



# **Environmental Technology Markets in South-Eastern Europe**

**Environmental Policies, Strategies and Pro-  
grammes of the Countries**

**Bulgaria**

**Romania**

**Croatia**

**Serbia and Montenegro**

**2004 Executive Summary**

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## **2004 Executive Summary**

Commissioner: Austrian Federal Economic Chamber (WKÖ), Environment & Energy Policy  
Department

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A free of charge pdf download of this study is available at

<http://wko.at/up/enet/euerweiterung.htm>

<http://www.kommunalkredit.at>

<http://www.oegut.at/themen/moe>

# 1. Scope and Goals of the Study

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The current report investigates the environmental policies, strategies and programmes of the countries **Bulgaria, Romania, Croatia and Serbia and Montenegro**. Bulgaria and Romania count to the so-called „2<sup>nd</sup> Accession Group“ whose EU membership is foreseen for 2007. In February 2003, Croatia joined them as well. The State Union Serbia and Montenegro has, after the political reform in the autumn of 2000 and redefinition of the state administration, too, set the strategic goal of joining the EU.

By providing detailed knowledge of the national environmental policies and the corresponding financial instruments (environmental funding programmes) of these countries, **this study aims at** enabling a better estimation of the environmental market potential for Austrian enterprises. The study is expected to serve in particular small and middle-sized enterprises who lack own resources for an ongoing market monitoring, as a „guide“ and **as support for estimating the future market development** in the environmental sector.

With the issue range being as large as the fields of energy and climate policy, waste management, water and wastewater, air quality and funding options in each country themselves, the report offers generally a first overview of the national policies. Key national documents are presented in a **document list** supplied with keyword descriptions of the contents, as well as with **source and national contacts**, so that the reader could easily find more detailed, respectively updated, information in future if considering that national environmental concepts and strategies undergo permanent development and adjustment.

**All information** in this report has been collected and evaluated by the ÖGUT **in co-operation with the institutions in charge in each accession country** considered. This „first draft“ has been sent for a critical review by the latter; their comments and changes have been considered in the final report. Both strategic goals and specific questions have been investigated, such as “how much, what for, by when and by whom investments will be performed in environmental measures“. The Austrian Society for Environment and Technology (ÖGUT), the Austrian Federal Economic Chamber (WKÖ) and the Kommunalkredit Public Consulting (KPC) gladly convey their genuine gratitude to the institutions in charge in these countries, such as ministries, environmental and energy agencies and NGOs, as well as to the Federal Ministry for Agriculture, Forestry, Environment and Water Management, for their **co-operative support**.

Along with this study, **a further report on the Accession Countries Czech Republic, Slovakia, Hungary, Slovenia and Poland** has been done as well.



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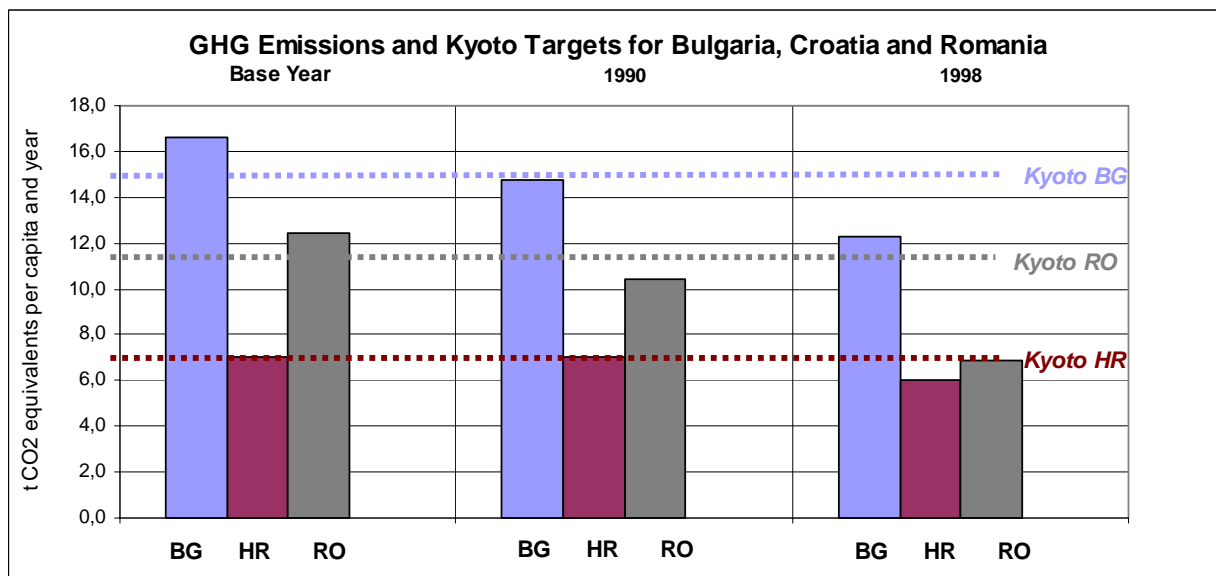


