

7. CTI Capacity Building Seminar
**Climate Technology and Energy Efficiency-the
Engine for Economic Growth and Innovation**

**SERBIAN ENERGY STRATEGY PRIORITIES AS
INSTRUMENTS FOR GHG EMISSION REDUCTION**

Prof. Milovan Studovic, Energy Strategy Expert
Regional Environmental Center-Country Office in Serbia

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SERBIAN ENERGY POLICY/STRATEGY PAPER

Contents of the Paper:

- State of Art in Serbian energy system: Energy Demand and energy Supply sectors
- Foundations of a new Serbian Energy Policy
- Macro-economic assumptions and Energy Demand projections, up to 2015. year
- Main priority Programmes in energy supply and energy
- Economic conditions of energy companies and investment program
- Implementing and monitoring the realization the Priority
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SERBIAN ENERGY SECTOR

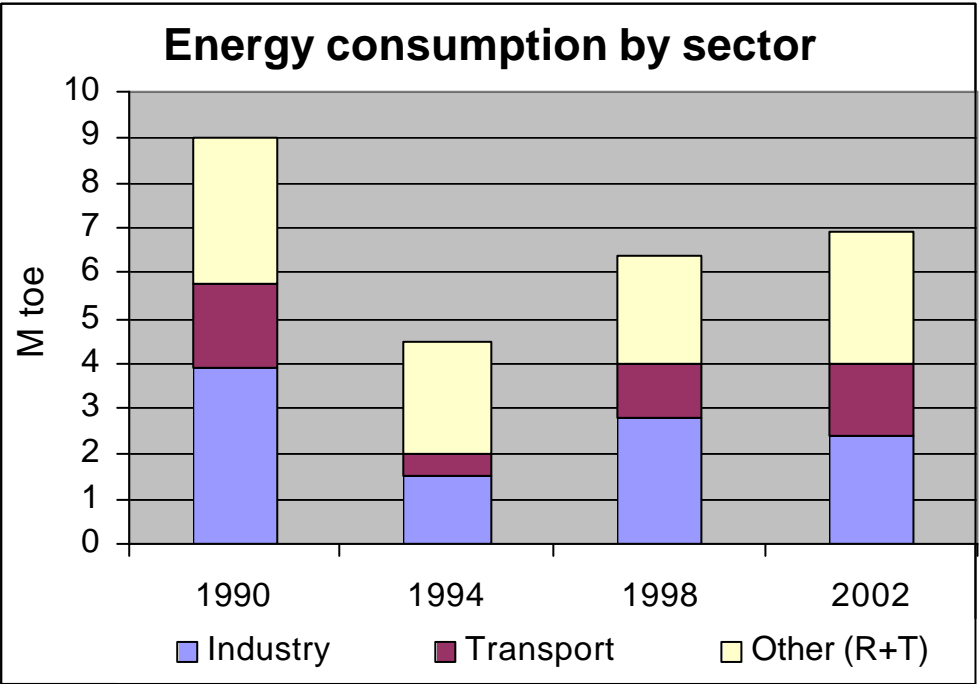
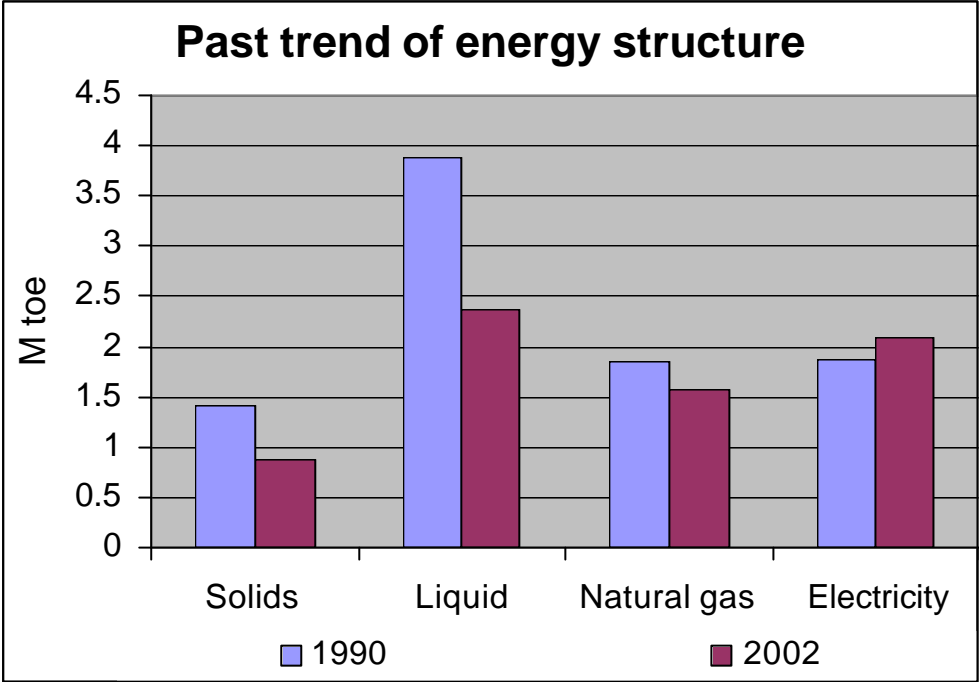
-STATUS AND PRIORITIES-

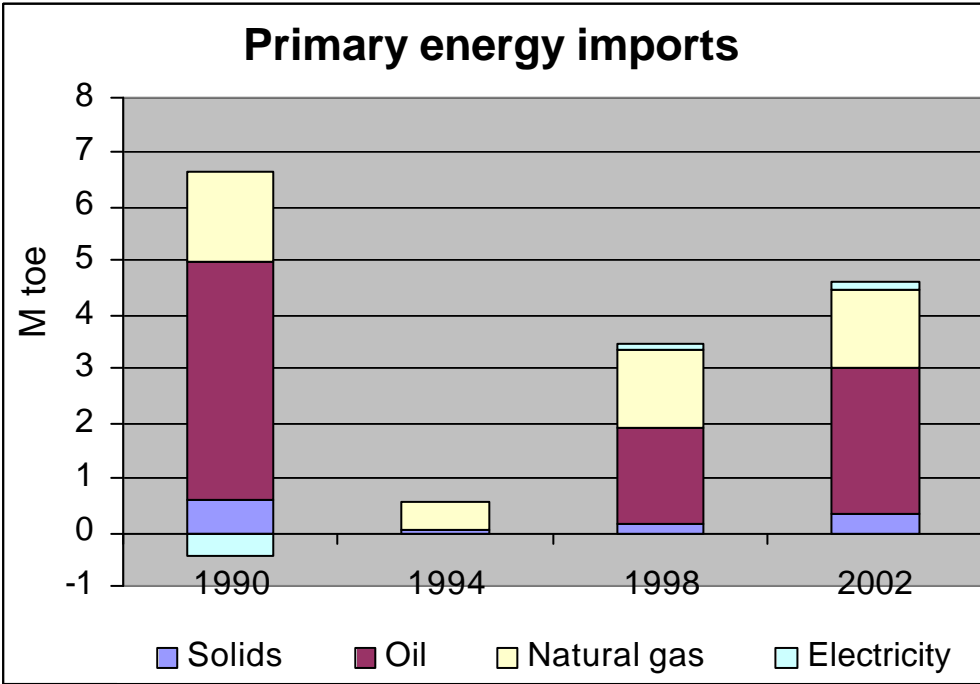
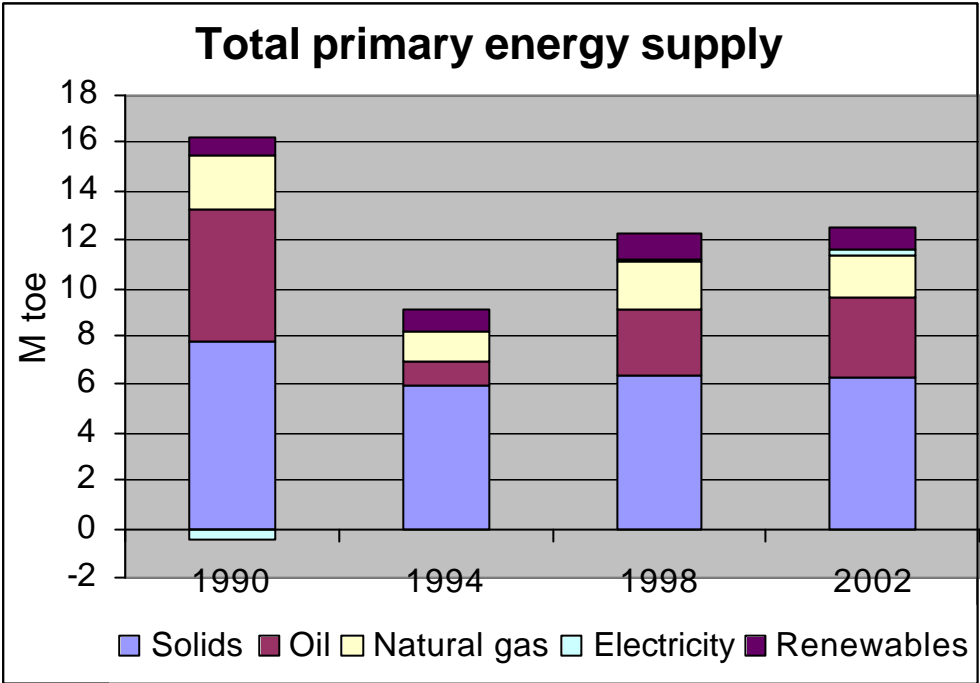
The main lessons:

Successful rehabilitation and modernization of energy production infrastructure,

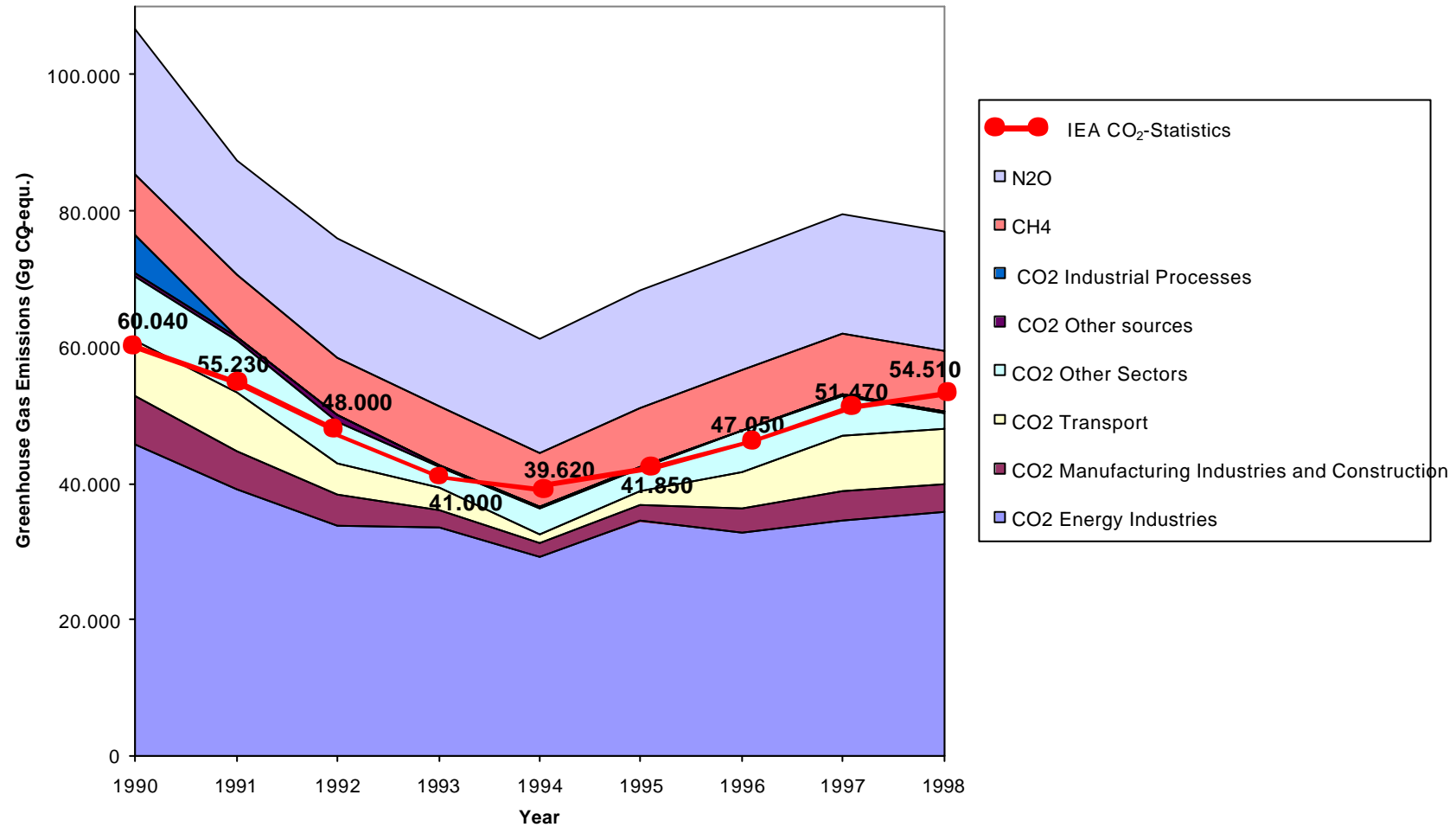
? Reliable plants operation and safe energy supply

- Adjusted energy demand with production capability of energy infrastructures,
? Better energy services and lower energy imports
- Energy pricing policy improved financial sustainability of energy company,
? Better conditions for own investment in maintenance
- Energy efficiency Programmes coordinated by Energy Efficiency Agency under Fund/Grant/loan EAR, WB, KfW, Norway, Spain.....,
? Inception phase for establishing the ambient and implementing the new instruments for Rational energy use
- Energy legislation: Energy Law and Energy Sector Development Strategy Paper adopted by Parliament, Council of REA appointed by Parliament, Restructuring of the Electric Power Industry, Oil and Gas Industry completed, Secondary legislation, Action Plan for Priority Programmes realization and documents for Kyoto Protocol ratification under preparation
? Decentralized and market based energy system operation will bring overall economic benefits, respecting the social and environmental acceptance
- Strategy of country socio-economics development, not approved yet,
? The Paper “Foundations of Serbian Energy Policy” (WB/MoME, May 2003.) with a reviewed and forecasted macro-economic data (from 1990 to 2015.) used in the preparation of the Serbian Energy Sector Development Strategy

