different level of unbundling in the Member States causes the concrete danger of hampering the cross border exchange of goods such as electricity or natural gas. A barrier for exercising this power, which has been discussed broadly in the legal literature, could be seen in Article 295 EC Treaty, which states that the EC Treaty shall in no way prejudice the rules in the Member States governing the system of property ownership. Here there is a field of tension between the European Community objective of a harmonization of the internal market and the interest of the Member States not to lose the freedom of manoeuvre in this area. The decision depends on the interpretation of the system of property ownership in Article 295 EC Treaty. According to a rather tight interpretation of the ECJ, Article 295 EC Treaty does not prevent the EC from introducing the separation of vertically integrated companies: Article 295 EC Treaty must be interpreted in a way that it only determines that nationalization or privatization of property ownership is not an issue for the Union, but for the Member States themselves.

Independent System Operator (ISO)

As an exemption to full ownership unbundling, Articles 13/ 14 f. of the EU-Directives provide for the ISO model. It foresees the appointment of an independent system operator whereas the vertically integrated company retains the ownership of the network on the condition that it is actually managed by a completely independent company or body. The ISO is responsible for operating, maintaining and developing the transmission system and investment. Conversely, the asset owner has no responsibility and no prerogatives with regard to investment planning, which basically reduces its function to a financial investor. The asset owner is under the obligation to finance the investments decided by the ISO and approved by the regulatory authority. Financing can only be denied in case of violations; if the financial framework fits, there is the obligation to finance. The asset owner has to provide for the coverage of liability relating to the network assets. According to the Article 14 (5) (c) (natural gas) and/or 13 (5) (c) (electricity) of the EU-Directives, this excludes the liability relating to the tasks of the ISO. Thus, it is rather questionable which liability remains for the asset owner, which can only be that the asset owner must cover liability e.g. for the condition, but not the management of the network. Since the ISO model is a strongly regulated alternative, its popularity is rather low in the Member States and even lower in the undertakings.

Independent Transmission Operator (ITO)

The third option besides ownership unbundling and the ISO model is the setting up of an ITO. This option was presented at the end of January 2008 by Austria, Bulgaria, France, Germany, Greece, Luxembourg, Latvia and the Slovak Republic. Here, the energy companies remain vertically integrated. In practice this means that the TSO has to own the necessary assets (network and any other assets necessary for the activity of transmission), and must be equipped with sufficient human, technical, physical and financial resources in order to ensure independent decision making and carry out the activity of electricity or gas

transmission. Eventually, the EU-Directives provide for an independent decision-making right of the ITO concerning the assets necessary to operate, maintain or develop the transmission system. Finally, the ITO must have inter alia the power to raise money on the capital market through borrowing and capital increase.

Other basic characteristics of the ITO are the confidentiality of information flows as well as the required independent management and staff. Staff which is necessary for the activity of electricity transmission, i.e. for performing the core activities of the ITO including management and network operation; have to be employed by the ITO. Whereas contracting of services by the vertically integrated undertaking to the ITO is prohibited, vice versa the provision of services by the ITO to the vertically integrated undertaking is allowed under specific circumstances, if the national regulatory authority approves it.

Part of the ITO model is the establishment of a supervisory body – not a constitutive element in all of the allowed legal forms referenced to by Council Directive 68/151/EEC. The supervisory body is in charge of decisions with significant impact on value of assets of the shareholders within the ITO, i.e. the approval of the budget, financial plans, the level of indebtedness of the ITO and the amount of dividends distributed to shareholders. However, the supervisory body has no say in the day-to-day activities of the ITO. The independence of the supervisory body is ensured by the requirement that at least half of its members minus one must be professionally independent of the vertically integrated company, which has to be ensured by the national regulatory authority.

***Independent Transmission Operator+ (ITO+)**

Exceptionally, also ITO+ model is possible. The exception is allowed in terms of non applicability (derogation) of the paragraph 9(1) (dealing with the basic principles of unbundling) and 9(8) (offering the choice of either ISO or ITO model under certain conditions) of the Gas Directive.

It is usually related to the implementation of a market based capacity allocation mechanisms applied only to a **part** of the gas transmission capacities (by exemption of certain new gas infrastructure from the requirement to offer access on the basis of regulated tariffs) and retaining the ability to conclude business with the vertically integrated company that is its owner. It is only possible in the case of the transmission assets being owned by a vertically integrated company on 6 October 2011 (the same condition as for the choice of the ISO or ITO model) and there are arrangements in place which guarantee more effective independence of the transmission system operator than the provisions applicable to ITO.

The solution is implemented in Austria (Nabucco) and Netherlands/UK (BBL).