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## 2. Summary

### 2.1 Climate Protection

Since the beginning of the Nineties, Bulgaria, Romania and Croatia have shown a **clear reduction of the greenhouse gas (GHG) emissions**. For Serbia and Montenegro, no GHG emission data are available, yet considering the national situation as a framework, the general development follows the same trend. Main reasons for the emission reduction are seen in, first, production decrease in some particularly energy intensive sectors, such as the steel and aluminium industry, mining, chemical and cement industry; second, in the switch to fuels of lower CO<sub>2</sub> emissions, and partly also in an energy consumption reduction following cutback of subsidies for the energy sector.



Legend: BG – Bulgaria, RO – Romania, HR – Croatia

Graphics: ÖGUT

The development of the greenhouse gas emissions of these countries within the next 10 to 20 years, i.e. if they will fall or rise, depends on the fact if material consumption or improvement of energy efficiency and renewable energy will prevail. The ISPA Strategy 2002 for Bulgaria is based on the assumption that until 2015, the national GHG emissions will have again achieved the Kyoto target value. For Croatia, too, having been approximately 10% below the Kyoto target in 1999, a significant increase of the GHG emissions is expected to occur until 2010.

Bulgaria, Romania and Croatia have all developed national **strategies and action programmes towards minimisation of GHG emissions**. The key priorities include