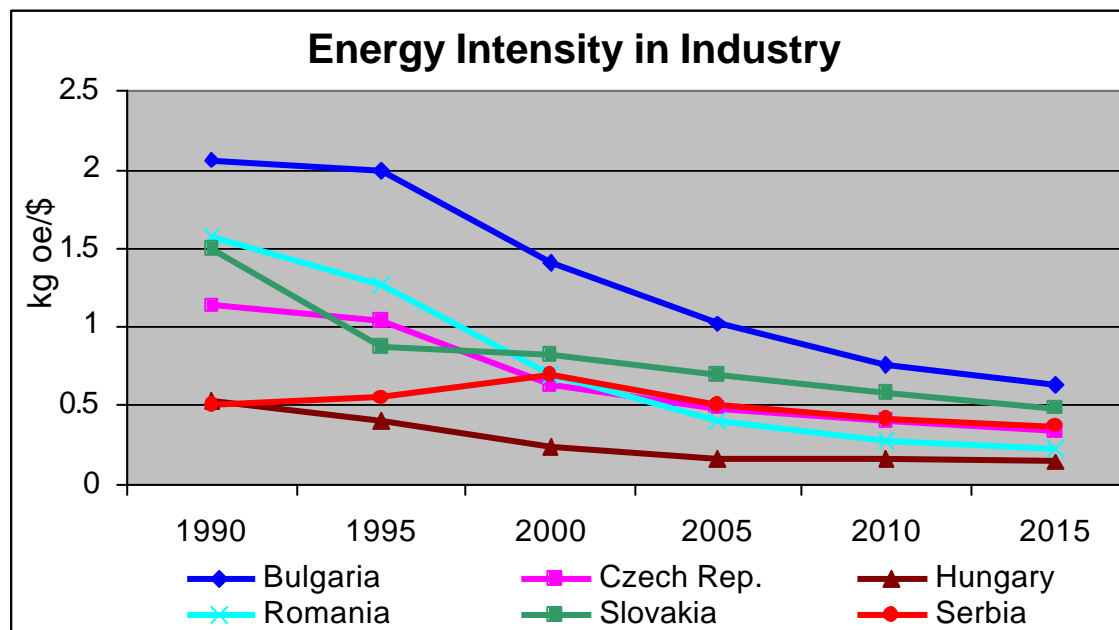
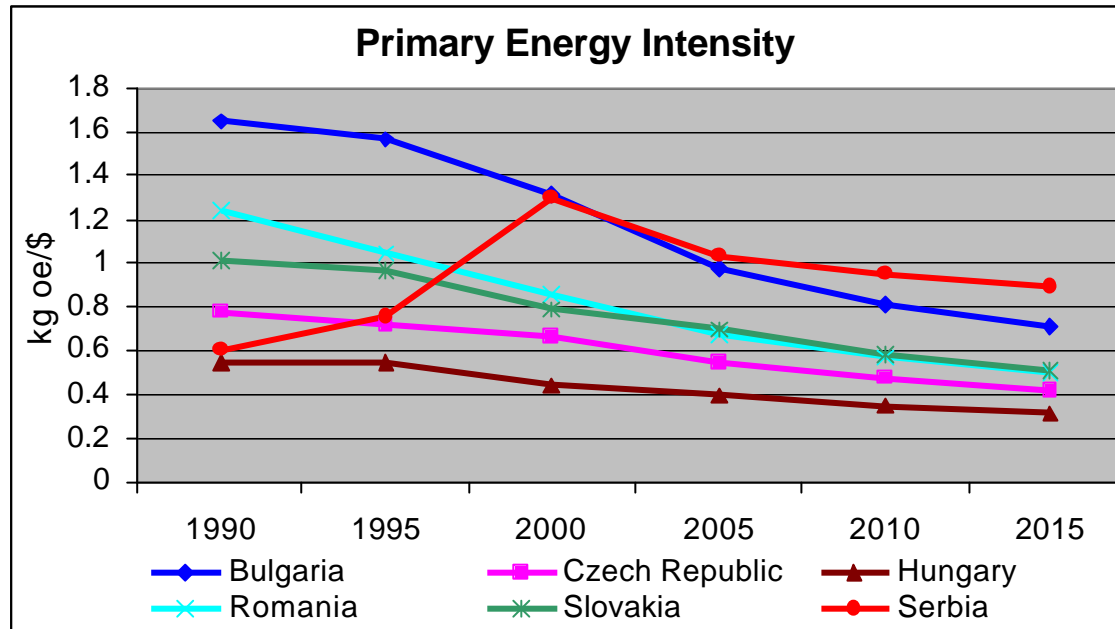




