

ROMANIAN ASSOCIATION FOR THE PROMOTION
OF ENERGY EFFICIENCY

ENERGY EFFICIENCY IN ROMANIA

White Book



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PREFACE

Romanian Association for the Promotion of Energy Efficiency (ARPEE) is an unexpected answer to prolonged examinations and dilemmas, a practical solution that asked for itself. More often than not, the Romanian energy field has come upon this question – What is it to be done? – whenever issues like industrial competitiveness, energy bills, the absorption rate of the European Union funds, or the lack of local resources for the cold season were raised.



It could be another case in point for something more akin to the national character, but only after attending a recent regional conference under the auspices of the United States Department of Energy on Investments in Energy Efficiency for South Eastern Europe, and after listening to rigorous presentations delivered by eminent French experts at the Romanian-French Seminar “Energy – an opportunity for Romania”, I came to realize the wealth of this energy resource at hand.

We debate and strategically plan the Romanian energy security. We raise the subject and let ourselves be drawn into endless talks about energy independence however hypothetical the projection. Time and again, our main concern refers back to ensuring new energy resources, a position easy to understand given the current global energy conversation, as much as the old local anxiety, ambitions and obsessions.

It is a good starting point to acknowledge the fact that the figures for Romania’s overall energy efficiency are disappointing. The White Book presented by ARPEE suggests that our economy employs 2.5 more energy per GDP unit than the EU average, while the energy losses in some sectors amount to 30-35 %.

Energy efficiency could be one of the solutions to the current picture, supportive of sustainable economic growth. Romania has a National Plan for Energy Efficiency that requires strong commitments in its implementation and a thorough follow-up.

As with any other economic sectors, it is necessary to move beyond setting objectives and drafting out strategic plans. It takes relentless efforts to translate the mission statement into coherent policies, pursued by responsible institutions,

empowered to deliver based on a systematic outreach to the business community. This approach needs to inform a new National Investment Plan in Energy Efficiency, in sync with political recommitment to the National Strategy in the field.

I strongly believe there are enormous benefits to be gained out of pursuing energy efficiency in any economic sector. New jobs, further investments, a boost to innovation will be just a few. The White Book is highlighting the role the European funds could play in increasing energy efficiency in industry, transport, construction, agriculture, services and residential sector, as well as in the SMEs sector. At the local level, it would be desirable to see at least one project dedicated to high-efficiency cogeneration, urban central heating systems, or to improving the buildings energy efficiency in the public sector. Public-private partnerships should be involved in the efforts leading to more efficient outcomes, while equally improving this method of work.

ARPEE could bring clarity to the energy debate, advancing various solutions greatly needed by both the Romanian economy and the society as a whole. We are grateful to the ARPEE founding members for their interest to contribute to future national policies in the energy efficiency field. The White Book introduced herewith is not merely transposing European *aquis*. It is an example of creativity and innovation based on sound analytical work. Without any doubt, it sets the path for better accessing finance for energy efficiency and extending best practices to local projects.

Romanian Government institutions and National Energy Regulatory Authority will find ARPEE as a reliable partner in tackling those issues that the public administration hardly gets time to consider or lacks the adequate capacity to investigate them properly. This partnership must act beyond parochial interests, be it professional or institutional, reminding us that reducing energy dependency, improving economic competitiveness, creating jobs and lowering energy bills are goals above circumstantial policies of austerity.

Mihnea Constantinescu

Ambassador at large for Energy Security

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EDITORIAL

Energy efficiency is a **fundamental element** for the development of Romania.

We have always benefitted from prices among the lowest within Europe for gas, electricity and heat. However, the cost of energy already represents a very important part of household incomes compared to the rest of Europe because of the relatively low revenues of the population and the poor energy efficiency in Romania.

The liberalization of energy markets will lead to price increase for final customers, households as well as industry because of incremental convergence to the level of other states at a pace which may be higher than that of pay rise. Therefore, energy is starting to take an ever-increasing part in the household incomes, even though this element is already barely affordable.

In order to cope with this unavoidable trend of increasing prices, the only solution to limit the impact on consumers' bills is to act upon the amount of energy used, and therefore **improve energy efficiency**.

The transposition of the new EU Directive on Energy Efficiency (2012/27/EU) is the chance for Romania to **tap the outstanding energy saving potential** which already exists within the country. The stakes are huge as these necessary amendments need to be made while still preserving the consumers' purchase power and the companies' competitiveness.

The Romanian Association for the Promotion of Energy Efficiency (ARPEE) was established in October 2012. Its founding members are private companies of reference from the energy sector in Romania: ABB, Alstom, Dalkia, EnergoBit, Elcomex, GDF SUEZ Energy România, Lafarge, OMV Petrom, and Pricewaterhouse Coopers. The purpose of ARPEE is to promote and support energy efficiency development activities in all areas of the economy, with all policy and decision-makers, central and local public institutions and authorities, industrial and household consumers, professional organizations and NGOs.

This **White Book** is intended for all energy stakeholders who will contribute to the transposition and enforcement of the Energy Efficiency Directive – EED (2012/27/EU). It details the stakes for the sectors most concerned with energy efficiency and puts forward proposals for implementation and institutional changes.

It is the reflection of the will of ARPEE to **become engaged**, along with public institutions in the endeavors for better energy efficiency in Romania.



Gilles Humbert
ARPEE President



Aureliu LECA
ARPEE Executive Director

1

ENERGY EFFICIENCY A FUNDAMENTAL PRIORITY IN ROMANIA

The European Union has based its energy strategy on three fundamental pillars, **climate**, **security of supply** and **competitiveness**, which has led it to setting the three objectives to be reached by 2020, called the 20/20/20 (20% reduction of CO₂ emissions against 1990, 20% renewable energy and 20% increase of energy efficiency). Applied to Romania, fulfilling these objectives represents the convergence to the European average.

Recently, Europe has decided to reinforce the actions in the area of energy efficiency with Directive 2012/27/EU (EED), which now has to be transposed in each Member State.

Given the current performance for Romania, more than other countries, energy efficiency represents an important means for sustainable development since this allows to **accelerate** the process of reaching various goals: it reinforces energy supply security, reduces primary energy consumption, contributes to the reduction of greenhouse gases emissions in a viable way, improves competitiveness of the industry, return on investment due to general savings, economic development, the creation of jobs and makes energy invoices affordable.