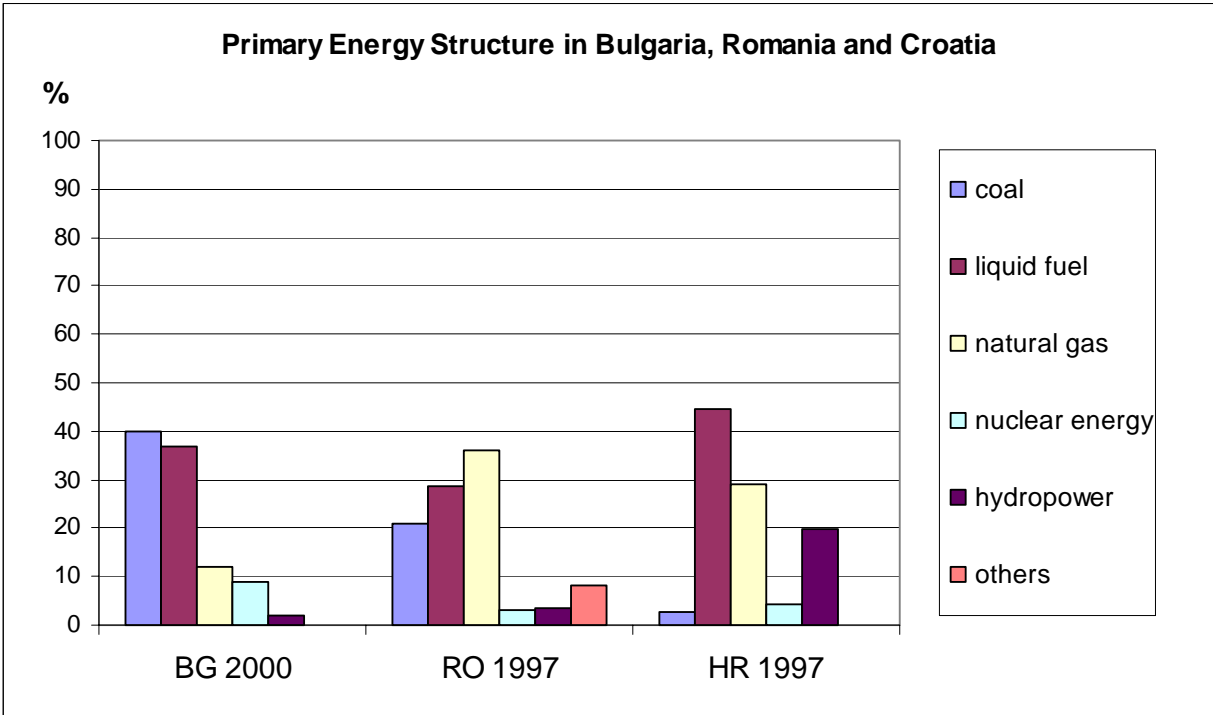
- energy efficiency programmes for the industry and private households,
- employment of heat-power co-generation,
- thermal power plants restructuring and modernisation,
- employment of renewable energy, and
- switch to fuels of lower CO<sub>2</sub> emissions.

Bulgaria and Romania have each signed a bilateral „Memorandum of Understanding“ (MoU) with Austria, aiming at co-operation within the implementation of Joint Implementation Projects (JIP). The so-called "Emission Reduction Units" (ERU) resulting from measures performed by Austrian enterprises in these countries towards GHG emission reduction can be then transferred to Austria. The former Federal Republic of Yugoslavia signed the UNFCCC in 1997, but does not count to the member states of the Annex I group of the convention. By the end of 2003, the State Union of Serbia and Montenegro had supplied no GHG data to the UNFCCC yet.

In August 2003, the Austrian JI/CDM Implementation Programme was launched. The Programme is executed by the Kommunalkredit Public Consulting. More information is available under [www.ji-cdm-austria.at](http://www.ji-cdm-austria.at).

## 2.2 Energy

The primary energy sources used in the investigated countries are marked by the use of **fossil and nuclear energy**. The highest share of coal consumption within the energy supply occurs in Bulgaria by 40%. While most countries of the 1<sup>st</sup> EU Accession Group have already developed concepts on reducing the coal consumption and the own coal exploitation, Bulgaria and Romania will stick to coal as a key energy source.