Table 4.1: Statistics of EU-27 Member Countries that adopted or plan OU, ISO and ITO

Sector	OU	ITO	ISO	None, due to various derogations from unbundling
Electricity	15 countries: Belgium, Czech Republic, Denmark, Estonia, Finland, Germany(*), Italy, Lithuania, The Netherlands, Portugal, Slovakia, Slovenia, Spain, Sweden, United Kingdom	8 countries: Austria, Bulgaria, France., Germany(*), Greece, Hungary, Poland	3 countries: Latvia, Ireland, Romania	3 countries
Gas	11 countries: Belgium, Denmark, Estonia, Finland, Germany(*), Italy, The Netherlands, Portugal, Spain, Sweden, United Kingdom	12 countries: Austria, Bulgaria, Czech Republic, France, Germany(*), Greece, Hungary, Ireland, Lithuania, Poland, Slovakia, Slovenia	1 country: Romania	4 countries

(*) Both OU and ITO are legitimate options under the German law.

4.2 KEY STEPS AND PROPOSED TIMEFRAME

According to the European expert's general opinion the only variant that effectively works on the gas market, theoretically and practically is the ownership unbundling (OU). The independent transmission operator (ITO) solution is a variant very common in the USA (RTO model), where the issue of ownership is well developed, the regulatory framework works effectively, and economic risks of capital are quite clear and in mind of investors. The solution requires significant regulatory involvement and permanent monitoring. Unbundling with the ITO model is perceived as a reasonable, well-functioning evolution that should be regarded as a transitory option toward OU. Since the ISO model is a strongly regulated alternative, its popularity is rather low in the Member States and even lower in the undertakings. ISO requires significant regulatory involvement and permanent monitoring (e.g. e.g. NRA approval of investment planning). The main concern related to ISO model is that one should note that a "deep" ISO is basically associated with similar risks to ownership unbundling. In addition, an ISO may, in the worst case, help to facilitate collusion.

The main arguments for ITO solution against OU and ISO are the following:

- OU is of interest only if shareholders who are classified as VIU (Vertically Integrated Undertaking) are interested to exit from the gas transportation business - OU is irreversible!
- ITO model preserves all future choices (pursuing an integrated company structure)

- ISO – model not attractive for shareholders (as in the OU-model the state might be shareholder in the asset company and in the ISO-company; limitation of the financing obligation of asset company difficult to assess and to implement)

Table 4.2: Comparison of the OU and ITO model

	OU	ITO
Separate legal entities	yes	yes
Asset owner	yes	yes
Independence of TSO management	yes	yes
Non-discriminatory network access	yes	yes
VIU as TSO shareholder	no (but possible as a minority shareholder without any rights)	yes (e.g. right to appoint and dismiss the management, approval of financial plan and dividends)
Investment/financing obligation of the TSO-owner	Yes, in accordance with 10-year plan	Yes, in accordance with 10-year plan, but tender procedure is possible
Rendering of services	no restrictions under the Third legislative Package	from TSO towards VIU only
Flexibility of the model	<u>Irreversible</u>	leaves the option for OU/ISO open

In Moldova the ITO model has been discussed as potentially the most possible one especially based on the pros and cons addressed in the text above. The ITO model in Moldova would mean that the current TSO(s) (Moldovatrangaz and Tiraspoltrangaz) keep ownership over pipelines, however, they have to be legally unbundled (new companies established, which is already case for the Moldovatrangaz) from the VIU (Moldovagaz SA). From the ownership perspective Moldovagaz SA can remain to be the ITO owner.

The ITO model requires detailed rules on independence of ITO:

- assets, equipment, staff and identity,
- effective decision making rights,
- independence of management,
- supervisory body,

which in more detail means that:

- ITO must be independent from the VIU in terms of:
 - representation before the national regulatory agency (regulatory affairs) and within ENTSO,
 - corporate services, including legal services, accountancy and IT,

- ITO must be equipped with all necessary financial, technical, physical and human resources,
- ITO must not, in its corporate identity, create confusion in respect to its communication, branding and premises,
- staff performing the core activities of ITO (management and network operation) must be employed by the ITO
- assets must be owned by the ITO (not only the network, but also any other assets necessary for the activity),
- ITO not allowed sharing IT systems or equipment, physical premises and security access systems with VIU.

That means that Moldovagaz SA would not be allowed by no means to interfere with policies, decisions, staff, investment plans etc. The national regulator ANRE would be very crucial in ITO unbundling solution and the only and ultimately decision maker that would need to perform heavy regulation and permanent monitoring.

As well the leading management and business administration staff of new ITO companies cannot be hired from people that were in similar position in the Moldovagaz SA in the last 3 years, while for non-core people not less than 6 months is applicable. IT consultants/contractors and auditors shall be different than the ones of the VIU except in exceptional cases.