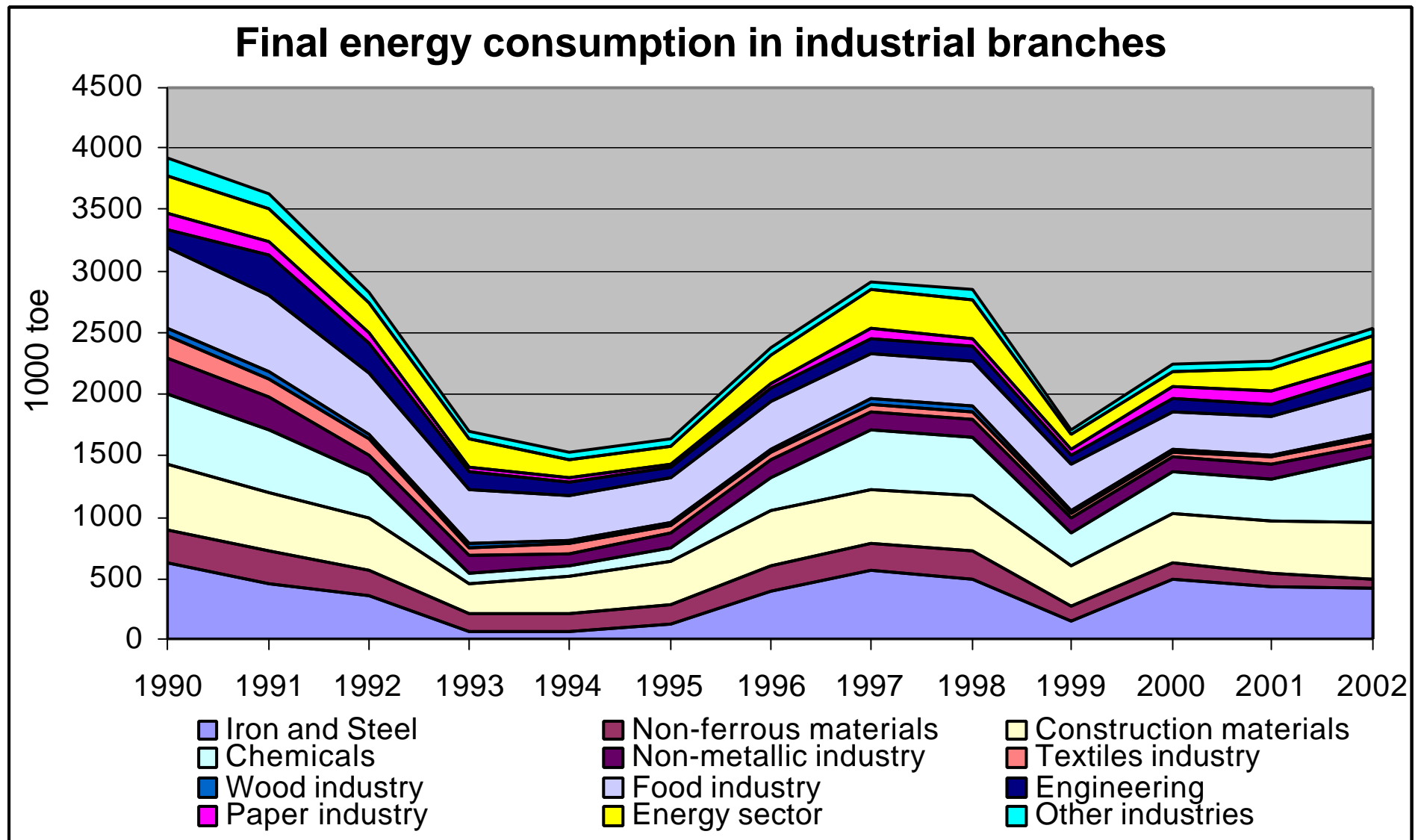
Development of Gas Emission in SR/MN



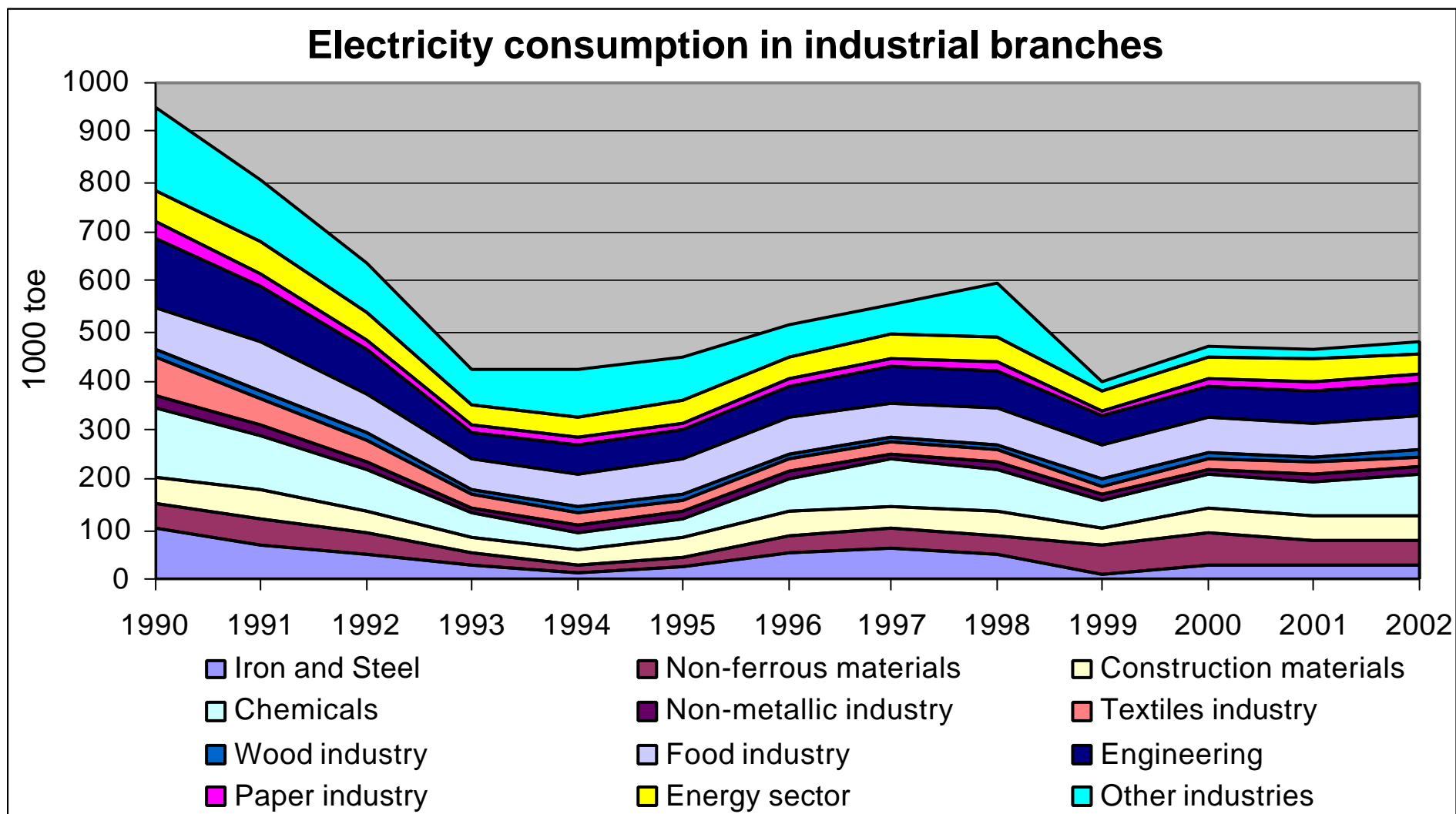
Energy Indicators



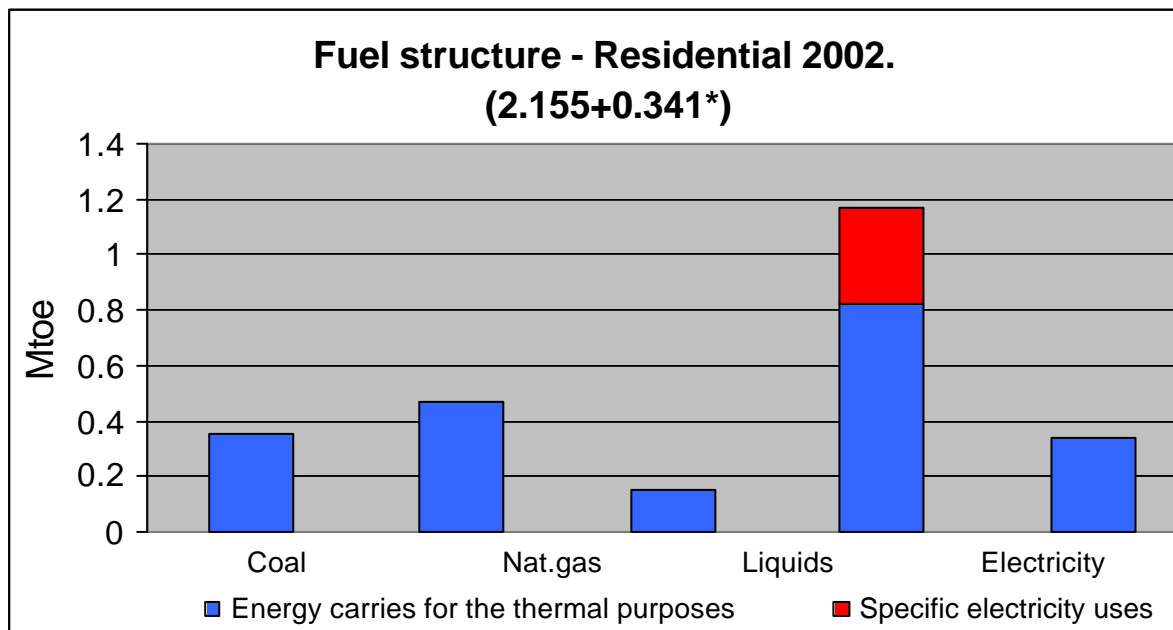
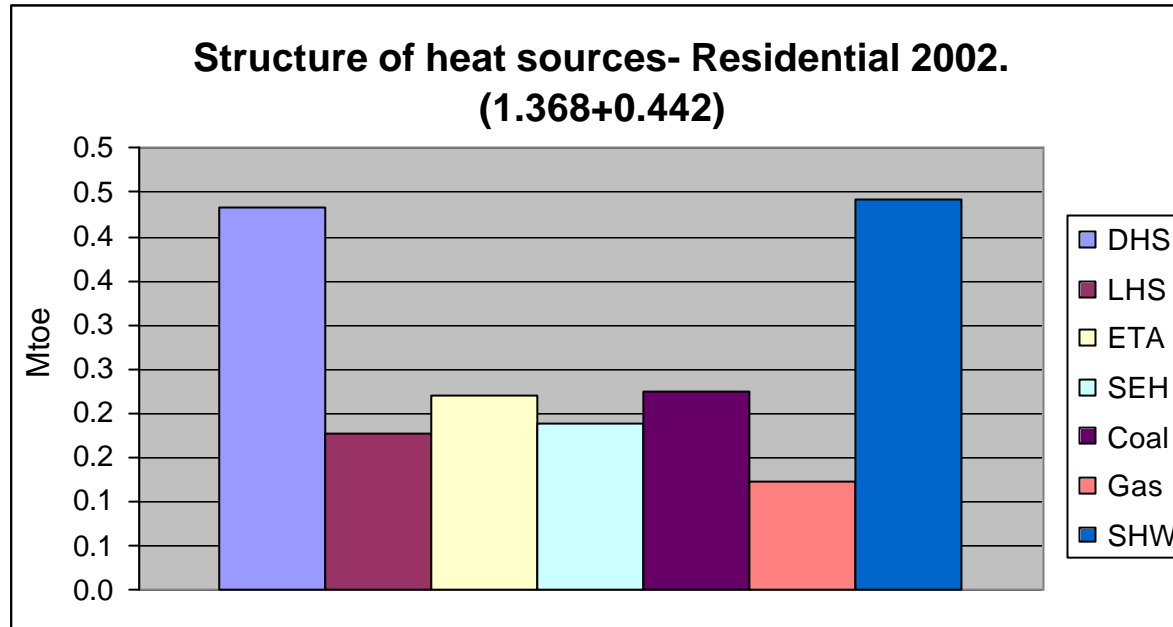
Final energy consumption in Industry (Past trend)