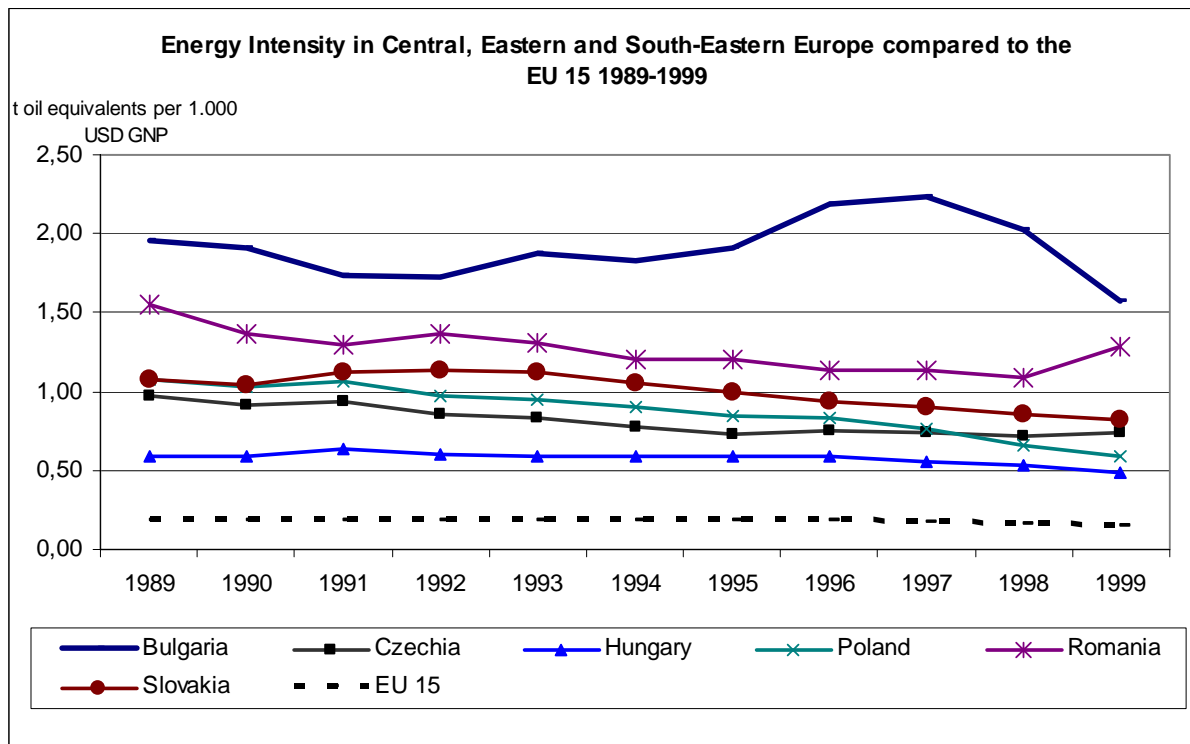


Legend: BG – Bulgaria, RO – Romania, HR – Croatia

Graphics: ÖGUT

Nuclear energy is of rather modest significance in these countries, its share being 9% in Bulgaria, 3% in Romania and 4% in Croatia, however the construction of a second nuclear power plant in Belene is currently in discussion in Bulgaria.

Bulgaria and Romania show, when compared to the countries of the 1<sup>st</sup> Accession Group, a **significantly higher energy intensity**; the value is even higher when related to the EU-15 average, which proves a great energy saving potential in these two countries.



Graphics: ÖGUT

Significant **energy saving potentials** have been identified in the field of thermal sanitation of residential blocks and district heating infrastructure, of heat-power co-generation, of consumption-related energy billing and of the modernisation of electricity distribution systems who prove a high share of losses.

All investigated countries have set goals to **cut back the energy price subsidies for private households and enterprises**, and of liberalisation of the energy markets. So for instance in Bulgaria, the electricity market for large consumers (10% of the national consumption) was opened to liberalisation in 2003. In the countries in question, **thermal power plants are partly much too old and inefficient**. So for instance in Romania, investigations show that an infrastructure update could reduce fuel consumption for electricity generation by a factor of 2,5. Romania is planning a thermal power capacity closure of 8.000 MW until 2020 and the construction, respectively modernisation, of new approximately 7.000 MW.

Both Bulgaria and Serbia and Montenegro prove an extremely **high share of electrical heating for private households** (in Serbia and Montenegro, 2/3 of the population use electrical heating). A significant improvement potential is seen in sanitation and reconstruction of the district heating infrastructure in the cities, combined with off-heat utilisation of waste incineration. Both would prove a positive effect on the heating supply as well as on the environmental situation.

**Natural gas infrastructure** is well developed in Romania; tendency in gas consumption is decreasing for industry and increasing for households. Compared to this, gas supply infrastructure in Bulgaria, is

only partly provided. Here, mainly thermal power plants and less the private households count for gas consumption.

