



Source:www.whitehouse.gov

PLANUL Cladire Inteligenta Energetic

Promotion of Intelligent Energy Building PLAN

The PLAN for limitation of pollutants emissions into the atmosphere through knowledge and implantation of the performant-clean technologies for energy generation and use sector, inclusive by Increasing Efficiency at consumers

1.Introduction

1.1.International Policy Instruments that address Climate change limitation for a more sustainable and developed society

In response to human activities emissions ,the climate has started to a a thicker blanket of Greenhouse Gases(GHG) ,acidifying emissions ,eutrophication ,heahy metals emitted by certain installations : We need about energy: certain and inexpansive, sustainable, ecologic and „intelligent“. Also, we want a sure future, agreeable and without „Katrina“! We can't stay inactive! The science mens predict a global cold of climate about the middle of the XXI-th century: in the time of the years 2035-2045, the sunshine will touch the minimum! Let's be partners to the Romania, EU ,Europe, United States ,China ...Planet Energy Efficiency Plan : All people should by effectively protected against reconised

health risks from air pollution ! „The partnerships in campaign contribute successfully to the touch of the objectives of this Campaign, favouring significant the visibility of this Campaign.” – we advise The European Union.



Source: www.global-carbon.co

1. 2. Strategy of reducing emissions and for the Promotion of Energy Efficiency

A European Strategy for Sure and Low Product ,Sustainable and from at Nature much more to take , in ecology and intelligent consumption !.

The Treaty of institution Constitution for Europe establishes: to work of internal energy market in electricity ,secure in supply with energy and promotion efficiency energy ,economy of energy ,for o promote and develop renewable energy (to enlighten-Green Paper - A European Strategy for Sustainable, , Competitive and Secure Energy) .Attention : The Member States shall determine the penalties applicable to breach of the national provisions adopted pursuant to this Directive /Constitution!.

Inclusively `` We implemented a new National Energy Policy, and last summer I signed into law the Energy Policy Act of 2005, the first comprehensive energy bill in more than a decade. ``-President Bush (Advanced Energy Initiative – February 20, 2006). Is necessary,therefore , a strategic Programme for public information, conviction and mutual consulting, cooperation between authorities, producers and customers.

How we assure the Energy Efficiency and Ecology? -Through sustainable energy, renewable energy sources and rational use of energy. The programme's perspective is that innovative energy options, based on existing energy clusters, can make a substantial contribution to a more sustainable society.

Therefore ,for future , Romania –effectively protected against recognised health risks from air pollution and efficiency energy ! Internationals comparisons as regards Intensity of Energy :

**EU 25/Romania-Intensity of primary energy- Tep/1000Euro2005 :0,166/0,546 ; Intensity of Finalis energy- Tep/1000Euro2005 :0,109/0,350 ; Intensity of Electrical energy-kWh/Euro2005 :0,251/0,532 (Annex I). Alarming ! Even if Pollute payment !
In Romania: attention-Intensity of Finalis energy / Intensity of primary energy :0,359/0,512 (Annex II) .In 2020 year :exhaustion gaseous and petroleum fuels ! (Annex III) .Source- Energetics Policy in Romania:2006-2009 .**

That is , Implantation of Polices and Measures in the Energy Sector: must to prevent, reduce and control the emissions .Existing large ,with significant contributors to emissions and global integrated in environmental performance , installations for the production of electricity represent an important part .

In specially sulphur dioxide-SO₂ ,oxides of nitrogen-SO_x and dusts from the Large Combustion Plants (LCP)- combustion installations with a rated thermal input exceeding 50 MW (production –electric and thermal power) and big consumption , that is -Implantation of the performant technologies for energy generation and use sector, inclusive by Increasing Efficiency at consumers ,for environmental performance ! . "To bring depositions and concentrations down to levels below the critical loads and levels ", that is :aims at achieving the available economic potential for energy efficiency !

The PLAN aims at constituting an useful instrument for the Romanian Government and Internationale Authority at the establishment of a climate-related strategy ,as well as at the implementation of new acquis communitaire ; at disseminating information on the current status of policies and measures for limitation of pollutants emissions in the energy sector ; in order to draw up conclusions and recommendations for Romania and EU on how to surpass potential obstacles at the implantation the Treaty establishing the European Community and United Nations Framework Convention on Climate Change (UNFCCC) .