ITO must have a strong say in investment planning – power to raise money on capital market through borrowing and capital increase and needs to act as a TSO.

It is important to mention that some exceptions regarding these rules could be made but they need to be addressed and approved during the certification process.

The options for compliance with the unbundling requirements in regard to the choice of the model(s) have to be implemented in the law(s) transposing the Energy Community rules and all TSOs must be certified, irrespective of the unbundling model chosen, ITO can start operating after it has been approved and designated by the state following the certification by the national regulatory authority. The criteria are defined in the Directive and Regulation, amended according to the Energy Community Treaty. The procedure of certification is led by a national regulator, which has to adopt a draft decision within four months of application and notify the Secretariat. Consequently the authority has to answer Secretariat's potential questions,, provide reasoning underlying its decisions, etc. Within the four months given to the Secretariat to provide its opinion, it is obliged to request the Energy Community Regulatory Board to provide its own opinion on the national regulatory authority's decision. After the Secretariat provides its opinion, the national regulatory authority shall issue its final decision within two months afterwards (publishing both its own decision and the Secretariat's opinion together) and, if positive, the national government shall designate the TSO by a decision that is to be published in both the national and the EU official journals.

As Moldovagaz SA is controlled by a so-called "third country", **another step in the certification procedure is requested pursuant Article 11 of the Directive**, certification of the controlling party. The process may add to the time required for the certification as the national regulatory authority has to adopt draft decision in four months, notify afterwards the Energy Community Secretariat on the issue, which is then required to provide its opinion

within two (or four, subject to possible prolongation), also requesting the ECRB's opinion on the matter. In the two months after the decision, the national regulatory authority has to take a final decision, taking utmost account of the Secretariat's opinion.

The rules applicable to certification of the TSOs within the Energy Community, in contrast to the rules within the EU, do not require the national regulators to strictly follow the opinion by the Energy community Secretariat and authority's decision may diverge from the Secretariat's opinion. It has to be noted that the final decision, if diverging from the Secretariat's opinion, has to be duly reasoned and shall be without undue delay discussed by the EnC Ministerial Council.

The whole certification process might take up to 1 year which needs to be considered within the time planning (Moldova needs to implement the gas unbundling solution by 1 January 2020).

Figure 4.1: Timeline for unbundling of Moldovagaz SA

					2014				2015				2016				2017				2018				2019				2020			
	Tasks, Activities and Milestones	Responsibility	Start	End	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	T2.2 Unbundling of Moldovagaz SA																															
2	Unbundling in accordance with the EnC acquis communautaire as transposed in RoM	Moldovagaz SA	1Q2018	4Q2019																												
3	Notification (request) for certification as a gas TSO in accordance with the EnC acquis communautaire	SRL Moldovatrangas	1Q2018	4Q2019																												
4	Certification of the gas TSO upon receipt of request for certification as a gas TSO in accordance with the EnC acquis communautaire	ANRE	3Q2018	4Q2019																												
5	Preparation of formal opinion(s) regarding certification in accordance with the EnC acquis communautaire	ECS, ECRB	1Q2019	3Q2019																												
6	Approval and designation of the gas TSO upon its certification	GoM	4Q2019	4Q2019																												

Milestones:



2.12 - finalisation of the unbundling of Moldovagaz SA

2.13 - notification (request) for certification as TSO submitted to ANRE

2.14 - notification of EnC Secretariat on the certification being requested by a person (to be) controlled by (a) person(s) from third country/(countries)

2.15 - capacity of ANRE, Moldovagaz SA, SRL Moldovatrangas and Market operator built for the 2020 scope of market operative functions status/development including market integration into wider IEM and implementation of unbundling with respective certifications

2.16 - education of market participants on the market integration into wider IEM and on the 2020 scope of market operative functions status/development performed

2.17 - delivery of opinion on compliance of the person(s) controlling the gas TSO and whether granting certification present relevant risks

2.18 - adoption of draft decision on the certification and notification of EnC Secretariat

2.19 - delivery of opinion on draft decision on certification

2.20 - adoption of final decision on certification, EnC Secretariat duly notified and publication in the Official Journal of the EU executed

2.21 - certified entity is approved and designated as gas TSO

5. SUMMARY OF STRATEGIC INVESTMENT PROGRAMMES AND PROJECTS

In this section, only the major investment projects identified in the Energy Strategy in the area of natural gas are addressed.