**Renewable energy** currently holds a relevant share in primary energy consumption in Croatia only with 29% hydropower. The country is envisaging a massive increase of renewable energy by introducing a financial support and a CO<sub>2</sub> emission fee. Romania has just concluded the modernisation of the Portile de Fier (Iron Gates) Danube hydropower plant, remaining sections will undergo sanitation as well.

## 2.3 Waste Management

Amounts and structure of waste generation in the investigated countries has, after the political change and the following change of consumption patterns, have approached those known within the EU. Key frameworks for future waste management are, for the countries Bulgaria, Romania and Croatia, the **Directives 99/31/EC (Landfill Directive) and 94/62/EC (Packaging Directive)**. Waste prevention is currently of a rather minor importance in these countries, since waste fees do hardly refer to waste quantities. All investigated countries have however defined the „polluter pays“ principle as an integrative part of their waste strategies and programmes.

Recycling appears to play a significant role just in Romania only in terms of the packaging waste; generally, hardly any large-scale recyclables collection systems are established. Waste treatment is marked by **landfilling to dominate as approach**; waste incineration is considerable only in terms of industrial waste. Future investments are determined in the national „Waste Management Plans“ or the ISPA Strategies and focus on the following priorities:

- construction of regional landfills harmonised with EU standards; for this, numerous local landfills not corresponding to EU norms shall be closed
- construction of incineration plants for hazardous and biohazardous waste
- establishment of collection and disposal systems for hazardous waste
- establishment of collection and utilisation centres for recyclables from municipal waste
- establishment of separate collection for biowaste and of biowaste composting plants
- construction of waste incineration plants for municipal waste, combined with off-heat utilisation
- dumpsite sanitation in the industrial sector

For the **State Union Serbia and Montenegro**, current key priorities are **elaboration of the legislative base and capacity building as prerequisites** for a modern waste management, as well as data recording on waste structure and quantities. Most action is however needed in sanitation of dumpsites endangering groundwater quality, located near industrial sites.

Waste management adjustment to EU standards, being foreseen to occur until 2015, is estimated to require investments amounting to **6 billion Euro in Romania** and to **1 billion Euro in Bulgaria**. For **Croatia**, corresponding investment until 2012 is estimated at **2,2 billion Euro**.

## 2.4 Water / Wastewater

**In a majority of areas** in the investigated countries, **water supply does not meet the quality standards defined by the EU**. In Serbia, approximately 50% of the public water supply indicates microbiological and physical-chemical values worse than required. In all countries, old supply infrastructure **proves a high share of water losses**: in Croatia, these amount to 43%, in Bulgaria - to 18%-52%.

Wastewater treatment in these countries is qualified as the most cost-intensive sector within environmental protection. Alone for implementing the Directive on municipal wastewater (91/271/EEC), investments necessary for mainly sewerage infrastructure and wastewater treatment plants are estimated to approximately **10 billion Euro** in Romania and to approximately **3,3 billion Euro** in Bulgaria **until 2015**.