The PLAN presents an integrated and coherent combination of policy instruments , acting individually and unconcerted ,in concordance with the provisions :

- the Gothenburg Protocol to the Convention of the United Nations Economic Commission for Europe(UNECE) on long – range transboundary air pollution (Law no .271/2003 in Romania-Annex IV) ;**
- the Law no. 157/2005 for the ratification of Adheration Treaty for Romania and Bulgaria in correlation with the Directive 2001/80/EC on the limitation of emissions of certain pollutants into the air from large combustion plants (Annex V) :promotion the Implement Directive Plan (IM) and the National Emission Reduction Plan (NP);The Programm of gradual reduction of yearly emissions on pollutants / titulars of activity; Emission Limit Value-ELV;**

- the Law no.199/2000 concerning the efficient use of energy (*Law Petre Naidin*- in my quality of Deputy in the Romanian Parliament) ;
- the Environmental legislation, relevant to the industrial pollution control field, inclusively Directive 96/61/EC concerning integrated pollution prevention and control(IPPC);
- The PLAN for the Promoting of Energy EFFICIENCY implementation –company Dialog com.

Corresponding to Implement Plan -Directive :The PLAN relate to the reduction of SO₂, NO_x and powders emissions at 109 Large Combustion Plants (LCP) from Romania.
In the case of construction of plants information and consultation takes place from PLAN.

2.Knowledge of present situation in Large Combustion Plants Sector



Source: www.energyglobe.at / www.energyglobale.info

2.1.Tehcnical State of Plants –Present Energy Sector in Romania

The major objectives of Policy –achievement of responsibilities in the field of climate change limitation ,inclusively the raise of import dependence on primary energy resources is considerable : Final energy consumption (Annex IX) presents as total and on sectors of economy-industry -41,35 %; home-28,9% (the primary resources consumption in the district heating systems still exceeds ,with 13% ,the corresponding consumption in industry) ;transport-21,6% . Conclusion: public climatic-cities ,municipality is afflicted of noxes emissions , on metalurgy ,cement , rayon,cellulose ,heat ,on period 1950 are urban sectors (example,city Calarasi,where resides) !.

“About 80% on Thermal power station are to set in period 1970-1980-practical to excel the duration of norm life : majority thermal capacities no have equipments with performant installations for the emissions reduction , in this way the emissions of NO_x and SO₂ to excel emission limit value (ELV) -ceilings in EU ; Modernize /retechnology:10%

on capacities from Instalate Power .Hidro-electric power station :37% practical to excel the duration of norm life and are rehabilitations 25% -that is 900MW.Nuclear power station Cernavoda: a reactor -707MW-production 10% from electric power in Romania.

The Centralize Systems of urban heatings : physics and ethical wear of equipments and installations ; wastage and no rehabilitations of blocs and houses ; financial sources for the upkeep and modernizes -hat is big invoices and , Special , disconnect in much cities , the other consumers to pay supplementary `` -Source: Energetics Policy in Romania:2006-2009.



Source:www.curentul.ro

2.2. Future Energy Sector in Romania

Romania orders of reserves in fuels :

-in Coal (solid)

-Potential energetics ,economy-tehnical in arrangement in Hidroenergy sector and

-Potential tehcnical of RES-Renewable energy source.

Unfortunately , the reserves in Natural gas -NH4 and Crude oil have a period estimate of guarantee on : 14 years , that is 2010 .(Annex IV - Situation of resources of primary energy).

In the conditions of prognosis growth in price at hidrofuels , the import of Natural gas (only from Rusie !)- 37,4% in 2005 and crude oil -40,1% in 2005 : energy production on coal and nuclear energy . That is pollutants emissions !

Therefore , is necessary the measures and strategy , that is of a PLAN.

2.3. Levels of total and yearly emissions

Climate models predict that the global temperature will rise by about 1,4-5,8 C by the year 2100 ! This change is and contribution of acidifying emissions –SO₂,NO_x and Ammonia :

-SO₂: Energy Production and Transformation Industry -75,73 % in 2003 (big consumption ;closing of capacities) ;

-NO_x: Energy Production and Transformation Industry-39,24% ;Transport-31,58%; Procession Industry-11,39%;

-NH₃: Dejection of animals-80,26%. ANNEX VI Evolution of acidifying emissions .

The deposition of acidifying pollutants (SO₂, NO_x and NH₃) onto vegetation, surface waters, soils, buildings and monuments reduces the alkalinity of lakes and rivers and has serious effects on biological life. For instance, acidification has destroyed fish populations in thousands of lakes and streams in Scandinavia. Acidification also makes many forests vulnerable to drought, disease and harmful insects- Directive 2001/81/EC of the European Parliament and of the Council of 23 October 2001 on national emission ceilings for certain atmospheric pollutants.

Conclusion:Rapid –implementation the PLAN.

In Romania ,number new and existing plants with Emission limit values is large with significant contributors to emissions :

-42 LCP coordinated by Minister of Economy and Commerce ;

-54 LCP coordinated by Minister of Administration and Interior ;

-13 LCP in property of companies ,

with emissions SO₂-48,5 % ; NO_x -42% from thermal total capacity and Dust-27,8%.