5.1 UPSTREAM ACTIVITIES

5.1.1 Natural gas exploration and storage

From the internal energy sources perspective, the zones in the South of Moldova (gas basins in the residential areas of Gotesti, Baurci, Aluat, Manta) will be reassessed, the process being combined with the implementation of clear leasing policies of deposits for the benefit of the state and citizens. Concurrently, exploration works will be carried out in other area, following the examples of neighbouring countries and in close cooperation with them. The Republic of Moldova will be open for cooperation with experience companies to investigate the potential of energy resources, and prudence in negotiating royalties, having highlighted the natural potential identified as a result of these investigations.

As per Energy Strategy, natural gas resources identified in the Southern part of the country (Cantemir district) shall be further explored and if feasible, also developed.

At present, there is no gas storage facility located on the territory of the RoM. However, there is a possibility that Moldova accomplish also this challenging goal.

Construction of an underground storage facility (Cazaclia) of working gas volume of 7,410 mill. Nm³, max. daily withdrawal capacity of 1.78 mill. Nm³/day, max. daily injection capacity of 1.9 mill. Nm³/day and the cycling rate of 1 time/day (total investment costs of 750 mill. EUR) has been proposed by the RoM for the Energy Community Secretariat as PECO project. However, the proposal was rejected in the PECO projects selected in October 2013.

The facility would increase the SoS for gas in case of gas supply crisis. The RoM, Romania and other countries from the Balkan region could be provided with gas from the Cazaclia underground gas storage in case of need through the existing major pipelines. The underground gas storage would cover the demand of natural gas in the period of peak demand in cold season and would treat the risk of interruption of supply on domestic and regional markets.

5.2 DOWNSTREAM ACTIVITIES

5.2.1 Natural gas import / transportation

From the point of view of alternative supply routes, Moldova has only two neighbour countries that can provide cross-border flows from one or several supply sources. However, the existing natural gas supply connection with Romania does not allow a reversible, the only possible direction until now being the one towards Romania. Consolidation of Moldova's

current role as a natural gas transit country is based on maintaining the current transit direction and creating a secure transit route in the alternative direction.

The maintenance in the future of the current East-West transit direction, which is also Asia-Europe's main natural gas supply direction, will be performed by strengthening the current Moldovagaz SA – JSC Gazprom partnership and extending the interest of JSC Gazprom in keeping this transit route for the horizontal integration of the company through involvement in the production of power, which is in full conformity, both with JSC Gazprom's policy in Europe, and Moldova's needs for retrofitting cogeneration assets in Chisinau

5.2.1.1 Iasi (RO) – Ungheni (RoM) gas pipeline (G-1)

As concerns infrastructure development, construction works on the new interconnector with Romania, Iasi (RO) – Ungheni (RoM) started on 27 August 2013. This interconnection shall diversify delivery routes for natural gas to the RoM and thus ensure high SoS for gas, especially to high gas demand centres (Chisinau), by construction of the reversible gas pipeline.

Key characteristics of the interconnection are:

- Length: 43.28 km in total, of which 10.48 km in RoM, with 736 m crossing the Prut river;
- Pipeline diameter 20"; reversible operation; transport capacity: 1.5 bcm/year at 55 bar nominal pressure and a min. pressure of 16 bar on the border;
- Total cost – 26 mill. EUR, of which 9.1 mill. EUR on the Moldovan side and 16.9 mill. EUR on the Romanian side;
- Financing (Moldovan side): EU grant – 3 mill. EUR and grant from Romanian Government – 6.1 mill. EUR;
- Financing (Romanian side): EU grant - 4 mill. EUR and contribution of Romanian Government – 12.9 mill EUR;
- Planned completion within 8 months and commissioning by July 2014.

5.2.1.2 Extension of the gas transport capacity of the Iasi-Ungheni pipeline on the RoM territory (G-2b)

A. Project description

The next and final phase of the Iasi-Ungheni project is the extension of the pipeline of 130 km (Ø500mm) on the RoM territory by construction of (1) gas pipeline Ungheni-Chisinau, (2) the ring around Chisinau and of (3) a distribution / measurement station on the ring. By that the new source of supply from Romania will be connected with the biggest consumption area, Chisinau (approx. 60% of total consumption of the country).

This pipeline is feasible if the Gas Pumping Station (on the territory of Romania) will be constructed and Romanian gas transmission network will be strengthened in the region (in this respect, 130 km of new/upgraded gas transmission pipe is under discussion).

The estimate budget of the project is approx. 70 mill. EUR. This project is of a strategic importance for the RoM and represents a significant step forward towards building and consolidating the energy security of the country.