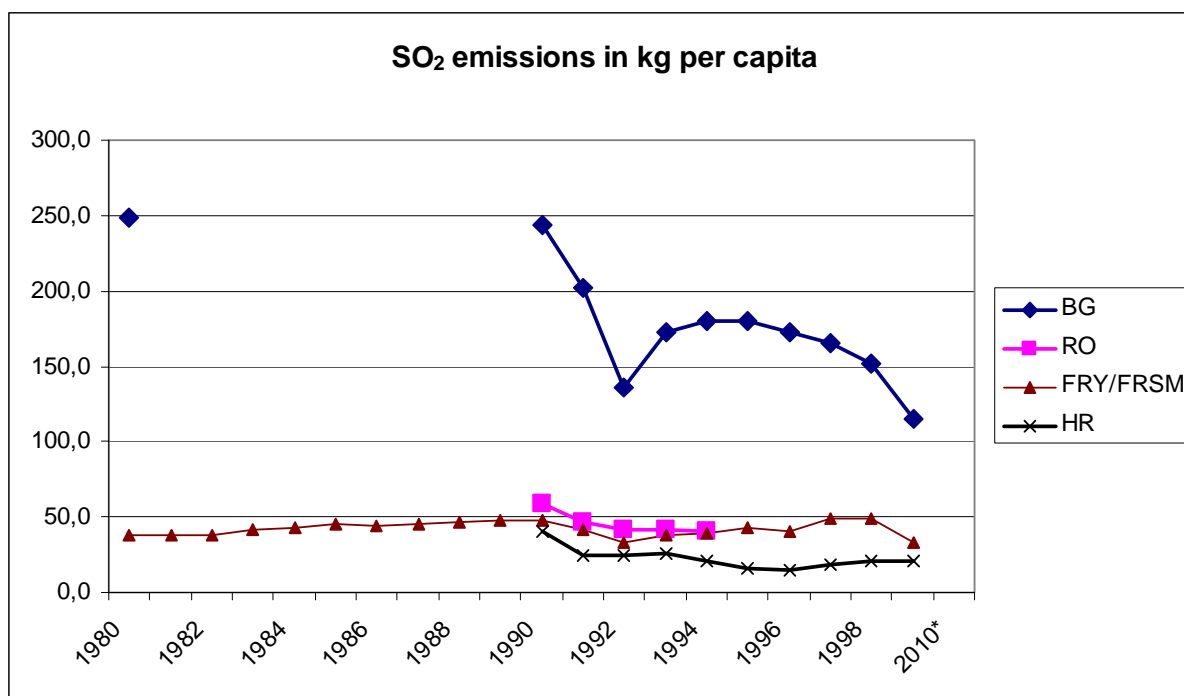
70% of the population in Bulgaria are connected to public sewerage; in Croatia, this value amounts to 60%. Within a National Programme on Priority Wastewater Treatment Plants, Bulgaria is planning the reconstruction of wastewater treatment plants of a total capacity of 6,2 Mio. inhabitant equivalents. Until 2006, 36 priority wastewater treatment plants are to be constructed, of which 16 alone for big cities. In Croatia, the construction of a wastewater treatment plant for Zagreb is qualified as a priority investment, as well as the sewerage and the wastewater treatment in the coastal and the tourism regions, including protected areas such as the Plitvice Lake or the Mljet National Park. Wastewater treatment modernisation in the coastal region of Croatia is a priority also for the reason of increasing tourism requiring good bathing water quality. Romania has developed, along with measures for municipal wastewater treatment, also an Action Plan for water protection against nitrate pollution originating from the agriculture. In Serbia, priorities are mainly seen in wastewater collection and treatment in areas where drinking water quality is directly endangered.

## 2.5 Air Quality

„Classic air pollutants“, such as SO<sub>2</sub>, NO<sub>2</sub> or VOC emissions, originate mainly from the industrial sector and the thermal power plants in these countries. Generally, **air pollutants prove a slightly decreasing tendency** initiated by economical re-structuring, switch to low-sulphur fuels or fuels of a lower air pollutant contents (e.g. natural gas), and instalment of off-gas treatment equipment. Bulgaria proves the highest annual SO<sub>2</sub> emissions per capita of all investigated countries, due to the high share of coal employed for electricity generation.

Meeting the EU air quality standards will require investments of **approximately 2,3 billion in Bulgaria** and **6 billion Euro in Romania** until 2015. **According to its** National Environmental Action Plan, Croatia is planning corresponding investments of approximately **0,6 billion Euro** during 2002 – 2012.





Legend: BG – Bulgaria, RO – Romania, HR – Croatia, FRY – Federal Republic of Yugoslavia / FRSM – Federal Republic of Serbia and Montenegro  
Graphics: ÖGUT

The following actions in the sector of air quality are being envisaged:

- off-gas treatment in thermal power plants,
- switch to entirely lead-free fuel (in Croatia by 2005)
- introduction of the „polluter pays principle“ including fees for air pollution emissions
- reduction of air pollution in the cities by reducing off-gas emissions from the transport sector (modernisation of public transport systems)

In particular, Bulgaria is planning the construction of desulphurisation equipment in 8 units of the thermal power plant “Maritza Iztok” in Sofia as well as the modernisation of the electro-filters and the reduction of the nitrous oxides (NO<sub>x</sub>).