In 2006:number LCP-174:Identical with Directive 96/61/EC concerning integrated pollution prevention and control(IPPC) –Annex VII..

2.4.The obligations of Environmental Authority and titulars of activity

a.Environmental Authority at 1 January 2011:

-transmits European Commission a present plan , with on investements for the installations unidentical ,to include stages foe application of acquis and objective in 2012-possible sanction.

-22th Chapter – Environment – on the incorporation calendar : The transitory periods for correspondation of these Large Combustion Installations was be negociated in two phases, in function to the peculiarity of these installations. The costs for the correspondation isn't not at all petties for these installations and for the implementation to the Directive 2001/80/EC. In 2007, all the LCP must have, obligatory, an environment licence with corresponding programme, which will establish for every LCP inclusive the annual investments. If these objectives are not carried aut, the LCP can be closed;

The procedure: the monitoring by the point of view to the environment factors quality. The investments will be negotiated for every factor: for the improvement of the air quality, for the purification of waters, for every environment factor, they are very detailed. Will express environment licence, with corresponding programme, in phases for every year; annual investments for make and prove the reduction of emissions in every years, in accordance with the international engagements.

b. Titulars of activity-

-Respects methods Directive 2001/80/CE concerning the situations of works unfit of equipments or interrupts; monitoring emissions ;reports emissions ;participant at programmes of instruction; function on the basis of incorporate licence on environment for operation ; the closure of a plant included in the national emission reduction plan shall not result in an increase in the total annual emissions ;the technical and economic feasibility of such emission reductions ;
-change in the choice of fuel used.

Annex VIII : The Provisions on Implement Plan

2. 5.The estimation of social effect for big cost

Home Policy and strategy Gouvernement -1990-20...50 :Nation it "mine twin brother "that is :

-policy for regional and local development -reduction of specific energy consumptions ,promotin of small CHP,local RSE;

-policy for social protection-heat metering and control ,thermal insulation of dwellings;

-policy for environmental protection-institutional cooperation ,investment funds for energy efficiency ,promotion of renewables.

Are imperative for population -economy effience: subvention of thermal energy , social tariff for electric power ,therefore reduction of production costs with 30%.

How? .

Strategy PLAN:

-rehabilitation in the thermal sector-power 950 MW , to shut thermal power station unperformances (" in 2005-2010 te be out of order -power 2100 MW and into building 1100 MW ");

-reduction wastage into transport and distribution sector;

-security into to feed with energy ;

-market competition -environment and internal , of energy ,inclusively with green certificates and to legislate conception -"white certificates ".To enlighten The PLAN for the Promoting of Energy EFFICIENCY -The grant Program de acordare of supports for population, as subventions, limited in time, for warm houses and preparing of warm water, inclusive for the instalation of warm systems, for streamline of consumption, safety and life quality.

Due to economic breakdown is necessary into investments of sector -2006-2009: natural gas NH4-1.100 mil.Euro ; crude oil-petroleum-1.750 mil.Euro , that is financial national effort.



Source:www.motivia.fi

3. Implantation of the Performant and Clean technologies for energy generation and use sector

Energetics total Efficiency and in costs to makes certain for each ,therefore,and total -producer (slack link point of view),conveyer and final consumer.

3.1. The Program For put into practice of Law no.199/2000 concerning the efficient use of energy (*Law Petre Naidin*), at any trade society or local authority (more than 20.000 peoples)-Annex , establies and imposes:

- agree the Program for development of the energy efficiency for the time 2006-2010, in association with a device for give a financial support from the state budget and local budgets for the development of the energy efficiency;
- the urgent needs for investments and rehabilitation in the thermal sector (that ensure approx.60% of the electricity consumption;
- The efficiency Program of industrial energy consumption;
- applications with environmental norms(in the *acquis communautaire*).
- reorganization and restructuring of the activities generation based on lignite ,through the creation of energy complexes.

Practicable , The technologies for :- Termoelectrica – Power plants: Deva, Petrotel LUKoil, CET Govora, Electric Plant from Zalau, Arpechim Pitesti(member of the OMV Group) go in under the incidence of the Directive 2001/80/EC ; Sidex Galati , plan de conformation , 100 mil.euro for investitions.

3. 2.Implementation Performant Technologies

Defines - Performant Technologies -best available techniques.

Are necessary in 2009 an Thermal Power into central systems : 3mil.toe ; because standard of living develops and national economy reestablies .

Romania ,desirable , development and sustainable :in 2002 are connections -2.350.000 houses (55% on urban medium and 29% from Romania) are in coupling . That is to feed 1.900.000 families –in 2006 .