Energy efficiency is therefore a **must** if Romania wishes to reach its ambitions energy-wise at an acceptable cost.

It is also a major stake for the protection of the purchase power of its population. Actually, the increases of energy prices are an unavoidable phenomenon in the following years because of the trend of current regulations (CO₂, renewables, single energy market, etc.). Prices must meet particular formation rules and their structure can no longer include social protection as has been the case up to now.

The public authority responsibility is to prepare Romania for these changes by transforming subsidies into investments or financial incentives, as they treat the effects, but not the causes and giving the means to manage energy invoices in order to reduce consumption, rather than prices.

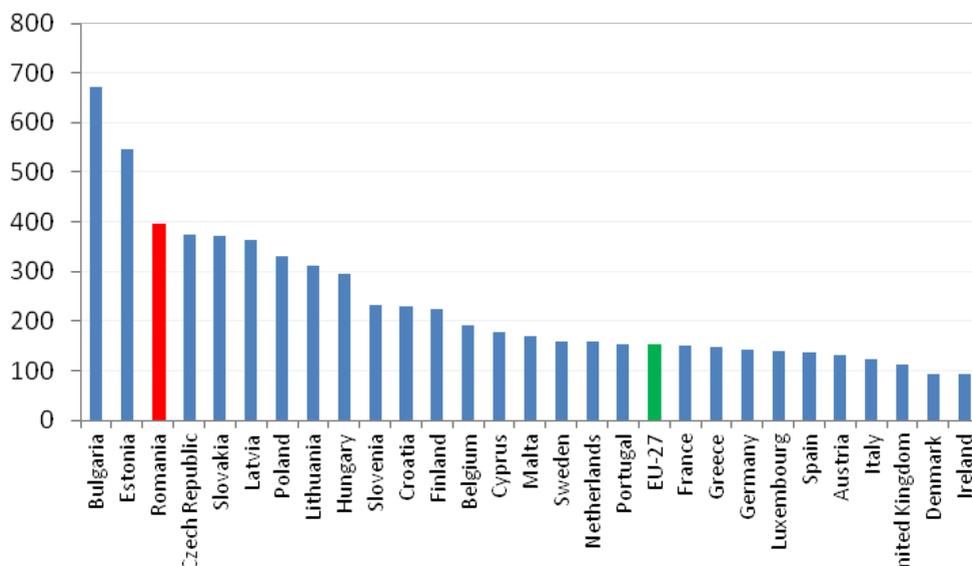
Energy efficiency must become a **fundamental priority** of Romania.

In this context, there are several stakes:

- Draft a national strategy in order to implement **specific regulations** and an **improvement of institutions framework** in order to place energy efficiency where it belongs;
- Increase the awareness of the various stakeholders and a **voluntary financing policy**.

PRIORITY TARGETS

Energy efficiency in almost all sectors of the economy is lagging far behind the European average. ARPEE estimates show that energy efficiency can generate a long-term benefit of 5-7 billion euro (current price), which represents an **increase of 4-6 % of GDP**, with no additional energy consumption.



Energy intensity of economy, kgoe/1000 €

Source: Eurostat, 2010

Consumption	Romania	Europe
Energy intensity (kgoe/1000 €)	393	152
Electricity consumption per capita (kWh/capita)	2300	3900
Households annual energy consumption per space heating (kWh/m ²)	265	125

The highest energy losses are in the following areas:

- **Buildings**, accounting for more than 40% of the final energy consumption; with very high energy losses (approx. 40-50 % of consumed energy) and only 5-6% of the whole stock have benefitted from and thermal rehabilitation.
- **Heat networks** which supply more than a quarter of the population, but are actually in a very precarious financial balance because of the absence of investments for years and recurrent regulation changes.
- And the **industry** whose energy intensity remains high in comparison with the rest of Europe.



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LEGAL FRAMEWORK

In order to quickly respond to the challenges of the energy efficiency field and catch up with the energy performance against other European countries, Romania must adopt **stable, predictable, transparent** and **easily enforceable** laws to attract important investments and ensure the implementation of agreed regulatory measures.

Currently, the Law on Energy Efficiency that will transpose the Energy Efficiency Directive (EED) is a priority for Romania. ARPEE wants to invest and bring the expertise of its members in the implementation of this law, to be done in a collegial and transparent way:

- The **inter-institutional collaboration** at the level of competent government authorities must be implemented and the consultation process between them and the business environment, the academic environment and consumers' needs.
- Decisions must be based on impact (cost-benefit) studies. The findings of these impact studies, like all other areas of public interest must be submitted to **public consultation**.
- Effective **communication** of public officials and energy companies, consumers and the civil society must be established.

COMPULSORY AND IMMEDIATE MEASURES

- The transposition of the EED shall take into account the capacity of economic operators to meet these requirements **at acceptable costs** for end users. In particular, ARPEE strongly supports the option of implementation of **voluntary agreements** as the mean to achieve the energy efficiency savings by energy suppliers, in order to avoid market distortions and unnecessary increase of final energy prices.
- In order to define and take responsibility regarding the national indicative objective for the energy efficiency it is necessary to **update the national situation** in order to identify the action areas and, especially, the potential to reduce consumption (for example, identifying the energy intensive and non-value added processes/equipment in various industries).