In order to prepare the project for the implementation the MoE of the RoM is currently seeking donor's support to develop a Feasibility Study (FS), which will include the Environmental and Social assessment (ESA). This FS is planned to be finalized by end of 4Q2014 provided financial resources are ensured by the end of 2013. The project design is also envisaged to be drafted with the support of the donor community. The deadline would be by end of 3Q2015. In this regards, financing of the FS will be provided by EBRD.

The Financing Agreement on the construction Ungheni-Chisinau pipeline should be signed preferably in 2015, taking into account the support offered by EBRD, EIB, European Commission through NIF (ENPI). The initial goal was to finalize the entire project by the end of 2017, however, in experts' opinion this would be feasible by the end of 2018 only as per project implementation dynamics described hereafter.

B. Activity plan

Activity description		Responsibility
1.	Preparatory phase Preparation of the project concept, pre- and feasibility study (including ESIA) for the Ungheni-Chisinau gas pipeline	MoE
2.	Conclusion of financing agreement for project implementation with IFIs (EIB and EBRD) Identification of financing sources and conclusion of financing agreement for construction of Ungheni-Chisinau gas pipeline	MoE, GoM
3.	Obtaining permits and approval Obtaining permits and expropriation of land for the gas pipeline, mapping of land, obtaining of approval from environmental authorities and others as required by law	MoE
4.	Tendering for development of project documentation (PD) Selection of engineering/consulting company for preparation of PD	MoE
5.	Elaboration of PD Preparation of PD for Ungheni-Chisinau gas pipeline	PD Contractor
6.	Tendering for construction Selection of main contractor for construction of the Ungheni-Chisinau gas pipeline	MoE
7.	Construction Building of the Ungheni-Chisinau gas pipeline as per PD	Project Contractor, Works Supervision Consultant
8.	Commissioning Trial runs until successful technical taking over and start-up of commercial operations	Works Supervision Consultant, Project Contractor

C. Milestones

No.	Milestones	Expected results	Deadline
1	Completion of the Preparatory phase	Pre- and feasibility study ¹ , Environmental and Social Impact Assessment (ESIA), identification of the financing mechanism completed; the preferred technical solution is agreed upon among stakeholders	End 4Q2014
2	Financing closed	Financing sources found and adequate financing agreements signed	End 1Q2015
3	Permits and approval obtained	Permits for the preferred technical solution from pt.1 are obtained and any formal approval obtained from the relevant authorities	End 3Q2015
4	Tender for development of project documentation (PD) completed	Engineering/consulting company for the development of the PD selected and contracted ³⁶	End 1Q2016
5	Project documentation for the selected technical solution elaborated	Technical project, specification (tasks description), detailed drawings, project execution plan etc. ³⁷ are developed	End 1Q2017
6	Tender(s) for construction of gas pipeline Ungheni-Chisinau completed	Contracts with Works Supervision Consultant and the Project implementation Contractor signed	End 3Q2017
7	Construction of gas pipeline	Construction of Ungheni-Chisinau gas pipeline is completed as per PD and ready for commissioning and trial runs	End 3Q2018
6	Commissioning of gas pipeline	Trial runs completed by successful technical taking over / start-up of commercial operation	End 1Q2019

D. Ecological and social effects

It is necessary to make Environmental and Social Impact Assessment (ESIA). ESA, as rule, is part of FS. The environmental impact is analysed in PD according to NCM A.07.02-99 (6.2.10. Environment protection). Concentration of pollutants should be in line with EU Directive for industrial emissions 2010/75/EU.

³⁶ Considering the preview experience regarding construction of Ungheni-lasi pipeline (feasibility study, PD, etc.) it can be expected that all package of documents will be done in time.

³⁷ At construction of the pipeline, the following Construction Standards have to be followed:

- CH 452-73 – land expropriation for main pipelines
- СНП 2.04.08-87 – gas supplying