Annex X: Energy Consumption primary and electric power development -2,5%/year and thermal with 1,5 %/year – from Thermalheating –thermal power station (CT) and Electric Thermal Power Stations (CET)/ city , district ,headquarters .

Is feasible the combined production of heat and electricity. This solution represents a valuable opportunity for significantly improving overall efficiency in fuel use.

The power intensity in Romania is as a matter of fact double face to EU25(Annex I), that is must to increase the Energy Efficiency: therefore, it impose the power standardization – the expulsion to the inperformating products and technologies; the introduction of the technical development programmes; the best available techniques, which not produce waste products an use not dangerous substances, the fast monitoring – Demand Side Management(DSM), the accidents prevention, in according to the Directive 96/61/EC.

Proposal Central Authority: Utility crude oil with sulphur <1%;Installations on desulfurion of gases;Ardents with reduced NOx;Modern mills on coal ;Modern furnace gas ;Regulate and control ardent ;Introduction on airsols ;Ardents mixeds for natural gas and light liquid fuels. Debatable!

a. Promotion of Co-generation , a significant increase in the use natural gas

PLAN proposes a programme for Thermalheating rehabilitation and commissioning of new co-generation units; parallely ,old units will be shut down: many residential consumers to decouple themselves from the district heating

network and install individual heating systems. Price : triple , because price natural gas develops (from Rusia).Moreover , Central public authorities reduces of subsidies (then ousts) ,and Local are in financial deficit !

The best solution for the increase of energy efficiency(quality, power intensity, economic and social commitments) and the improvement of the environment impact is the combined and simultaned production of more energy forms-CET: co-generation and triple-generation in large capacity unions(well-known conception on the Thermalheating - the production of electric and thermal power – Electric Thermal Power Stations). The advantages of this solution are:

- the fuels saving face to the distinct production, therefore the reduction of pollutants emissions;
- assure the energy efficiency, inclusive the conversion, even in costs;
- allow the use of performanted combustion plants – the combustion machines with reduced emissions of NO_x

and monitoring by combustion gases analysors.

The co-generation system necessitates means for performances increase through:

- the optimization to the steam extraction of turbines;
- the improvement of the steam thermal cycle;
- the use of combined cycles – fuel-gases-steam, especially without post-combustion, which assure, in

Thermalheating regime, a global efficiency more than 85% and double quantity of electric power.

The triple-generation system is the combined production of electric power, heat and cold. This system assures annually a rising efficiency of central Thermalheating system(applied in Japan, United States – District Heating and Cooling(DHC)). Is necessary to introduce this system in temperate zones of Europe(inclusive commercial centers and public buildings).

b. The efficient solutions:

- the installation of own Electric Thermal Power Stations for districts, towns and companies, especially at large variations of the electric and thermal power necessary, with the investment salvage in 3-4 years(especially a mixed cycle steam-gases with post-combustion); the suggested consumption of NH₄ or electric power(it expulse the network wastages and with the advanced salvage of wastages, through, for example, heat changeables).
- a significant increase in the use natural gas ,in particular through the use of gas turbines



Source:www.whitehouse.gov

c. Alternative fuels : The future of Hydrogen

Accelerating Future Technologies-In his 2003 State of the Union Address, President Bush announced a \$1.2 billion Hydrogen Fuel Initiative to reverse America's growing dependence on foreign oil by developing the technology for commercially viable hydrogen-powered fuel cells to power cars, trucks, homes, and businesses with no pollution or greenhouse gases.

Fuel Cell is a convertor of energy that transforms direct Hydrogen in electricity(warmth for buiding and industry) with superior efficiency face on thermal motors.Spiraling oil prices, soaring world demand, long-term oil supply worries, and increasing concerns over the climate impact of carbon emissions all are factors contributing to rapidly growing support and serious efforts toward the development of a hydrogen-based economy: thermodynamic efficiency, fuel chain efficiency.

Future Plan : Hydrogen Sources, Alternative fuel paths and solar Hydrogen, infrastructure choices and Nuclear Hydrogen

d.Development of Clean-Renewable energy sources sector for Romania

Energy is clean, abundant, widespread, and renewable. Various technologies can capture this energy, concentrate it, store it, and convert it into other useful forms of energy.The share of RES in electricity production will be of : 30% in 2010 and 30.4 in 2015 (will be in the consumptions structure it will be of 11% in 2010 and 11,2% in 2015 ;in 2000- was already of 10%) .In Annex XI - Important potential- Situation of RES :Biomass ,Hidroenergy, Wind energy, Solar-thermal energy, Geothermal energy.

e.Financing mechanisms

The total costs for the LCI are for 2004-2017 : 2,403 billions euro approximately, till from 2013 and 2017, in function to the transition period negotiated -

- 1,515 billions euro-LCP coordinated by Minister of Economy and Commerce ;**
- 0,608 billions euro-LCP coordinated by Minister of Administration and Interior**
- 0,280 billions euro- LCP in property of companies .**

Note: necessary -7 billions euro , from declaration of Minister !.