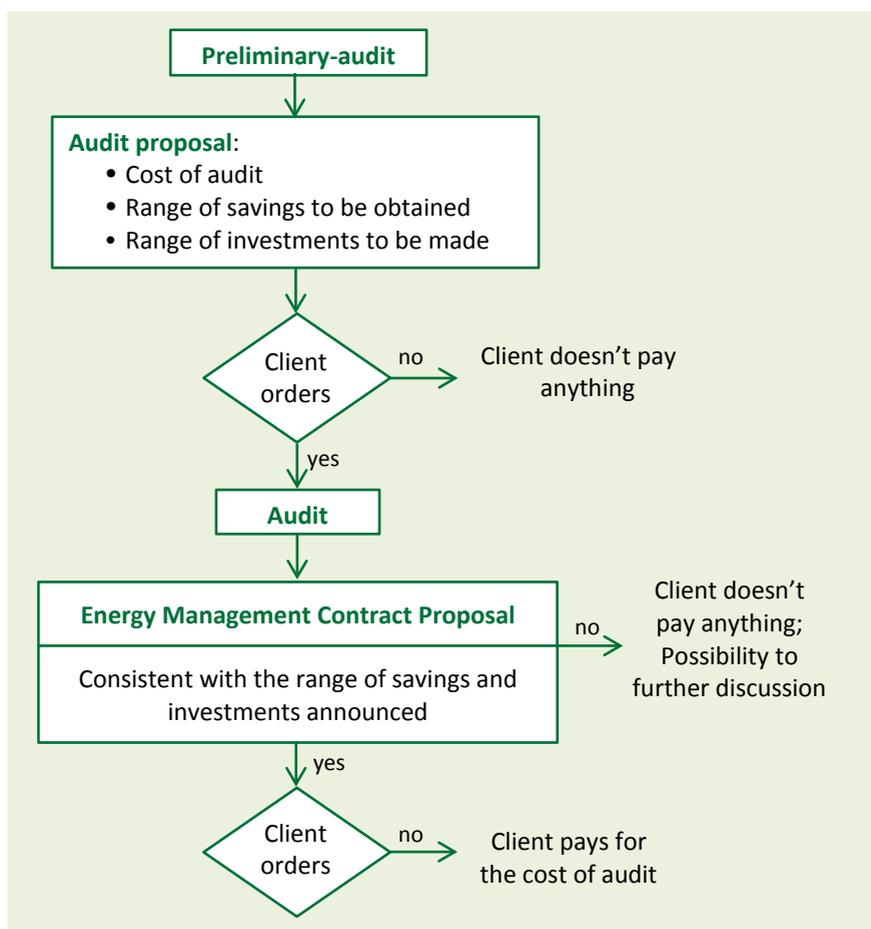
- Developing the legal framework for **promoting energy services companies** (ESCO) and promoting the taxation measures in order to encourage and motivate the fuel and energy consumption reduction and to create financial incentives.
- **Promoting the financial mechanisms and instruments** by opening the sector operational programs aimed at improving energy efficiency within the industrial field as well as the involvement of the banking system in energy efficiency projects through loans granting.

Key suggested actions

- Annual renovation of 3% of all central public institutions buildings.
- Achieve annual savings by among final consumers, by promoting voluntary agreements.
- Promote high-efficiency cogeneration and heating networks with definition of a development policy based on a cost/benefit analysis.
- Conduct energy audits.
- Implement smart metering systems.
- Identify measures to improve the networks.
- Promote and support investments in natural gas, electricity and heat infrastructure.

MEDIUM TERM MEASURES

- Promoting the implementation of measures that result from the energy audits, in conjunction with the financial instruments and mechanisms to promote energy efficiency and the implementation of long term agreements.
- To ensure that the audit results are acted upon, it is important:
 - To recognize the preliminary audit, realized within the implementation of an Energy Performance Contract (EPC), as a required audit in article 8 of EED (implementing audits);
 - To encourage the Project Development Agreement (PDA), which is a form of audit promoting the establishment of measures (see next diagram).
- Improving the support scheme for high-efficiency cogeneration, so as to motivate new investments in modern technologies, adapted to useful heat demand.



Principle of PDA

- Implementing energy management systems (SR EN ISO 50001). The arguments of ISO 50001 certification for an organization include: facilitating the transparency/communication regarding the management of energy resources; promoting energy management best practices; assisting facilities in evaluating and prioritizing the implementation of the new energy efficient technologies; providing the framework for the energy efficiency along the supply chain; facilitating energy efficiency improvement for projects aiming at reducing the greenhouse gas emissions; integrating with the existing organizational management systems.
- Continuing to renovate buildings and setting some design and construction codes for the new buildings in order to ensure typical, common efficiency conditions covered by the codes in well developed countries in Europe.
- Stimulating the investments in research and development in energy field.

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ENERGY EFFICIENCY SERVICES

Energy Service Companies (ESCO) contribute to improve the energy efficiency by accepting the financial risk implied by the coverage (or the help for financing) of initial investments costs and their refinancing through the savings achieved. These companies may help private beneficiaries or public authorities to upgrade their facilities, buildings, street lighting systems, etc., by grouping them into scalable projects within the long term **Energy Performance Contracts** (EPC).

The main purpose of the Energy Performance Contract (EPC) is to provide energy services at a competitive price, so as to facilitate for the beneficiary to reduce energy costs, the generated savings paying all or part of the investment (works, supplies or services). Providing the entire services package by a single energy services company (ESCO) including the guarantee of obtaining economies **monitored throughout the duration of the contract** and acceptance of penalties represents the essential difference between the contracted energy performance and the common methods of project implementation and financing.