E. Time-plan including milestones

	Tasks, Activities and Milestones	Responsibility	Start	End	2014				2015				2016				2017				2018				2019				2020			
					1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	Gas interconnection Iasi (RO) - Ungheni (RoM)		2Q2013	3Q2014	←→				M1																							
2	Completion of construction of the interconnection	Contractors	2Q2013	2Q2014	█	█	█	█																								
3	Commissioning (start by 1 July 2014) and start-up of commercial operations	Contractors	2Q2014	3Q2014				█																								
4	Extension of the Iasi-Ungheni pipeline on the RoM territory, Ungheni-Chisinau		4Q2013	1Q2019	←→																											
6	T4.1 Preparatory phase				←→																											
7	Obtaining financing from donors to support the (P)FS (incl. ESIA)	MoE	4Q2013	1Q2014	█	█	█	█																								
8	Selection/contracting of consultants to implement the (P)FS	Donor (EBRD)	1Q2014	1Q2014	█	█	█	█																								
9	Implementation of the (P)FS (incl. ESIA)	(P)FS Contractor	2Q2014	4Q2015				█	█	█	█	█																				
10	T4.2 Conclusion of financing agreement for project implementation	GoM (MoE)	1Q2015	1Q2015				█	█	█	█	█																				
11	T4.3 Obtaining permits and approval							█	█	█	█	█																				
12	Obtaining permits and expropriation of land for the gas pipeline	MoE	2Q2015	3Q2015				█	█	█	█	█																				
13	Geodesy works (mapping land, etc.)	MoE	3Q2015	3Q2015				█	█	█	█	█																				
14	T4.4 Tendering for development of project documentation (PD)	MoE	4Q2015	1Q2016				█	█	█	█	█																				
15	T4.5 Elaboration of PD							█	█	█	█	█																				
16	Selection/contracting of consultants to prepare the PD	MoE	2Q2016	3Q2016				█	█	█	█	█																				
17	Preparation of PD	PD Contractor	4Q2016	1Q2017				█	█	█	█	█																				
18	T4.6 Tendering for construction	MoE	2Q2017	3Q2017				█	█	█	█	█																				
19	T4.7 Construction incl. commissioning							█	█	█	█	█																				
20	Preparation and conclusion of the Financing Agreement	MoE	4Q2017	1Q2018				█	█	█	█	█																				
21	Selection/contracting of Works Supervision Consultant	MoE	4Q2017	1Q2018				█	█	█	█	█																				
22	Selection/contracting of Project Contractor	MoE	4Q2017	1Q2018				█	█	█	█	█																				
23	Procurement for goods and services	Contractors	4Q2017	1Q2018				█	█	█	█	█																				
24	Project implementation/construction works	Contractors	2Q2018	3Q2018				█	█	█	█	█																				
25	T4.8 Commissioning (start by 1 October 2018)	Contractors	4Q2018	1Q2019				█	█	█	█	█																				

Milestones:

- M1 - Completion of the Iasi –Ungheni project
- M4 - Permits and approval obtained
- M6 - Project documentation for the selected technical solution elaborated
- M7 - Tender(s) for construction of gas pipeline Ungheni-Chisinau completed
- M8 - Construction of gas pipeline completed
- M9 - Commissioning of gas pipeline completed, start-up of commercial operation

M2 - Completion of the Preparatory phase

M3 - Financing agreements signed

M5 - Tender for development of project documentation (PD) completed

5.2.2 Natural gas distribution

The Development Plan of Moldovagaz SA for 2013-2015 which includes the investment program and the capital repair plan has been elaborated in accordance with the current development perspectives of the existing natural gas transportation and distribution network of the RoM that include the following:

- Consolidation of the special status of natural gas transit state by consolidation of transportation possibilities;
- Providing higher reliability and safety of operation of gas transportation and distribution systems;
- Increased deliveries of natural gas to the consumers.

The implementation of the Development Plan of Moldovagaz SA for 2013-2015 depends on several key factors including effective development of macro-economic indices of the RoM as well as adequacy of tariff policy of ANRE vs. natural gas market situation, solvency of Moldovagaz SA and its ability to collect payments from its consumers.

The planned amounts of required investment and capital repair costs for the years 2013-2015 is estimated at approximately 64.9 mill. EUR, including (i) investments – 37,5 mill. EUR and (ii) capital repairs – 27.4 mill EUR (Figure 5.1).

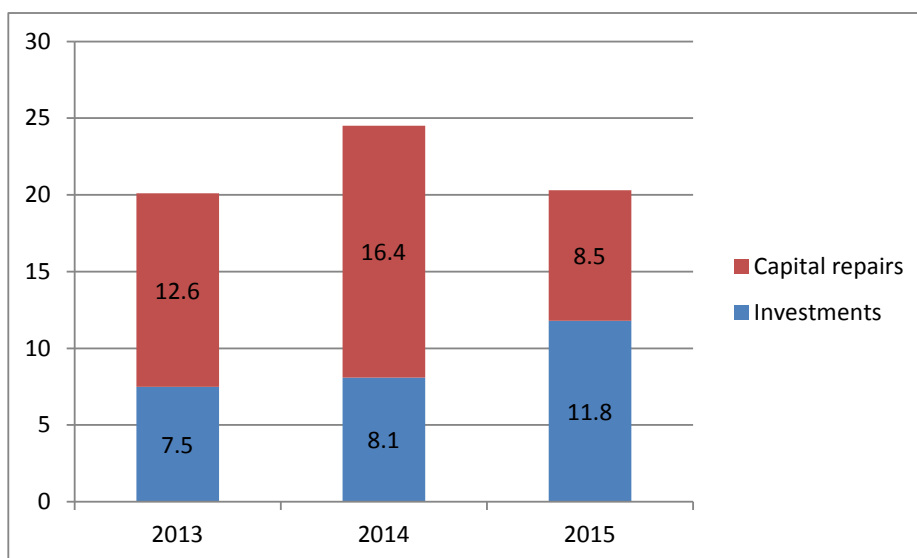


Figure 5.1: Investments and capital repair costs for 2013-2015 (mill. EUR)