The investment programs and projects in the Implantation of the Performant and Clean technologies for energy generation and use sector will be fianced from:

- Fund of environment –for reduction of impact over air ,water and earth ,inclusively to raise public awareness ,disseminating knowledge good practices and understanding
- Tax on unbreakable for emissions:Dust -0,042 lei(RON)/kg ;NOx-0,04 lei(RON)/kg ; SO2-0,04 lei(RON)/kg ;
- The Ministeries have special programmes(with the World Bank or with other banks).
- own capital resources (of investors) ;
- special funds Third Party Financing ;
- Joint Implementation (JI) of the Kyoto Protocol can be make the retechnologisation;
- guarantees and financial instruments specific to the banking system.

The consulting in the access from finances inreimburse founds or in cofinancing in the investment field for the assure of the energy economy and environment protection or information:

- The presentation of a Finance Guide by Structural and Cohesion founds , Framework programmes of European Union, respective of the incomes of central and local budget, UNDP/GEF Energy Efficiency Financing Team,
- FREE - The Romanian Energy Efficiency Fund-is a financial institution providing commercial financing of investments projects aiming the rational use of energy (RUE-The Fund assists industrial companies and other energy consumers in adopting and use of modern technologies for efficient use of energy. Thus, the Romanian economy could be affected by the reduction of its final energy intensity and the mitigation of Green House Gases and other pollutant emissions. the finance from the Global Environment Facility).

Proposals Law:exemption of accizion for delivery on NH4 and liquid fuels in development

Thermalheating ;reasonable redemption ,in time,of investment ;stimulation of producers for development of technologies and products with big efficiency energy.



Source: www.bioeco.org

4.The reduction of the energy consumptions

The PLAN is develop in :The PLAN for the Promoting of Energy EFFICIENCY
An exposement :

4.1 . The reduction of industrial consumptions

The industrial sector register the largest energy consumption and taking into consideration the prospects of an economic increase from 4-5% for the next years, the activities for consumption reduce in this field are absolute necessary. In this meaning, it take into consideration the next measures:

- programmes for substitution or modernization of the power equipments, worn-out moral and physical, large energy consumers(boilers, furnaces, compressors,etc.);
- programmes for introduction to the variable revolution at the electric motors, measure through that it can reduce the electric energy consumption with approximately 30%;
- the introduction to the Long Term Agreement, as a form of partner ship between Government and the various professional associations(chemistry, oil chemistry, metallurgy, large energy consumers) for the reduction of power consumption in the respective fields;
- the attraction of the power services companies or investors, by a proper legislation and a clear policy of fiscal and financial incentives;
- the increase of the capacity to the companies' managers, through the giving assistance by The Romanian Agency for Energy Conservation -ARCE, meetings with romanian and foreign experts, information campaigns, etc.);
- the introduction of the label for the equipments, in function to the power consumption;
- the improvement of the power management, by the formatting to the authorized persons in the field of energy administration.

4. 2. The reduction of the consumptions in transports field

The possible measures who can be adopted are:

- the adoption of a firm legislation for the engines which pollute;
- the introduction of bio-fuels;
- the introduction of alternative solutions: hydrogen engines, electric motors, gas, etc.;
- the substitution of a stock through the giving to the facilitations for those which want to change the car.

4.3.The reduction of the consumptions as part of the towns

The towns become an important consumer. For the reduction of the power consumptions in these communities, will carry on actions like these:

- the realization of the local strategies for energy efficiency;
- programmes concerning the urgent rehabilitation of central heat systems;
- the introduction of the use to regenerated energy;
- the promotion to the little and middle power co-generation.

4.4.The reduction of the consumptions in the buildings field



Our 'Saving Energy in your Home' interactive house will help you save energy and money

Source:www.edfenergy.com

The sector of public buildings has a large potential for reduce of energy consumption in buildings. In this meaning, are in working a series of norms or prospect programmes, how will be:

- technical settlements at European level concerning the thermal insulation for the buildings which will construct in the future;
- programmes for thermal rehabilitation of the existent buildings found;
- the introduction, from 2005, of the power certificate for buildings;
- programme for introduction to the individual measurement, at the national level, especially for thermal energy; in a background of the EU Programme, launched already a project of 5 millions euro in this meaning;
- the increase of the building managers to take measures for the energy consumption reduction.