ENERGY SERVICES MARKET IN ROMANIA

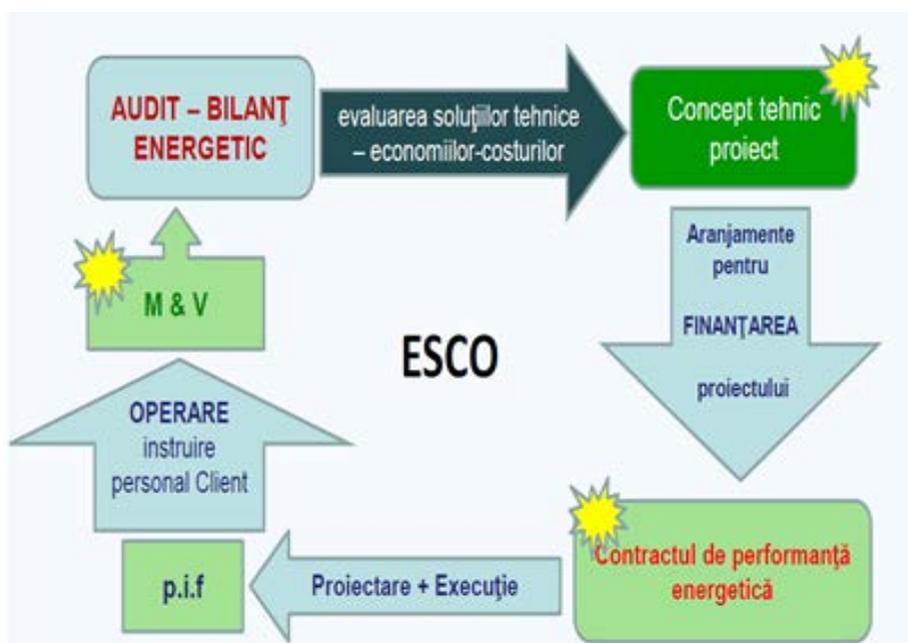
CURRENT SITUATION

Energy services market does not develop adequately compared to the potential that it has. Potential customers from the public and private sector often lack systematic information regarding the available ESCO services, organization structures of the client scattered (one entity pays for the fuels and another one pays for the maintenance) or they have doubts about the quality of the services provided.

According to the type of energy services offered by ESCOs, currently there are few players on the energy services market in Romania, but who face a series of barriers, especially in the public sector.

PROPOSED SOLUTIONS

- Change the administrative organizations of public administration (a single entity responsible for operating/maintenance/investment) in charge of awarding contracts and performance monitoring.
- Promote within public institutions the EPC advantages and improving the legal framework on procurement of such services.
- The obligation of public authorities and important industrial consumers to implement the energy efficiency measures resulting from the annual energy audit, so as to prove a decrease of at least 1.5% of the annual energy consumption, when it shows that performance is below the national average and incentive into implementation of progress plan.
- Approve a support scheme for improving the energy efficiency through granting subventions for investments or other type of facilities to the ESCO (taxes, etc.).
- **ARPEE** will issue, within the next six months, a proposal for **ESCO certification criteria** (application of article 16 of the EED).



LEGAL FRAMEWORK OF ENERGY PERFORMANCE CONTRACTS

CURRENT SITUATION

Government Emergency Ordinance no. 22/2008 introduces the concept of EPC, but the law on public procurement and the concession and the Tax Code do not make any reference to EPC, being currently treated as services contracts, even though they involve, in addition to services, some investments.

It is not properly regulated the way in which is achieved the **budgetary-taxation treatment** of the EPC for the projects involving the public sector. Public budget law provides restrictions regarding the use of public funds in order to pay utilities, so as the value of energy savings that can be found on the utilities bills cannot be materialized in payments to companies that provide energy efficiency services.

The indebtedness level that can be taken by the local administration is limited to 30% of the recorded revenues, which makes it impossible to develop high value, important projects. The primary law that serves the energy efficiency field still remains incomplete, because of the fact that current regulations in public procurement, public private partnership, public funding or taxation can be punctually applied, without providing the interdependence among them.

PROPOSED SOLUTIONS

- Regulate the legal status of EPC in compliance with the standards of Acquis Communautaire of Public Procurement of Energy Products and Services in Romania.
- Regulate EPC within the Tax Code and Romanian Accounting Standards in order to harmonize the commercial relations between ESCOs and public institutions.
- Clarify aspects to allow uniform treatment of EPC, from the assignment to the budgetary execution and taxation, by developing the **secondary and tertiary legislation specific for the EPC**.
- **ARPEE** will issue within the next six months a proposal for **standard contract for the EPC** (article 18 of the EED).

Illustration of an Energy Performance Contract

Within the project aimed at getting the Public Lighting System from the City Hall of Turda more efficient, an economy of 40% of energy consumption was achieved. This was facilitated by using energy efficiency lamps, as well as performing dimming and remote management systems.



Public Lighting System in Turda

ENERGY PERFORMANCE OF BUILDINGS

The energy performance of buildings represents the energy actually consumed or estimated to meet the needs associated with the normal use of the building, which mainly include the heating, domestic hot water, cooling, ventilation lighting and preparation of food.

The energy consumption within the buildings represents over 40% of the total energy consumption in the European Union. In Romania, the problem of energy efficiency of the buildings becomes more important as the existing buildings stock is erected in a proportion of above 60% before 1970, inefficient from the energy point of view, and the new buildings, especially the residential ones, have relatively low energy efficiency.

The European Directive 2010/31/EU was implemented in Romania through the Law no. 372/2005 regarding the energy performance of buildings. Through the changes and subsequent additions, as a positive aspect, several subjects have been clarified or reinforced by the law requirements, such as:

- The methodology to calculate the energy performance of the buildings;
- Setting the minimum requirements, making the difference between the types of buildings and their categories, etc.;
- Setting as the main objective to make new buildings with an energy consumption nearly equal to zero, which is to be reached in intermediate stages 2014-2020;
- Energy performance certificates as necessary, mandatory.

Consequently, applying a reference standard of the energy efficiency of buildings should represent a priority in the field, by developing and enacting a realistic and achievable in time national plan.

Taking into account the aforementioned aspects, it is necessary to accelerate the measures contained in the current legislation, using the following main directions:

1. **Completing the existing legal framework** by:

- Drawing up and promoting a **National guide for the design, execution and use of some reference energy efficient buildings** (higher levels,

including almost zero energy consumption). The technologies and the construction materials should be evaluated according to:

- contribution to the energy performance of the building;
- the optimal level of investment and operation costs;
- the analysis taking into account the Life Cycle of the Building – LCA (Life Cycle Analysis), highlighting its impact depending on the chosen construction systems. In this way, the building under analysis in its entirety leads to the real, quantifiable efficiency of the tax incentives scheme.

Illustration of an Energy Performance Contract

Hospital in a former monastery

Scope of project:

Heating system rehabilitation, measurement and automation

Investment: 158 000 €

Area: 8 750 m²

Savings on the contract (15 years): 230 000 €

CO₂ reduction: 4 770 t (15 years)



Hospital in a former monastery (dated from 1650)

- Including the energy efficiency performance, operating costs and LCA among the **mandatory criteria of evaluation in tenders for public**

procurement. The note of the Energy Certificate, the investment cost vs. operation cost, as well as the building impact parameters will increase the project performance, the execution or, respectively, the profitability of the existing building acquisitions. It will therefore stimulate the competitiveness through the offered level of energy efficiency, through more performing and more sustainable solutions and materials.