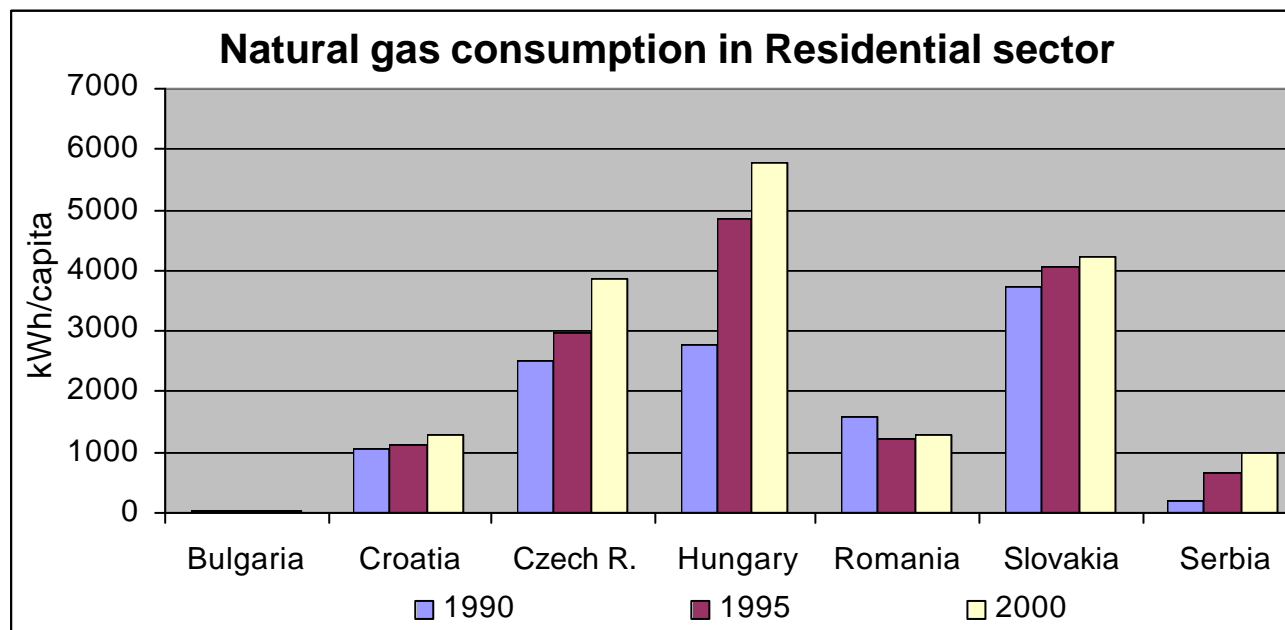
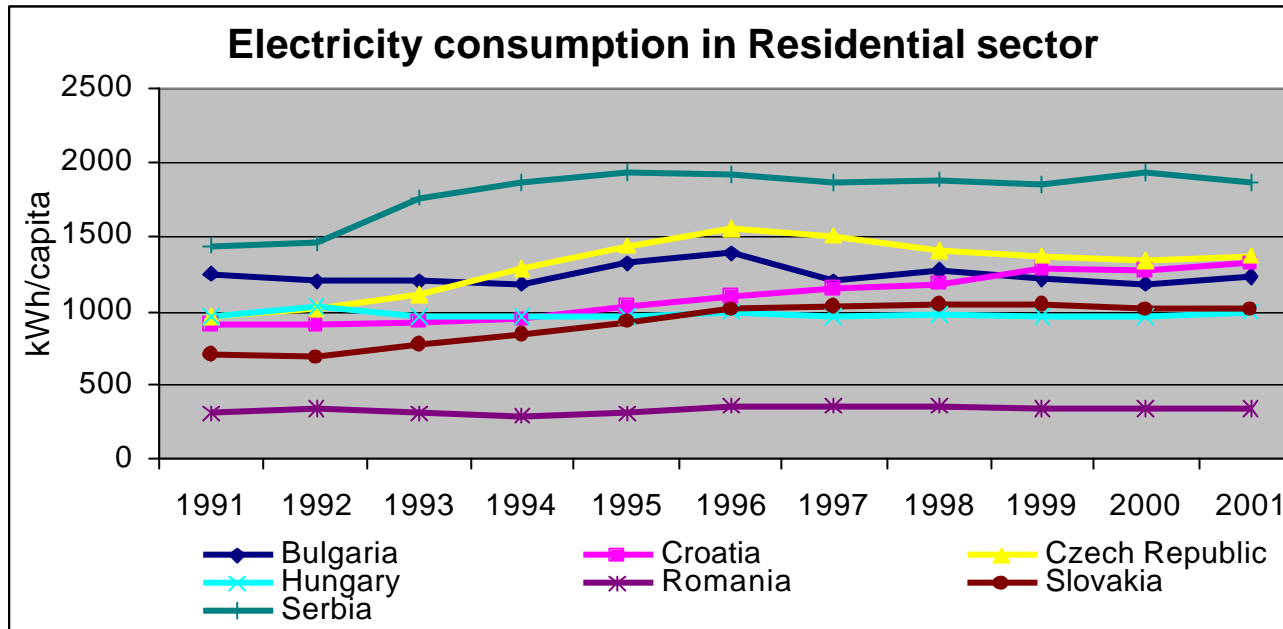
Electricity consumption in Industry (Past trend)



Thermal Energy Services in Residential sector



Residential sector



Economics and Energy Strategy Premises

- **Political and socio-economics Objectives**
- **Establishing a new Legal, Institutional, Structural, Economics, Owners and Market oriented framework**
- **Energy Policy and Strategy objectives in accordance with practice and regulation of EU**
- **Selection of the Energy Strategy Priorities are based on current potentials and constrains of Serbian energy infrastructures, respecting the objectives for sustainable socio-economic development**
- **Assess of energy demand and development of a new energy supply infrastructure are based on integrated Policy for efficient energy end-use and energy production, respecting whole economy and environment protection from energy sources**
- **Energy sub-sectors reform, starts with companies restructuring, commercialization, tariff and regulations of energy services and design and market operation**

Foundations of Energy Policy/Strategy

Objectives:

1. Basic/Generic-Energetic objectives:

- Security of supply, which aims to minimize the risk and impact of possible supply disruption on the society
- Competitive and efficient energy system, to ensure low cost energy for producers and consumers to contribute to industrial competitiveness and wider social policy objectives
- Environmental protection, which is integrated in both energy production and energy use to maintain ecological and climate changes

2. Specific-Technologically and Environmental:

- Improvements of plant equipments and systems technology reliability and operational performance in order to provide safe and efficient energy production and supply and reduce the pollution from energy infrastructures, through extensive infrastructures modernization

3. Long term general-developing objectives, within national energy infrastructure and specific-strategic objectives, within regional energy systems/markets

- **Adjustment of Serbian energy sub-sectors development strategy with strategy relevant Serbian economic sectors, within sustainable socio-economic development strategy**
- **Adjustment the Serbian energy sub-sectors strategy with energy demand projections, by investment in a new production units, respecting the energy efficiency and RES policy as well as energy import dependence and environment protection**
- **Integration in the Energy community of SEE (ECSEE Treaty) and pan European energy markets, respecting EU Directives, practice and regulation**
- **Participation in planning, investment and using a new strategic-regional and European energy infrastructures and systems, new sources and route for import and/or transit oil and natural gas and electricity, including the gas storages**
- **Participation in planning and investment in a new electricity production units on the border river (HPP with pumping/accumulation), including the investment in a new thermal power plants based on lignite reserve on Kosovo I Metohija, with strategic partner**

Foundations of Energy Policy/Strategy

Priority Programmes:

- 1. Energy sectors oriented Priorities**, with specific Programmes for improving a technical and operational performances of energy production systems
- 2. Program oriented Priorities**, with specific Programmes for rationale energy use improvements end-use energy efficiency
- 3. Technology oriented Priorities**, with specific Programmes for selective use of RES and a new, energy efficient and environmentally acceptable technologies for additional production the electricity/heat
- 4. Emergency oriented Priority**, with optional Project for urgent investment in a new electricity and heat production source (CCGT), based on gas technologies, in order to avoid electricity shortage
- 5. Serbian energy long term sub-sectors developing Priorities**, with specific Programmes for redeveloping energy supply sectors (with new technology), and specific-strategic and regional new energy infrastructure and electricity production systems (PSHPP) transmission systems with intensive investments

Foundations of Energy Policy/Strategy

Instruments for Priority realization:

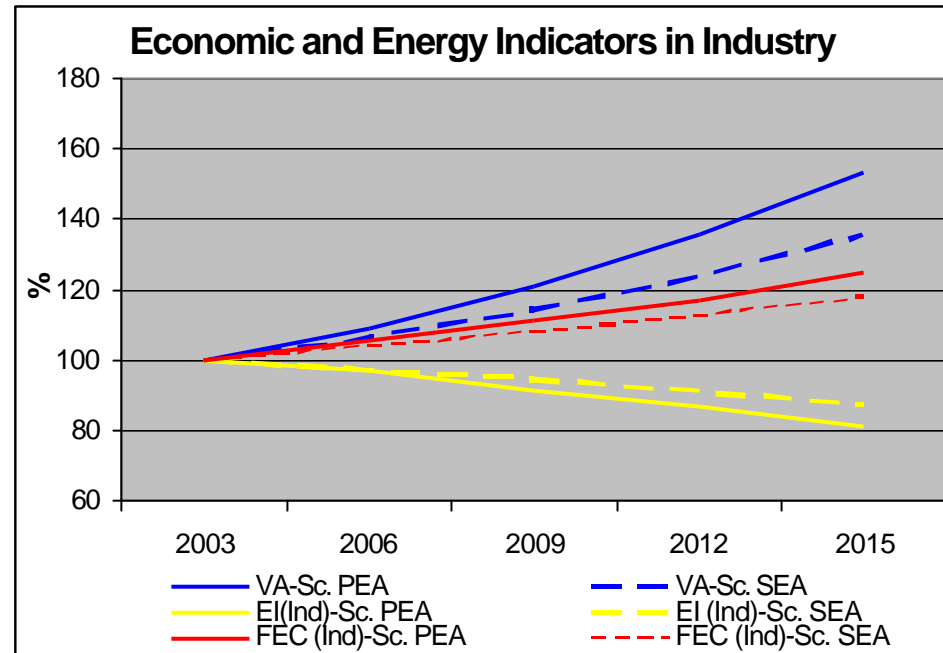
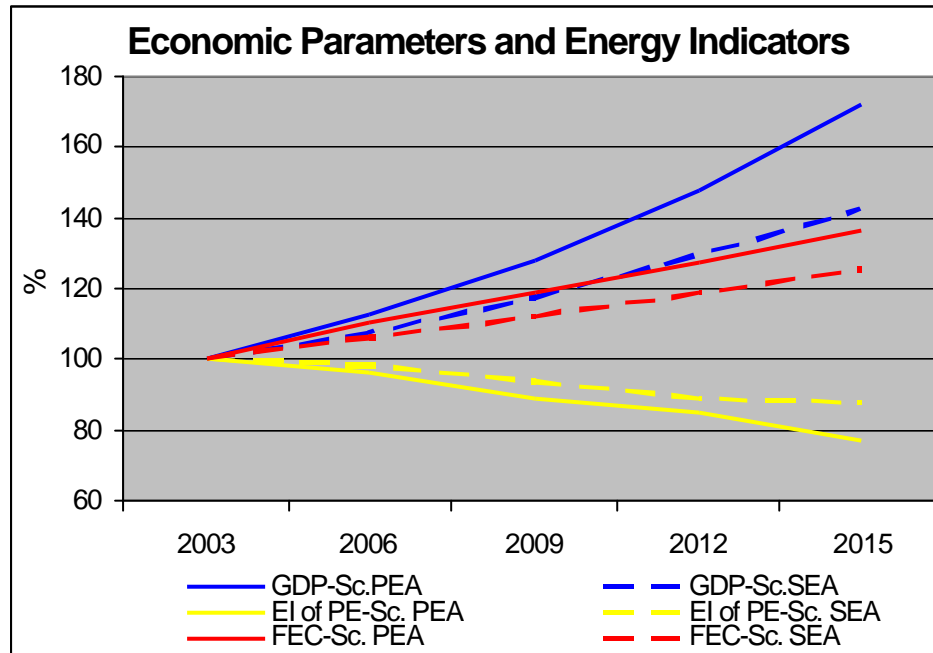
1. Legislative (Energy Law and Secondary regulation), Institutional (REA and SEEA) framework
2. Structural (new entities in Electric and Oil and Gas Industry), tariff and regulatory policy (justifiable cost of energy production) economics operation (transparency and separate accounts) within a new energy sector framework, including the new rules for all energy players
3. National Program and Action Plan for: Energy Efficiency, Renewable Energy Sources, Environment Protection, Research and Energy Technology Development
4. Systems Instruments:
 - Graduate and postgraduate education, including specific Training of young people in technical, legal and economics sciences(*);
 - Establishing the Center for energy statistics (within RSO)
 - Development of network of innovative Centers for transfer of specific knowledge in the areas of for energy services
 - R&D Program for development and production the technology/ equipments for environment protection due to the negative impact of energy infrastructures
 - Establishing the Environment-Energy Institute

Foundations of Energy Policy/Strategy

State Measures/Actions:

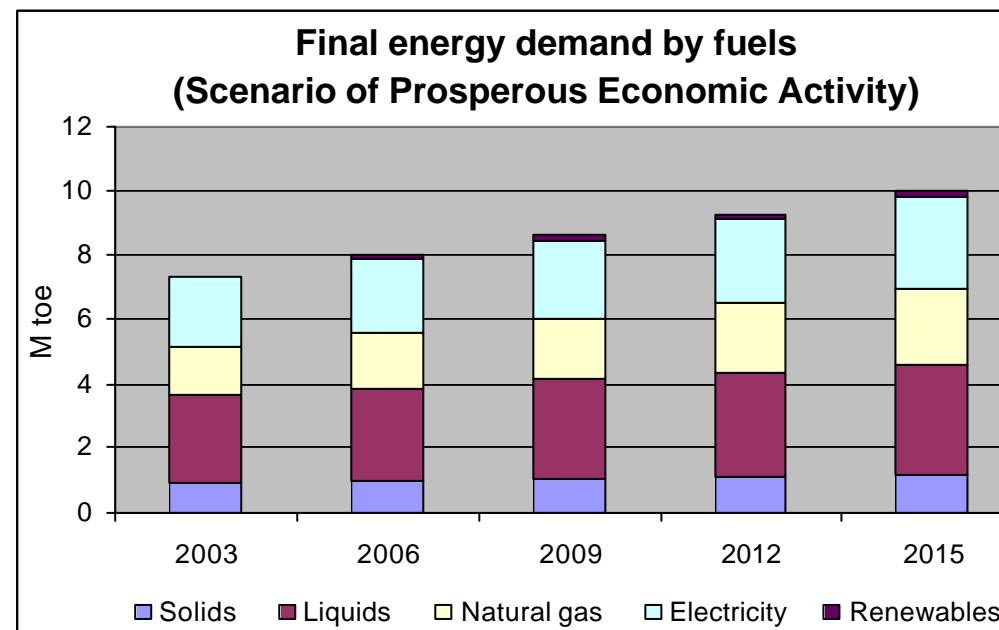
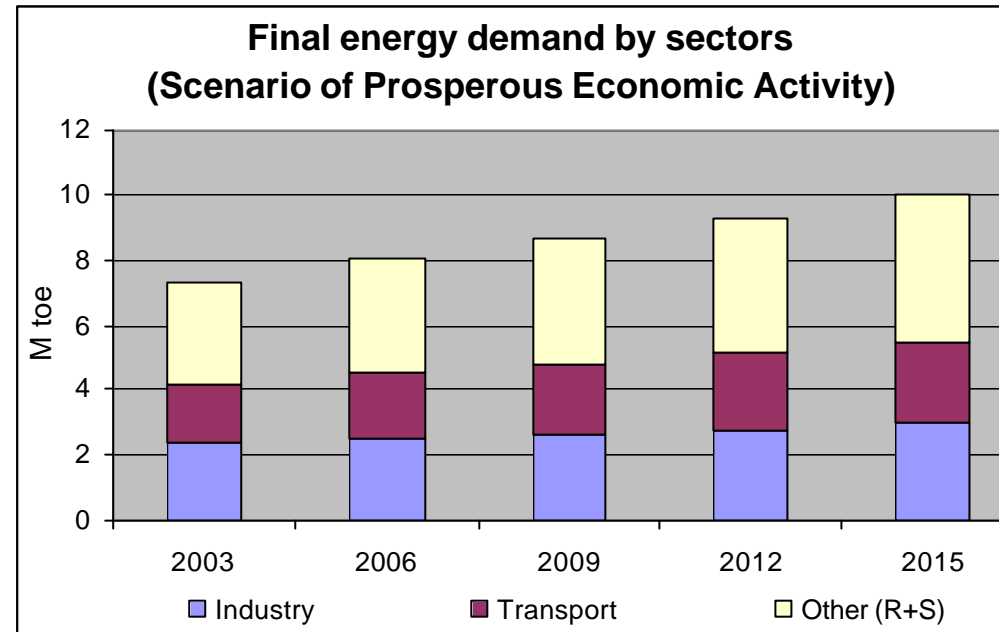
- Adoption of National Economy Development Strategy
- Fill full conditions for Accession to the EC SEE Treaty
- Ratification of Kyoto Protocol, quota emission, National register for gas emission and establishing corresponding monitoring system
- Set-up energy tariff and price policy (before REA starts with full power), taxes, customs and antimonopoly policies as well as set-up a specific energy efficiency standards for energy services
- Set-up regulation for participation of private and foreign capital in investment in a new energy infrastructures, and participation of Serbian energy entities in strategic and regional energy projects
- Establishing the National Fund for Energy Efficiency Program and Financial incentives for the Projects for use of renewable energy sources
- Energy efficiency Standards and Codes, as well as energy labeling for energy equipments, electrical appliances

Macro-economic assumptions

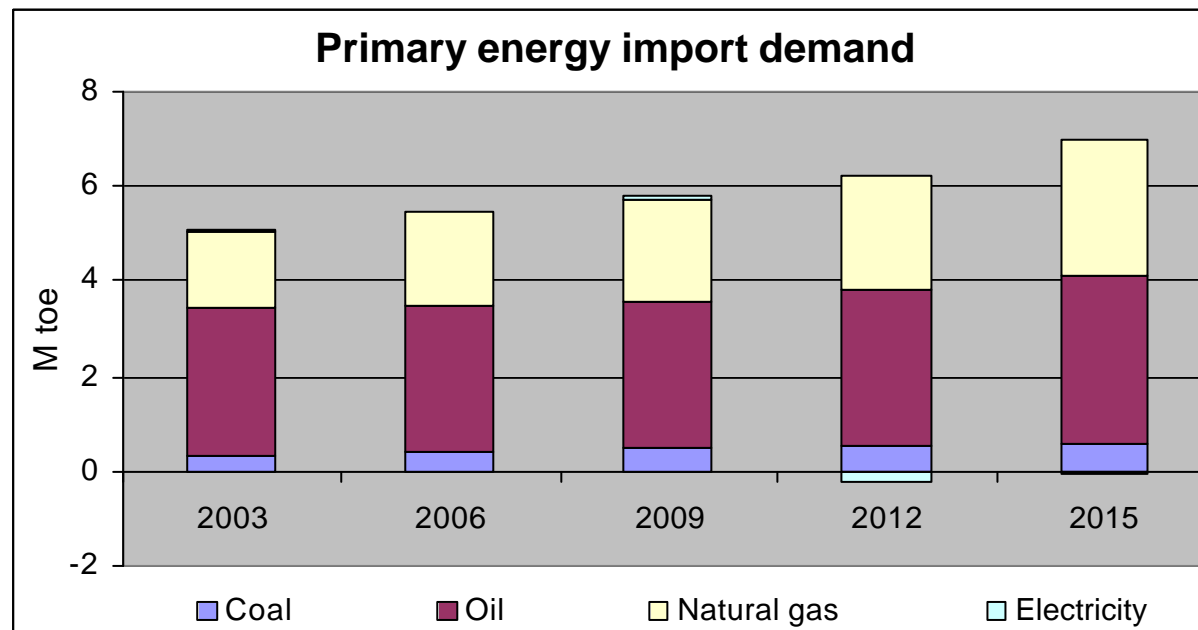
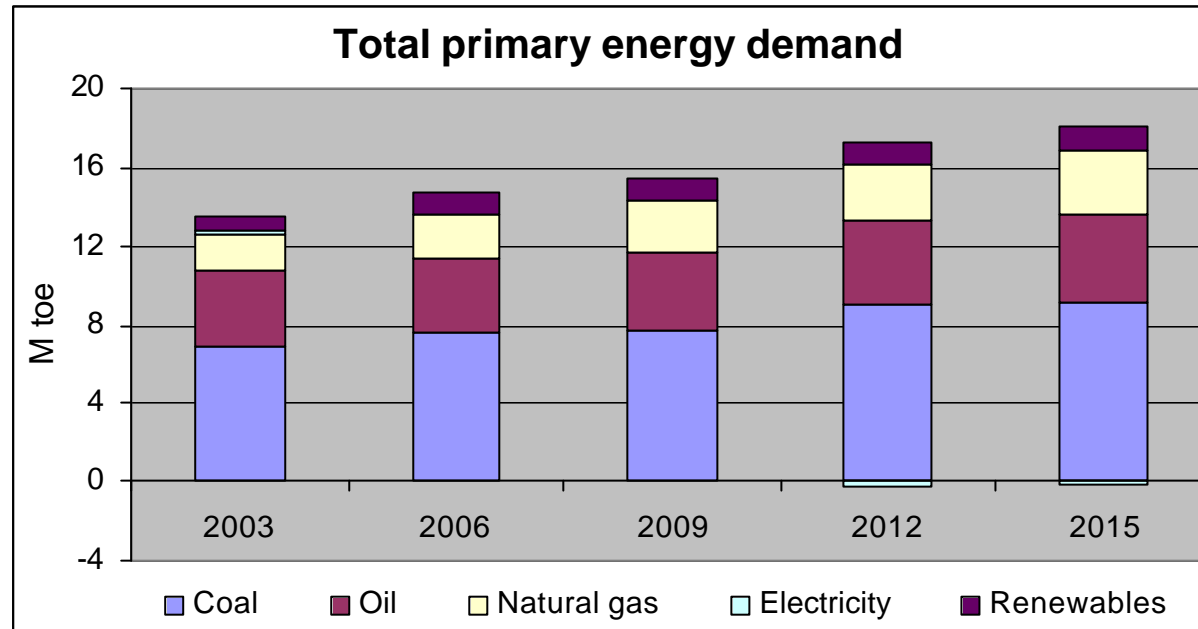