5.GLOBAL- Pollution , congestion and environmetal impact in Romania

Through the development of new, innovative energy solutions a substantial contribution can be made to environmental goals -these green electricity produced -e.g. reduction of greenhouse gas of CO² emissions. (Romania: corresponding to first period from engagement -2008-2012 under the terms of the Kyoto Protocol ,the impact are measurable and has committed itself to reduce its GHG emissions by 8%, compared to corresponding emissions in the base year 1989.) In 2007 ,first date that is part –surplus from cap and trade 50 million tone of CO2 equivalent /year and participation “Green Investment Scheme / ETS /Assigned Amount Units ” .

The Energy Sector ist the first source from pollution in Romania :especially ,on the burning of fuels-88% on the total emission of greenhouse carbon dioxide-CO2 and nitrogen oxides-NOx ;90% in all sulfur dioxide-SO2 ;72% from powders in suspension . The justification ist the technical state of equipments-80% on the thermal power plants have builded in 1970-1980 and district heating –now are the physique and ethical wear ; investments , in the transit period 2006-2009 , for the climate policy – about € 2,8 milliard ,in bigs plants from burning (inclusively ,price in the energy price). Therefore ,to apply :capacity building for Greehouse Gas (GHG) Emission Reduction through energy efficiency improvement ;promotion of cogeneration ,promotion of cleans and renewables technologies , especially wangles of fuel and to use hydrogen ,as energy vector.

The objectives and proposals for:

-The Project -Capacity Building for Greenhouse Gas (GHG) Emissions Reduction through Energy Efficiency in Romania: Energetic optimization of the municipalities and cities for local project -Reduction of consumption in buildings- apartments and public system of illumination ; Rehabilitation and extension of the heating system ,installation of metering equipment , inclusively promoting decentralized combined heat and power production –the cogeneration plant ; To promote the use of renewable energies ; Thermal rehabilitation of the houses of the home consumers .Estimated reduction of 1 kg CO2 /year at the economy from 4 -5 Kwh/year ;

-The Project – Capacity Building for GHG precursors(with acidity effect –NOx,SO2 ,inclusively powders in suspension and sediment) Emissions Reduction through Energy Efficiency in Romania : Energy Efficiency improvement ;Thermic rehabilitation and modernization to cleaner technology , of the company – bigs thermal power plants on hydrocarbons ,hard coal,lignite ,hydrocarbons ,refinery ,petroleum : estimated reduction 10% till in 2010;
- The Project-Sustainable Transport through the monitoring and administration of the Energy Consumption (moreover for NOx ,yet and the emissions from the heavy metals, powders in suspension and sediment)-fuel efficiency and alternative fuels , biomass-to-ethanol/biodiesel production technology ; discongestion traffic : estimated reduction 8 % till in 2010.

ANNEX I

**Internationals comparisons as regards Intensity of Energy
-Tep/1000Euro2005-**

Zone/Country	Intensity of primary energy	Intensity of Finalis energy	Intensity of Electrical energy- kWh/Euro2005
EU 25	0,166	0,109	0,251
EU15	0,153	0,101	0,239
NM10	0,419	0,256	0,487
Germany	0,156	0,103	0,227
Greece	0,189	0,124	0,295
Portugal	0,178	0,126	0,285
Hungary	0,314	0,212	0,393
Czech Republic	0,458	0,264	0,568
Poland	0,434	0,266	0,467
Romania	0,546	0,350	0,532

Source: **Energetics Policy in Romania:2006-2009**

ANNEX II

**Intensity of primary energy and electrical energy
-Tep/1000Euro2005-**

In Romania

Year	2000	2001	2002	2003	2004	2005
Primary energy	0,605	0,597	0,546	0,555	0,512	0,511
Finalis energy	0,368	0,353	0,350	0,358	0,359	
Electrical energy- kWh/Euro2005	0,544	0,571	0,532	0,533	0,509	

Source: **Energetics Policy in Romania:2006-2009**

ANNEX III

Situation of resources of primary energy

Fuels	A.Reserve		B.Yearly production - Mil.tonnes	C.Period estimate of guarantee-YEARS:C=A/B
Coal (solid)	Mil tonnes	Mil. toe		
-lignite	-721 (28 in 2005)	274	3	240
-huila	-3400(2,9 in 2005)	629	28	121
Crude oil (liquid)	Mil.tonnes-74	Mil.toe-72	5,2	14 Grave
Natural gas –NH4 (gaseous)	Mld.tonnes-185	Mil.toe-159	Mld. Tonnes-12,9	14 To reflect
Uraniu-a reactor	Mil.tonnes-7,5	Mil. toe-107	0,061	122