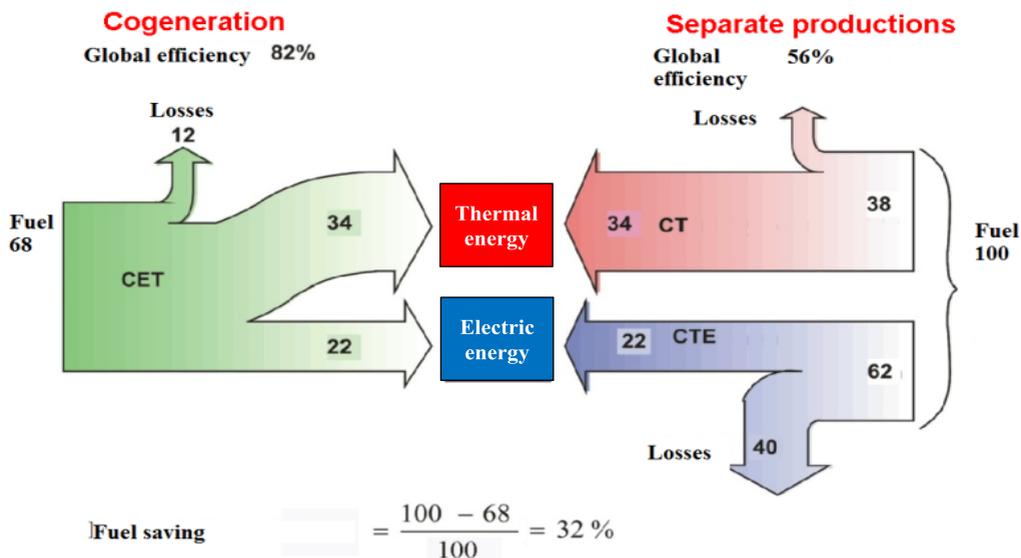
- Taking into account the energy efficiency level of the building in the calculation of the **tax value of the building**. The measure would stimulate by quantifying the energy efficiency impact of the building on the property value, by setting differentiated taxes, similar to the existing criteria of the real estate zoning.
 - Setting up a **public-private partnership** to sustain research, development and innovation of some new solutions and technologies, as well as professional training of the different actors (private and public), efficient from the energy point of view.
2. Gradual application of a **national program of policy and tax measures** with the implementation in a simple and accessible form, in order to encourage the energy efficiency of the buildings through:
- Significant tax incentives according to consumption and the type of energy sources used (tax reduction, loan schemes for the purchase of performing energy material and equipment, preferential loans and interest supported by the state etc.);
 - A responsible behavior of the energy consumers, by being interested in assuming the energy losses or gains (framework contract between the building user and the building manager / developer / owner, etc.).
3. Launching a **national information campaign** on energy efficiency, focusing on:
- Investment and operation costs through the building LCA;
 - Optimal reference technical solutions;
 - Available financial instruments.
4. Considering **energy services** and the **choice of energy** as part of the energy performance of a building (EN 15 603 standard).

5

COGENERATION AND DISTRICT HEATING

CURRENT SITUATION

The transposition of the Energy Efficiency Directive (EED) represents an **opportunity** as it acknowledges the advantages of heat networks and co-generation: possibility to recover lost industrial heat, massive use of renewable energy (biomass), effective production (according to the scheme), better air quality and safety.



Savings generated by cogeneration in comparison with alternative production systems

The application of article 14 (promotion of heat and cooling efficiency) will allow for a mapping of networks depending on the demographic development in the future and energy demand (heat demand).

It will offer the basis for a national strategy that must establish the cornerstone of sustainable management of such networks **resuming refurbishing** and **development of cogeneration plants** included in the DH or in industrial applications, as well as investment in **network refurbishment**.

It is equally a **risk** as the way in which the EED will be applied will probably decide the future of the tens of networks still in operation in Romania and which continue to service more than a quarter of the population with a market estimated at 1 B€/year and more than 50,000 employees and contractors. Actually, these DH networks are, in most cases, in a **precarious financial** and urgent investment is needed in order to increase the efficiency of the systems and provide a long-term sustainable DH business model which would be beneficial for Romanian consumers.

The implementation **system obligation scheme** (article 7 of the EED) would drive DH operators to increase their prices as the energy efficiency market is not yet mature enough in Romania so that they could generate the expected energy savings. These increases will add to the burden on the population because subsidies are halted and could accelerate the disconnection process as well as the end of such networks.

In the heat sector the « revolution of energy efficiency » which Romania must implement, must take place in all areas at once in order to **maintain the economic balance** of DH networks. Upgrading the DH and the development of cogeneration with an increase of prices as limited as possible, must occur simultaneously with the decrease of household energy consumption, so that the invoice remains constant, despite this increase and the scheduled decrease of subsidies.

The alternative to an obligation scheme is the **voluntary agreement** of DH operators and the state, which could play a decisive role for assuring this coordinated approach. The concern of DHN sector, consequent to the implementation of article 7 of the EED, might occur in all energy sectors (see Chapter 6).

PROPOSED SOLUTIONS

- Promote, at national level, high efficiency cogeneration and urban heating through a voluntary energy policy which would exploit the possibility given to member states by the Directive to achieve 25% of the energy saving objective with upstream operations and not via end-users.

- A single regulation authority with a unique methodology at the national level to establish heat prices and applied at local level.
- Revise the state aid scheme for high efficiency cogeneration in order to give investors' confidence and ensuring transparency, sustainability and visibility.
- Simplify the procedure to delegate the urban heating service in order to accelerate the access of municipalities to management tools which will allow for the improvement of energy efficiency.
- Enforce respect of the law on Unitary Heat Zones with in all towns.
- Timely implementation of the gas price deregulation calendar with the adequate protection of vulnerable consumers and maintaining the overall affordability of gas prices. Deregulated prices are essential in order to ensure non-discrimination between heating technologies and give consumers the possibility of an informed choice.
- Reduction of VAT of heat prices for efficient DH (as defined in EED)
- In order to accelerate the improvement of energy efficiency at an acceptable cost, apply support measures (cogeneration/biomass) for refurbished plants so that they meet applicable environment criteria (efficiency included).