Croatia is planning a reduction of 61% of its SO<sub>2</sub> and of 14% of its NMVOC emissions until 2010, both related to the values of 1990. NO<sub>x</sub> emissions being dominated by the quickly increasing motorised transport shall at least not exceed the 1990 values in 2010.

### 3. Market Chances for the Austrian Environmental Technology Enterprises

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The environmental market in Central, Eastern and South-eastern Europe can be divided into the following three groups, considering the different political and economical framework conditions:

- **Countries of the 1<sup>st</sup> Accession Group**

These countries will become EU members on 1<sup>st</sup> May 2004. They are characterised by the fact that specific and detailed environmental action plans exist (e.g. „National Programme on the Adoption of the Acquis“) supplying with an exact “roadmap” for the improvements to occur. This way, investment amounts and deadlines for the environmental sector for achieving compliance with the EU Acquis can be reliably estimated. These countries prove high **rates of economic growth, increased legislative security and political stability**, thus basic prerequisites for long-term investments are certainly provided. Along with the classic „end of pipe“ solutions, such as off-gas treatment, wastewater treatment and safe landfills, new technological concepts, such as „cleaner production“, waste prevention, reduction of industrial wastewater pollution, increased energy efficiency and employment of renewable energy, are granted a high value, since they allow for a more adequate cost distribution according to the “polluter pays” principle.

Considering its geographical and cultural neighbourhood, Austria has good chances on the environmental market in these countries. However, the advantageous framework conditions listed above result also in the fact that here, the environmental market already underlies **a strong competition among Western-European enterprises**.

- **Countries of the 2<sup>nd</sup> Accession Group**

This group includes Bulgaria, Romania and Croatia. The first two are already Accession Candidates, Croatia is at the beginning of the Accession Negotiations. In these countries, EU Accession is considered as a political fact, and for Bulgaria and Romania the **Strategies and Concepts for the harmonisation with the EU Environmental Acquis have been already developed**. Implementation plans determining specific measures for the next 5 to 10 years to apply have not achieved yet such detail as in the countries of the 1<sup>st</sup> Accession Group but are supposed to be finished in the next years.

These countries have been characterised by an investment retention during the last decades, manifested through considerable „technology jumps“ when new investments are now realised. Important consequences of this process are technological improvements and increased economic efficiency. As for **legislative security and political stability**, these countries currently undergo a **crucial phase**, since capacity restructuring, and therefore definition of responsibilities and tariffs for infrastructure (e.g. energy sector, waste management sector) as well, has not been concluded yet but just within the next years, similar to the countries of the 1<sup>st</sup> Accession Group. Another serious problem in these countries is corruption, being still insufficiently addressed also in the process of permit issuing for environmental projects.

After the phase of political self-identification and strategic concept development, these countries are currently approaching the phase of their implementation and the consequent application of the polluter-pays-principle. This way, a number of environmental projects in these countries shall turn in future into cost-effective undertakings.

#### ▪ **Countries of a Middle-term EU Accession Vision**

This group is represented by the State Union of Serbia and Montenegro. Following the political reform in the autumn of 2000, the country has announced its **intention to access the EU**. Environmental legislation is currently under development, and the authorities in charge attempt to already consider the EU requirements in the field of environmental protection that could serve an EU Accession later.

The consequences of the war and the economical isolation define the highest priorities the country is now working at, namely the reconstruction and the availability of crucial infrastructure. Environmental action is currently planned for the **fields of water supply** and sanitation of **dumpsites endangering groundwater quality**.