Source: **Energetics Policy in Romania:2006-2009**

ANNEX IV

Law no .271/2003 ratifies The Protocol Gothenburg - in 2010-Romania-Ceilings and reduction targets :
-SO2 -918 ktonnes/year (LCP-336 , that is 36,6%)
-NOx-437 ktonnes/year (LCP-114, tfait is 26,08%)

ANNEX V

Implement Plan -The derogations for territory Romania of DIRECTIVE 2001/80/EC on the limitation of emissions of certain pollutants into the air from large combustion plants –article 4 (3) , Annex III, IV, VI ,VII

EMISSION LIMIT VALUES (ELV) for SO2, NOx and Dust

Year –term 31 december	Emission and number plants	Ceilings and reduction targets at total plants –Emissions Aim in Purpose(Percentage reductions-%)- in ktonnes/year
1980		SO2 :561 NOx:135 Dust:189,8
2004		174-LCP:Identical with Directive 96/61/EC concerning integrated pollution prevention and control(IPPC).
2006		Conformation-36 LPC

2007		SO2 :540 -534 ,698 NOx:128-117,164 Dust:38,6-34 ,799	(4,7%) (13,21%) (81,67%)
2008	SO2-1 NOx-9 Dust-2	SO2:530-512 ,043 NOx:125-110 ,508 Dust:33,8-29 ,861	(8,72%) (18,14%) (84,27%)
2009	SO2-1 NOx-6 Dust-3	-	
2010	SO2-6 NOx-15 Dust-6	SO2:336-328, 052 NOx:114-103 ,733 Dust:23,2 -22 ,448	(41,52%) (23,16%) (88,17%)
2011	SO2-8 NOx-19 Dust-7	-	
2012	SO2-3 NOx-4 Dust-	-	
2013	SO2-15 NOx-11 Dust-4	SO2:148-144 ,000 NOx:112-101, 214 Dust:15,5 -14 ,661	(74,33%) (25,02%) (92,27%)
2015		SO2 :Unaccuracy -95 ,281 NOx : Unaccuracy-87 ,490 Dust: Unaccuracy - 14 749	(83,01%) (35,19%) (92,23%)
2016	NOx-6 -note	SO2 : Unaccuracy -102 ,560 NOx:80-76 ,115 Dust : Unaccuracy - 14 ,599	(81,72%) (44,61%) (92,31%)
2017	NOx-6-note	SO2 : Unaccuracy -95, 220 NOx :74-69 ,917 Dust : Unaccuracy - 14, 599	(83,02%) (48,21%) (92,31%)

Note: Derogation-Emission limit values for NOx (measured as NO2) for plants > 500MWth non applies in 2016 and 2017 for 6 plants-thermic capacity 6909 MWt in Romania- cities Oradea ,Deva,Rovinari,Turceni,Suceava.

Source: **The National emission reduction Plan (NP)**

ANNEX VI

Evolution of acidifying emissions

- ktonnes/year-

	1990	1995	2000	2001	2002	2003	2004
SO2	1311	1085	759	834	781	803	960
NOx	546	407	296	330	367	325	437
NH3- Ammonia	300	234	206	164	156	182	210

Note: Sources of emissions-

-SO2: Energy Production and Transformation Industry -75,73 % in 2003 (big consumption ;closing of capacities) ;

-NOx: Energy Production and Transformation Industry-39,24% ;Transport-31,58%; Proceession Industry-11,39%;

-NH3: Dejection of animals-80,26%.

Source: **Energetics Programm in Romania:2007-2013**

ANNEX VII

The Situation in 2004 of the Large Combustion Plants(LCP)>50 MW

Identical with Directive 96/61/EC concerning integrated pollution prevention and control(IPPC).

Type of pollutants and the correspondation to the requirements of the Directive 2001/80/EC	SO ₂	NO _x	Dust
Total no. of LCP, of which:	174	174	174
Total no. of LCP corresponding in 2004	75	30	102
Total no. of LCP incorresponding in 2004, of which:	99	144	72
Derogation in according with 4th art., letter a) of the Directive 2001/80/EC(D44a)	34	34	34
Will be closed till to adheration date	10	10	10
Will be corresponded till to adheration date	21	36	6
Total no. of LCI which request transition, of which (% on total thermic capacity) :	34 (48,5%)	64(42%)	22(27,8%)
Request 1 year transition (T1)	1	9	2
Request 2 years transition(T2)	1	6	3
Request 3 years transition(T3)	6	15	6
Request 4 years transition(T4)	8	19	7
Request 5 years transition(T5)	3	4	-

Request 6 years transition(T6)	15	11	4
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Source: **Energetics Policy in Romania:2006-2009**