Scenario	GDP (%/year)	VA (%/year)	EI (PE) (%/year)	EI (Ind) (%/year)	GDP (%)	VA (%)	Electricity (%)
PEA	4.62	3.62	-2.20	-2.00	172.00	154.00	130.00
SEA	3.00	2.55	-1.10	-1.50	142.00	135.00	123.00

Final Energy Demand Forecasting



Primary Energy Demand Forecasting



DYNAMICS OF SERBIAN ENERGY REFORMS AND PRIORITIES IN COMING YEARS

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
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REFORMS OF THE SERBIAN ENERGY SECTOR : 2004. Energy Law adopted; 2004. Establishing of REA (2004.); Energy sub-sectors reforms: Legal, Functional and Financial separation and Corporatisation of Energy Public Companies (2005.); REA Enforces Energy Services and Prices Regulations (2006.); Energy Market Design and Operations (2007); Realization of the First, Second and Thrid Priorities Programmes (2012); New Energy Entities Commercialization and partial Privatization (>2012).

<p>First Priority-Improvements of technical and operational performance of energy production systems/units:</p>	<p><u>Programmes for technical and operational improvements of energy conversion/transformation systems:</u></p> <ul style="list-style-type: none"> ➤Oil sector ➤Gas sector ➤Coal sectors ➤Electric Power Sectors: <ul style="list-style-type: none"> ▪Generating Units (TPP,HPP,CHP) ▪Transmission system ▪Distribution systems ➤District Heating Sector/Industrial Energy (Power and Heat) Sources
<p>Second Priority-Rationale energy use and improvements of energy efficiency:</p>	<p><u>Programmes for rationale energy use and improvements of energy efficiency by:</u></p> <ul style="list-style-type: none"> ➤Replacement of electricity for space heating through numerous local Projects for households gasification in urban/sub-urban areas ➤Fossil fuels savings by improvements of Boilers efficiency and on this basis connects the new heat consumers on the existing DHS ➤Reduction of electricity and heat transport/distribution losses, including heat losses in industrial thermal processes/equipments
<p>Third Priority-Selective usages of renewable and a new energy efficient and for environment acceptable production technologies:</p>	<p><u>Programmes for a new RES and New Technology/electrical appliances/devices as follows:</u></p> <ul style="list-style-type: none"> ➤Selective use of RES (Biomass, Wind, Geothermal/Solar) ➤Increasing the natural gas utilization by CHP production ➤Introduction of efficient lighting devices and a new households electrical. appliances ➤Private investment in small HPP's
<p>Fourth Priority-Short-term investment in a new power and heat production units, in the case prosperous economy and power deficiency:</p>	<p><u>Programmes/Projects for investment in a new CC Gas Technology and CHPunits:</u></p> <ul style="list-style-type: none"> ➤Emergency investment in a new 250 MW/220MJ/s CCGT power plant unit, within Electric Power Industry Sectors and possible investment in a series of small /medium size CHP, within municipal/industrial sectors, based on natural gas, for combined electricity and heat production
<p>Fifth Priority-Medium/long-term capital-intensive investment in a new capital energy infrastructures, and participations in planning and investments in a strategic (regional/european) energy infrastructures:</p>	<p><u>Programmes/Projects for medium/long- term intensive investments in a new infrastructures:</u></p> <ul style="list-style-type: none"> ➤Large TPP's : Completion of TPP "Kolubara B" or investment a new TPP units on the basis "Kolubara", "Kostolac" or /and KiM lignite, including private investment ➤Large oil transport infrastructure system (diversification of oil sources and transport lines, with regional connection) ➤New natural gas supply/storage systems (diversification of oil sources and transport lines, with regional connection) ➤New strategic electricity production units on "borders" rivers, including investments in a new large pumped storage hydropower plants, for regional/european electricity markets supply, with all modes of investments/owners

Investment Programme

SECTOR	PRIORITY	INVESTMENT (? \$)	Agents
OIL INDUSTRY	FIRST	360	Oil industry, Chemical industry, Private initiative
NATURAL GAS	FIRST, SECOND, THIRD,FOURTH	840	Gas industry, Industry, Electric Power Industry, Municipal authorities, Private initiative
COAL-UGM	FIRST, SECOND, THIRD	85	Industry, Municipal authorities, Private initiative
COAL-OCF	FIRST, THIRD,FIFTH	600	Electric Power Industry, Industry, Private initiative
ELECTRIC POWER IIND.	FIRST, SECOND, THIRD,FOURTH , FIFTH	4279*	Electric Power Industry, Industry, Municipal authorities, Private initiative
	<i>Total:</i>	6375*	
RESIDENTIAL TERTIARY	FIRST, SECOND, THIRD,FOURTH, FIFTH	320	Gas industry, Municipal authorities, Industry Industrial and Tertiary market companies, Public sector, Private initiative,
RESIDENTIAL TERTIARY	FIRST, SECOND, THIRD,FOURTH, FIFTH	280	Oil and Gas industry, Power industry, DHS Municipal authorities, Industry Industrial and Tertiary market companies, Public sector, Private initiative, Consumers
INDUSTRY, DHS,	FIRST, SECOND, THIRD,	330	Industrial branches, DHS, Municipality authorities, Gas and Oil Industry, Public sector
RESIDENTIAL	SECOND, THIRD	20	Electric Power Industry., Municipal authorities, Consumers,
	<i>Total:</i>	950	
INDUSTRY, MA	BIOMASS	100	Industry, DHS, Municipal authorities, Small enterprise, Private
INDUSTRY, MA	SAMLL HPP	130	Municipal authorities, Small industry, Private initiative
DHS, MA	MODERNIZATION DHS	120	Municipal authorities, DHS, Small industry, Private initiative
	??????:	350	