The overall efficiency of Brazi Cogeneration Power Plant has increased by 20% in five years due to energy management measures implemented by the District Heating Operator.



Brazi Cogeneration Power Plant

VOLUNTARY AGREEMENTS

ARPEE welcomes the fact that the new Energy Efficiency Directive offers the opportunity to develop a sustainable energy efficiency market, in which various actors (consumers, energy suppliers, and energy services providers) interact based on voluntary agreements.

The purpose of a voluntary agreement is to negotiate a target of energy efficiency, to reduce emissions or to develop better technologies. In return for these efforts, the company or a group of companies may benefit from tax rebates, technical assistance, energy monitoring, energy audits or other facilities. In some countries, these agreements represent alternative measures to regulation or taxation policies.

Voluntary agreements between public and private sector (represented by a company or a group of companies) were developed in many countries in the 1990s, including in The Netherlands far ahead in this area.

Energy efficiency plans realized within LTA could be used in obtaining the environmental permit for large installations.

A company, participating in LTA, can obtain easier the environmental permit, because it must submit, among other documents, an energy efficiency plan, already included in LTA.

In this situation, authorities evaluate the demand and include in the authorization provisions regarding the obligation to implement the energy efficiency and others measures, according to the agreement.

If the company does not fulfill its obligations under the agreement or if it does not take part in all agreement aspects, the institution issuing the environmental authorization may include requirements on energy efficiency. Thus, a company actively participating in LTA may **receive more easily the environmental authorization**. LTA represents a good alternative, in order to increase energy efficiency for a given sector.

In the case of Romania, LTA type instrument can be successfully applied, for industrial sectors such as: metallurgy/steel industry, chemicals and petrochemicals, fertilizers, vehicles, buildings, but, in certain circumstances, in transport and urban energy (rehabilitation of district heating systems). Everything depends on the thoroughness of the partners involved in the agreement (Government, respectively economic ministries and companies).

The Netherlands Case

These agreements were named Long Term Agreements (LTA) and are used as instruments combining voluntary and mandatory aspects.

The agreements have been signed between the Government (the Ministry of Economic Affairs) and the representatives of the economic sector.

Over 44 such agreements were concluded, of which over 29 industrial sectors. Thus, over 1250 companies took part in the agreements, representing 90% of the industrial consumption of the Netherlands.

The average energy saving was of 22.3% in those sectors, representing an annual saving of about 5 billion m³ of natural gas.

The savings are evaluated and followed by the Netherlands Agency for Energy and the Environment.

Monitoring compliance and fulfillment of the agreement, similar to the Netherlands case, where the economies have been evaluated and monitored by the Dutch Agency for Energy and the Environment, is to be made in Romania by the institution responsible for energy efficiency (for example, National Agency of Energy Efficiency).

APPLICATION OF A VOLUNTARY AGREEMENT IN THE ENERGY SECTOR

Energy suppliers would like to reflect upon a «voluntary agreement» in order to avoid a negative impact on energy prices and prepare the country for the application of an energy efficiency policy.

The principle of voluntary agreement would be to assume that yearly consumption decrease of energy consumers is the outcome of the measures taken by operators to increase their awareness. In exchange, operators could **commit with a more important decrease than 1.5% per year**.

In exchange, public stakeholders (ministries, regions, towns) **would direct their investments** toward network infrastructure and the regulator would offer the **flexibility** required to promote energy efficiency in the determination of energy pricing (binomial tariffs, differentiated tariffs, etc.).

The voluntary agreement would thus play a **key role** in the implementation of an energy efficiency market around **five axes**.

Voluntary agreement – Five key axes:

- **Creation of a fund**
 - Revenue of CO₂ auction
 - European funds
 - Others
- **Commitment of the operator**
 - Maintain an amount of savings per year
 - Contribute to the development of the energy efficiency market
- **Infrastructure funding policy**
 - Commitment to finance infrastructure renovation
- **Building renovation policy**
 - Subsidy from the funds
- **Price regulation promoting energy efficiency**
 - Binomial tariff reflecting the cost structure
 - Tariff for transport and distribution
 - Price cap based on individual boiler

Launch a working group made up of ARPEE and public institutions in order to reflect upon the ways to conclude voluntary agreements for energy sector (by applying article 7 of the EED).

ENERGY POVERTY AND VULNERABLE CONSUMERS

The **liberalization of energy markets** during the period 2013-2017 will increase the energy price to the final consumer, either industrial or domestic, through the gradual alignment at their level in other Member States, probably in a more alert pace than that of increases in productivity and incomes.

In what concerns the domestic consumer, from a simple analysis, it results a significant increase of the effort of the state budget to assist **vulnerable consumers** by getting in energy poverty situation of new categories of consumers.

Thus, the only way we can **limit the impact on the budget needed for the social protection**, addressed to energy poverty, is to reduce the energy consumption by increasing energy efficiency of households.

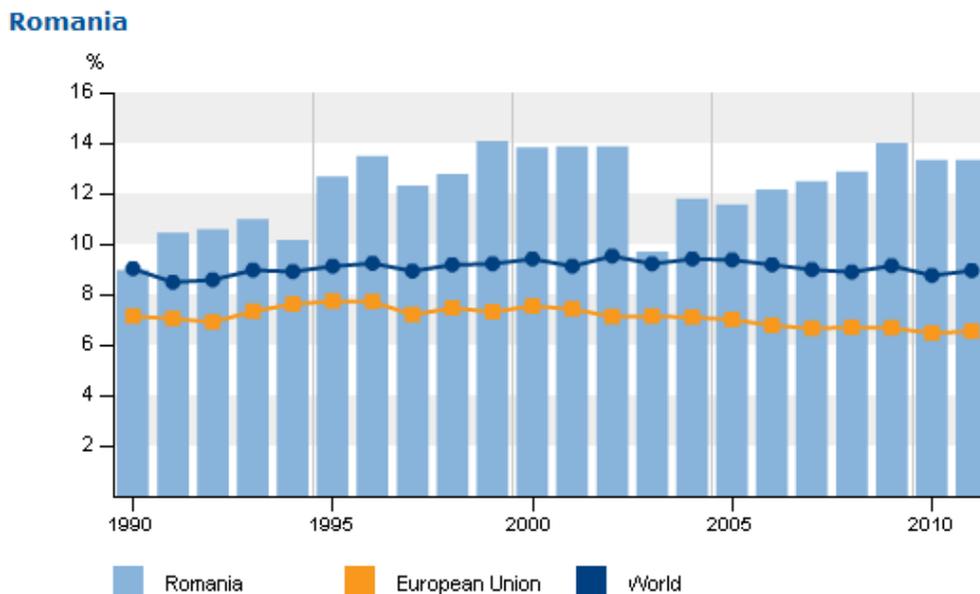
Stimulating measures in this regard is imperative and primarily refers to energy efficiency of housing (new or rehabilitated) and the promotion of efficient heating systems as required by the provisions of the Energy Efficiency Directive.