ANNEX VIII

The Provisions on Implement Plan

The National Emission Reduction Plan	The Programm of gradual reduction of yearly emissions on pollutants / titulars of activity
<p>1.109- Large Combustion Plants (LCP) from Romania- -42 LCP coordinated by Minister of Economy and Commerce ; -54 LCP coordinated by Minister of Administration and Interior ; -13 LCP in property of companies. 2.Activity in production of energy : -38 LCP-electric and thermal power (cogeneration); -14 LCP-electric power; -50 LPC-thermal power; -industrial sector:7 LPC-metallurgy; 1 LPC-refinery ;2 LPC-petrochimie; 2 LPC-to metals process. 3.Central Authority verifies ,monitoring and reactualison NP.</p>	<p>1.Fuels native and import:solid- coal (huila and lignit);liquid –crude oil ; gaseous –natural gas(NH4) ; refinery , coke battery and furnaces gas. 2. Titular sconces Programm: a.The public informations: - to establish Emission Limit Value-ELV; -technology measures of reduction emissions; -terms for implementation ; -measures of monitoring and evaluation ; -financial costs. b. The main objectives : -elaboration of feasibility studies ,with solutions for new technology implementation-function of-geography zone and local condition of environment ; -dissemination and use of current data; -demonstration projects-elaboration of a legislative framework; -investements funds and implantation the programm c.Respects methods Directive 2001/80/CE concerning the situations of works unfit of equipments or interrupts; monitoring emissions ;reports emissions ;participant at programmes of instruction.</p>

ANNEX IX

Final energy consumption -Mil.toe

Year	2000	2001	2002	2003	2004
	22,163	22,438	23,370	25,153	27,331

Industry %	40,7	41,7	45,4	43,3	41,3
Transport %	15,8	17,7	18,4	17,2	21,6
Home %	38,1	32,1	31,2	31,3	28,9

Source: **Energetics Policy in Romania:2006-2009**

ANNEX X

Energy Consumption primary(1) and electric power (2)

		2004	2005	2006	2007	2008	2009	2009/2004	2010	2015
1.Total -on inhabitant	Mil.toe	39,018	41,360	42,270	43,560	45,000	46,300	1,187	47,65	51,5
	Toe/inhabitant	1,80	1,91	1,96	2,03	2,10	2,17	1,205	2,24	2,47
2.Total -on inhabitant	GWh	50745	51889	52790	54550	56130	57970	1.142	59500	67500
	Kwh/inhabitant	2342	2400	2450	2540	2625	2720	1.161	2800	3230

Source: **Energetics Policy in Romania:2006-2009**

ANNEX XI

Important potential- Situation of Renewable energy sources for Romania –RES

Energy	Potential energetics-technical in arrangement - year 2006	Details	Future
Hydroenergy	Total-36 TWh/year; Economy-23-25 TWh (Power nominal-8000MW);In 2005-in exploitation-80% capacity; buiding-600MW(potential-1870GWh/year)	Technology transfer for the erection of new stations ,completing and/or rehabilitatin of existing ones. Necessary-attraction of private capital ;reduction of taxes.	840 MW will be installed (240 Mw in small plants)
Biomass	Energetics-7.594 ktep/year : Residues of vegetable waste from agriculture and forestry : -forestry and fire wood-15,5%;	May cover 70% of the engagements in RES.	Objective-equivalent consumption of 3.347 ktoe until 2010; installing new

	-sawdust and rests from wood-6,4%; -agricultural wastes-63,2%; -home wastes-7,2% -biogas-7,7%.		units/cogeneration and units using biomass.
Solar-thermal energy	Thermal-1434 ktoe/year ; Photovoltage-1200GWh/year.	Five geographical zones were identified:solar energy flow - 1000-1300 kWh/m2 year .	Heat production : replace existing heat sources in a 50% share at hot water and 15% heating.
Wind energy	8 TWh/year	Five areas werw identified : high potential exists on the Blak Sea coast,in Moldavia and Dobrogea -in mild and severe climat	Can be installed 14.000 MW -2000MW on the Blak Sea
Geothermal energy	Sources of low entalpie: 167 ktoe/year ;present in exploitation-30 ktoe/year.	The main objectives : -elaboration of feasibility studies ,wirh solutions for new technology implementation ; -dissemination and use of current data; -demonstration projects- elaboration of a legislative framework.	Total capacity at installing -2003-2010:441,5 MW electricity and 3.275.640 ktoe/year thermal energy ; -2011-2015-789 MW electricity and 3.527.700 ktoe/year thermal energy

Source:Legislation in domain



Source:www.whitehouse.gov



What ANIMAL Are You ??

Source:www.jokesandhumor.com/tests/animal/