The **investment program** has been elaborated taking into consideration the following:

1. The amount of planned investments in construction of objects is 12.2 mill. EUR. The total length of gas pipelines to be constructed is around 158.08 km. The main program items provide the following:
 - Construction of 152.3 km of gas pipelines in localities for the connection of over 3,100 potential consumers;
 - Construction of 4.17 km of gas pipelines (loops) for the improved operation of existing gas distribution system;

- Construction of 125 separately standing gas metering nodes at entries to localities and in the service area division borders;
 - Construction of Gas Distribution Station no. 3 in Chisinau;
 - Installation of remote control systems for trunk main valves, monitoring and telemetry systems, cathode protection systems of steel pipelines for a higher operational safety;
 - Etc.
2. The amount of planned investments in reconstruction and modernization of gas transportation and distribution system is estimated at 6.6 mill. EUR. It will provide a higher safety of gas transportation and distribution systems and contains the following main activities:
- Replacement of 5 existing gas distribution stations with new stations with automated technological processes;
 - Technical upgrade of gas distribution and transportation system objects;
 - Reconstruction of 15.6 km of existing underground steel pipelines;
 - Replacement of 28 gas metering nodes with modern ones equipped with electronic correctors.
3. The amount of planned investments in procurement of fixed assets is 13.1 mill. EUR, including:
- Transportation vehicles, automobiles and mechanisms;
 - Devices, equipment and electrical tools;
 - Computers, office equipment, alarm systems, communication equipment;
 - Software products.
4. The amount of planned investments in the survey and design works for the future construction is 0.6 mill. EUR.

The investments will be aimed at raising the reliability and safety of existing gas transportation and distribution systems; safety of industrial processes; modernization of gas transportation and distribution systems with installation of automatics, remote control and communication systems; improvement of commercial and technological gas metering systems, creation of new premises for working with consumers.

Regarding **capital repairs**, the planned capital repair costs that amount to 28.7 mill. EUR include:

- Repair of trunk mains and branch pipelines;
- Replacement of technical devices;
- Repair of production, technological and administrative buildings.

Reduction of gas losses and technological consumption are a priority for the Moldovagaz SA.

In distribution networks of Moldovagaz SA it is planned that the losses and technological consumption will be reduced to 1.6 mill m³ by 2013 and further down to 1.3 mill. m³ by 2015.

The estimated costs of measures in the domestic sector are 12.9 mill. EUR and 0.2 mill. EUR in the non-domestic sector.

In transmission networks of Moldovagaz SA it is planned that the losses and technological consumption will be reduced to 6.0 mill m³ by 2013 and further down to 4.2 mill. m³ by 2015. The estimated costs of measures are 6.0 mill. EUR in the observed 3-year period.

The reduction of technological gas consumption and technical losses in trunk mains, with reference to the normative volume, will be assured by:

- successive implementation of remote control and telemetry of gas transportation system;
- modernization of gas metering nodes on the Balkan direction gas pipelines (based on ultrasound gas meters);
- installation of a control gas metering point on the Gas Distribution Station no. 1 in Chisinau based on ultrasound gas meter;
- provision of linear gas pipelines with pressure and temperature transducers for a more precise determination of gas amounts in the pipelines;
- maximum takeout of gas by the consumers from the pipeline sections to be repaired before disconnection, in order to reduce the volumes of gas released from pipeline.

6. IMPLEMENTATION MONITORING, FOLLOW-UP AND UPDATES OF THE ROADMAP

6.1 STEERING COMMITTEE No. 2

Steering Committee No. 2 will be in charge of coordination of the natural gas sector Roadmap implementation. It will be appointed by the Government, with Parliament's approval.

The administration of the committee will be shared between representatives of the Ministry of Economy and National Energy Regulatory Agency, thus reflecting the two parallel authorities that have to participate in the coordination process.

Membership will be assigned to all important actors in the natural gas and environmental protection fields. The committee will meet monthly as part of the strategy's implementation and will report on a semestrial basis to the Government upon the Energy Strategy implementation in the respective area.

6.2 REPORTING LINES

For each **investment project**, the institution mandated with the implementation of the respective project will appoint a Project Manager, who will report on a regular basis to the institution's Board on the progress. Project's technical documents shall be subject to approval by the technical-economic committee of each institution mandated with project's development.