7

ENERGY EFFICIENCY OF ELECTRIC ENERGY SYSTEMS

Currently, in Romania, the global efficiency of the electric energy generation sector is under the European Union average values, especially for the old power plants, which register an efficiency of 20-22 % lower than similar European facilities. A critical situation is registered also by the transport and distribution networks (electric and thermal) that register losses that are almost double than the average in the European Union.



Losses in electricity transport and distribution networks

In the context of current European requirements and national needs, in the electric energy field in Romania increasing the efficiency is mandatory, both in term of technologies used as well as the management.

Among the **possible solutions** for improving the energy efficiency of electric energy production, transport and distribution **technologies** can be mentioned:

- Rehabilitation, upgrading, modernization or the replacement of the existent facilities of production, transport and distribution of the electric energy.
- Constant promotion of the use of **renewable energy sources** (RES), focusing on the use of **biomass**, important national resource, yet unused, which may have a special contribution in the production of electric and thermal energy.
- Introduction within the systems of production, transport and distribution of electric energy of high efficient technologies (which are economically viable and environmentally friendly), modern systems of measurement and control, as well as the smart energy management systems for monitoring, ongoing evaluation of energy efficiency and energy consumptions prediction.
- Improving the functioning of transport and distribution networks by implementing modernization programs aiming at increasing the safe functioning and quality of services provided to the network users, as well as reducing electric energy losses. It is recommended within these programs, the introduction of advanced equipment, leading to energy savings, ensuring a high degree of reliability and safety in operation. This has the advantage to reduce operational expenses on maintenance, personnel and technological losses.
- The transition to a higher technical stage, by using smart networks (*smart grids*) in the electricity transport and distribution systems, which are designed to efficiently provide and to ensure sustainable, economic and safe electric energy supply. The use of smart metering systems, integrated into a modern distribution infrastructure (*Advance Metering Infrastructure*) will provide efficiency, safety and confidentiality.
- Minimize the impact on the environment of electricity production, transport and distribution activities.

The **management** of these systems plays an important role in increasing energy efficiency. It is required the application of modern principles of economic and energy management and improving the current situation by adopting specific measures.

POSSIBLE SOLUTIONS

- The efficient functioning of the state companies in the field of electricity production, transport and distribution by introducing a professional, independent and responsible management.
- The energy efficiency management systems must be promoted at all levels. In this direction, it is proposed to create, within the electricity production, transport and distribution companies, specialized departments in energy efficiency field that have staff able to develop, implement and monitor energy efficiency programs.
- Each entity of these systems, with responsibilities in implementing the proposed efficiency programs, will establish an internal mechanism to monitor and to report the progress registered in implementing energy efficiency programs.
- Establishing fair prices for the production, transport and distribution of electricity in order to reflect the real costs.

Improving the efficiency of electricity production, transport and distribution requires the identification and implementation of several dedicated financial instruments. Rehabilitation and modernization in this field require significant, long-term recovery investments, fact that justifies the granting of some financial incentives for these programs. The presence of state co-financing will increase the attractiveness of projects and will allow attracting other financing sources.

FOSTERING INVESTMENTS

The growing concern regarding energy efficiency and price increase due to the liberalization of the energy markets in Romania are factors which will push the consumers towards a more well thought through consumption behavior. However, the adjustments cannot be done quickly and, above all, will not be inexpensive. By contrary, years of neglecting the energy efficiency would require significant investments from the state, companies and households, which have to be mobilized as soon as possible if Romania wishes to achieve its EU set obligations in time.

At the same time, investments in energy efficiency, as in any other energy sector, could come if investors think that their money is spent well and there will be a return which will pay off for investment. Therefore, Romania ought to design and implement a framework, in which investors (be it the state, private companies, banks or households) will put their trust and which will be incentivizing for investments, constructed on five main pillars:

- 1) **Ensure visibility to investors.** Need to modify the incentives policy to guarantee a long term vision for investors and to ensure consistency with the energy strategy of Romania.
- 2) **Inform the public** about the benefits of energy efficiency. This matter is often neglected as it is wrongly considered that the benefits of energy efficiency are self-evident. This is not the case, especially in a country with a history of energy efficiency, which is virtually inexistent. Therefore, a national wide information campaign, including aspects related to incentive measures, would be advisable in the short term.
- 3) **Simplification of institutional framework.** The current energy efficiency policy has been affected by the fragmentation of decision process between different state entities, which led to overlapping competencies and often blurred responsibilities. Therefore, it is of utmost importance that the policy becomes coordinated by a unique decision making center, even though other agencies and ministries may still preserve some authority over implementation of specific policies.

4) Preparation of the **adequate legislative and fiscal instruments**. Energy efficiency policy needs sustainable measures, which would continue to produce effects for a long time after it had been implemented. Such effects can be obtained only if Romania successfully develops a market of energy efficiency, where supply and demand will voluntarily create added-value for the society. For some parts of the economy, in particular for energy intensive sectors, this should not be difficult to be achieved because of the price elasticity of the demand. However, for sectors (like SMEs or households) with lower financial capabilities to invest, some more proactive approach would probably be needed. The government should then stimulate the demand for energy services by using instruments which have been proved efficient (and less costly) in other EU countries such as:

- Implement a government-funded energy efficiency program for low income households;
- Tax breaks or state guarantees for loans for measures which achieve important energy savings;
- Reduced VAT for measures achieving energy savings;
- Support for development of innovative financing mechanisms (like ESCO).

5) **Better use of EU funds**. Attracting EU funds remains crucial for domains where huge financing is critically needed (e.g. building insulations, energy infrastructure). Some forward steps could also be made in this area:

- Undertake a thoroughly audit of the processes that have been used so far to understand and eliminate obstacles which made those sectors to be less appealing to attracting EU funds;
- Better information of industrial companies, especially SMEs, about the financing opportunities and process' procedures;
- Make use of EU funds in the process of buildings energy modernization.

Example of biomass cogeneration project

- Installed capacity: 1.24 MWe and 6.7 MWth
- ORC technology
- Investment – 5.8 M€
- Beneficiary: Furniture manufacturing
- CO₂ reduction more than 5000 tons CO₂/year



SPECIFIC CASE OF BIOMASS

Romania is endowed with a significant potential for biomass production, represented by more than 1 million hectares of land not used for any purpose, but which could be used for energy-crops and millions of hectares of forests which need cleaning. This potential should be used for Romania's own national interest: job creation, investments in plants and wood industry, electricity and heat power plants.

Potential analysis of Renewable Energy Sources (RES) in Romania

Type of RES (% of total economic potential)		RES for	Annual energy potential	Economic equivalent energy (ktoe)
Solar Thermal (9.8%)		Thermal energy	60 mil. GJ	1433
Solar PV (0.7%)		Electricity	1200 GWh	103
Wind (13.4%)		Electricity	23000 GWh	1978
Hydro (23.4%) (of which Micro Hydro)		Electricity	40000 GWh (6000 GWh)	3440 (516)
Geothermal (1.1%)		Thermal energy	7 mil. GJ	167
Biomass (51.6%)	Solid biomass	Thermal/Electricity	290 mil. GJ	6917
	Biogas	Thermal/Electricity	15 mil. GJ	353
	Urban waste	Thermal/Electricity	14 mil. GJ	327

Source: PNAER, 2010.

The National Action Plan for Renewable Energies (PNAER 2010) shows that **biomass** is the most important renewable resource in Romania. Despite this fact, it is the least used in an economic way in the context of Romanian energy policy.

A pack of measures has to be taken concerning the **biomass strategy in Romania**: this indigenous resource must be viewed as a main energy resource, cheap and clean, to be used mainly with high efficiency cogeneration small and medium size, for heating and industrial purposes. The wood/biomass should be treated as a major, strategic resource and it should be used for export purposes only for/with high value added products.

Support scheme for biomass/biogas technologies should be strengthened in order to attract investors.

IMPROVING INSTITUTIONAL FRAMEWORK

SETTING UP THE NATIONAL AUTHORITY IN THE FIELD OF ENERGY EFFICIENCY

National Energy Efficiency Authority (NEEA) should be an autonomous authority, legal person, coordinated directly by the Prime Minister or Parliament, financed from his own sources, having as the main aim goal the elaboration, implementation and monitoring of the energy efficiency policy, as an integrated part of the Romanian Energy Strategy. Another important job of NEEA should be to elaborate, approve and monitoring the regulation for the energy services market.

NEEA could establish **territorial structures**, non-legal body, in order to fulfill his obligations at the nationwide.

Financial sources of **NEEA** come from tariffs for authorizations and certificates, annual contributions from the economic operators under the energy efficiency regulation, and international funds.

For the time being, the existing institutional framework is not foreseen to be a responsible institution for energy efficiency. Such body must be established in order to fulfill Romanian obligations to achieve the proposed goals for energy efficiency.

National Energy Efficiency Authority should be established by a Governmental Decision or Parliamentary Law, and having the following main attributions:

- To propose the national policy for energy efficiency;

- To monitor energy efficiency programs, to evaluate energy savings as a result of energy efficiency actions and measures;
- Cooperation with international institution and organizations to improve energy efficiency in all the economic sectors;
- To set up norms and regulations in order to improve energy efficiency and to develop an energy services market;
- To survey the appliances market and to set up energy efficiency regulations;
- To elaborate and coordinate training programs for energy efficiency;
- Accreditation of auditors (for energy audits and certification) and energy managers;
- To elaborate a synthesis of the energy efficiency programs;
- To propose different instruments in order to support the investment effort in energy efficiency: fiscal and financial incentives, voluntary agreements, EPCs, ESCOs;
- To elaborate a set of energy efficiency criteria for public acquisition of appliances, office equipment, etc.;
- Transposition of the energy efficiency European legislation in Romania;
- To elaborate, implement and monitor the National Action Plan in the field of energy efficiency;
- Undertake the comprehensive assessment, as described in EED, concerning the policy and development of district heating networks and cogeneration accordingly, based on cost benefit analysis.

SETTING UP THE DEPARTMENT FOR URBAN AND RURAL ENERGY

Creating, within the Ministry of Regional Development and Public Administration, a department for **Urban and Rural Energy**, responsible for coordinating the public heating systems.

- Within this department two sections are created: one responsible for the buildings (public and private) thermal rehabilitation projects and the second one responsible for making the heating systems more efficient.
- This department assists the local public administration authorities in developing projects for the heating systems modernization; project selection criteria: cost-benefit analysis, the potential for energy efficiency increase, number of customers connected or to be reconnected, etc.
- The department collaborates with the Ministry of European Funds for financing energy efficiency projects made for the rehabilitation of heating systems and the buildings connected to them; it promotes the solutions where the production sources are in cogeneration and / or use biomass.

RESEARCH AND TRAINING

- Promote and develop **partnerships with well-known universities in energy efficiency field**, to facilitate the establishment of R&D, training programs, national and international scholarships, dissemination of best practices;
- Create the legal framework for establishment of **alternation training programs** (dual training system, which allows the integration of work experience inside a long term training period, both for vocational and academic studies);
- Create **Center of Excellence for Training in Energy Efficiency**, aiming to provide initial and ongoing training, at all levels;
- **Assign European Funds** for the period 2014-2020, to support training and development of skills related to energy efficiency field.

This white paper is the result of a working group organized within the ARPEE with the following members:



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