Regarding reporting on the overall progress in implementation of the Natural gas Sector Roadmap by 2030, the Steering Committee No. 2 will report regularly – on a semestrial basis to the GoM.

6.2 PROJECT INDICATORS TO MONITOR PROGRESS

The Energy Strategy, Section VII, stipulates the principles of ES2030 implementation reporting and monitoring, in detail:

178. General progress indicators for projects, representing the simplest elements of the strategy's implementation, are the feasibility studies, technical design development and execution process of the project itself. Project development represents a serial process, and the conformity of achievements with the deadlines of the progress indicators represents a condition for the start of the work in due time for the following progress indicator. Every fulfilment of a progress indicator in the planned time increases project's chances to be finalized in a timely and appropriate manner. The appointment of a project manager for each project apart represents an attribute of the administration of every institution mandated with the project development, the project's administration being in charge with reporting on a regular basis to the institution's Board. Project's technical documents shall be subject to

approval by the technical-economic committee of each institution mandated with project's development.

181. Along with an internal coordination of projects' development within these plans and taking into consideration the different vertical structure of the hierarchic coordination, a horizontal coordination of plans is also necessary, by including the monitoring, reporting and assessment aspects. Diverse plans will contribute to the achievement of the same major or specific objective and will imply interaction with institutions that are or not in a hierarchic relation.

184. Once approved by the Government, the Strategy and the two roadmaps resulting from the Strategy as action plans, the administration, representativeness and responsibility for their implementation shall be distributed to some different entities, as will be the tasks for reporting and monitoring. When the implementation levers and deadlines are connected to the energy policies, the monitoring task will be assigned to the Government. This is the case of domains 3) and 4). Because the administration and monitoring tasks of these plans will be in direct conflict and the project development requires special management capacities, there where public property is involved it is necessary to establish a legal entity to fulfil an objective defined on a limited time period (Special Purpose Entity (SPE)), and there, where only private property is involved (for certain this is the case of the renewable energy-based generation), the organization of tenders and monitoring of plans will be under the responsibility of different departments from the Ministry of Economy.

185. For the cases where the implementation aspects are related to the compliance with regulation, administrative tasks will be assigned to the National Energy Regulatory Agency. An Institutional Strategy Plan of the ANRE shall be developed based on the definition of the domain and implementation schedule, with the approval and monitoring tasks being with the Parliament.

187. In the natural gas supply security domain, all responsibilities related to planning and implementation are with the Moldovagaz SA. Following the implementation of the separation of activities, roles will be divided according to the institutional separation of the transport, distribution and supply. From the policy perspective, the monitoring responsibility is performed by the Government (Ministry of Economy) through its representatives in the Board, as from the regulation perspective (including financial aspects line investments, use of the congestion rate and transport tariff) responsibilities are assigned to the National Energy Regulatory Agency.

188. Assessment of progress indicators is a both qualitative and quantitative process. The quantitative assessment activity will be assigned to the independent authorised entities, while collection of primary and process data will be performed by specialised public entities, like the National Energy Regulatory Agency. Assessment of qualitative progress indicators will represent the result of the activity of entities carrying out the monitoring on the basis of the reporting by the implementation entities.

The list of performance indicators included in ES2030 are shown in Table 6.1.

Table 6.1: List of performance indicators

ENERGY SUPPLY SECURITY			
Indicators	MU	2015	2020
Energy interconnections:			
- Power lines	km		139
- Natural gas pipelines			40
Alternative natural gas supply sources: long-term supplier, relevant use of internal resources, short-term market		2	3
Stimulating the use of energy produced from RES in the gross internal consumption	%	10	20
Ensuring the biofuel share in the total used fuel	%	4	10
Use of energy from renewable sources in all forms of transport:	%	6	10
- volume of ethanol and petrol mix in the sold petrol amount		5	
- volume of biodiesel mix in the volume of sold diesel			
Increasing the internal power generation capacity	MW		By 800
Ensuring the share of annual generation of power from RES	%		10
OPENING OF MARKETS AND CONNECTION TO EUROPEAN MARKETS			
Transposing the Third legislative Package		√ (in part)	√ (in full)
Approving the new roadmap and commercial codes for power and gas			√
Approving the regulatory framework on liberalization and competition		√	
Appointing a market operator		√	
Accession of the SE Moldelectrica to the transborder capacities tendering coordination mechanisms		√	
Integration of markets managed by the Market Operator in Moldova to the EIM			√
Official opening of markets	%	100	
Interconnection with EU systems:			
- Electricity			√
- Gas			√