For the future development of the country however, environmental measures are boldly integrated in the national and international strategies. So for instance, increase of **energy efficiency for securing the energy supply** as well as **recycling of waste materials** are defined as focal issues.

A large number of production and infrastructure facilities in Serbia and Montenegro are devastated of much too old. Thus, as first option for prospective investors, the renovation by the best-available-technology approach appears, which will generate **significant “technology jumps”**. It can be assumed that after the planned implementation of the polluter-pays-principle in terms of energy and resource consumption, a high demand will arise of most modern and integrated environmental technology. Since thus political and legislative stability and thus planning possibility for investors will further improve, the country can be certainly qualified as a **prospective market for environmental investments**.

#### **Chances for Austria at the Environmental Technology Markets in Bulgaria, Romania, Croatia and Serbia and Montenegro**

In all four countries, Austria enjoys the image of a „**model country**“ **in terms of environmental protection**. Environmental technology and conceptual solutions have been here indeed early implemented, thanks to the committed national environmental policy in the Eighties and the Nineties and thanks to the EU environmental directives. This way, Austria has succeeded to establish a well-developed environmental branch. Since in the investigated countries the **reconstruction of the environmental infrastructure**, e.g. waste utilisation and disposal systems, landfill biogas utilisation, sewerage and wastewater treatment, development of energy saving solutions, **occurs with a delay of approximately 10 to 20 years**, Austrian enterprises can utilise their own experience and offer both necessary “hardware” and solution packages consisting of consulting, facility design, construction and operation.

**Austrian** environmental enterprises enjoy, thanks to the geographical neighbourhood and common historical background with certain countries, a **clear competition advantage** compared to environmental companies from other countries, such as France, Denmark or the Netherlands.

## Market Chances for Environmental Enterprises in the Prospective EU Member and Candidate Countries in South-Eastern Europe

	BULGARIA	ROMANIA	CROATIA	SERBIA AND MONTENEGRO
<b>ENERGY AND CLIMATE PROTECTION</b>				
Kyoto Protocol Reduction Period 2008-2012	Reduction of 8% (Base: 1988)	Reduction of 8% (Base: 1989)	Reduction of 5% (Base: 1990)	not signed yet
Memorandum of Understanding for JIPs with Austria	yes open Call for JI/CDM proposals	Yes, but excluding waste management open Call for JI/CDM proposals	no	no
Measures towards Energy Efficiency	priority building sanitation, industry	priority building sanitation, industry	priority, but not specified yet	no priority yet
Reconstruction of Thermal Power Plants	priority: switch to natural gas; desulphurication	priority; primary energy: natural gas is a key energy carrier	priority	no priority yet
Nuclear Power	sanitation of NPP Kozloduj, evtl. close-down; evtl. new NPP Belene	EU conform nuclear power	common NPP with Slovenia; priority is hydro power	no
<b>WASTE MANAGEMENT</b>				
Landfilling	priority: regional landfills; sanitation of dumpsites	priority: regional landfills; sanitation of dumpsites	priority: regional landfills; sanitation of dumpsites	priority: regional landfills; sanitation of dumpsites
Recycling, Waste Collection	building up	building up and further develop- ment of existing	building up	building up
Waste Incineration	(bio)medical and hazardous waste	(bio)medical and hazardous waste	(bio)medical and hazardous waste; coastal region	(bio)medical and hazardous waste; groundwater protection
<b>WATER / WASTEWATER</b>				
Construction of Wastewater Treatment Plants	priority: (36 for reconstruction, 16 new)	priority	priority (Zagreb; coastal region)	if groundwater endangered
Sewerage / Water Supply	priority	priority	priority	priority
Water Quality	measures against drought	measures against floods	coastal region; bathing water	priority if close to dumpsites
<b>AIR QUALITY</b>				
Classic Air Polluters	off-gas desulphurication at TPP; switch to natural gas, small HPP	off-gas desulphurication at TPP; modernisation of gas supply	Public transport; switch to natural gas, HPP	no priority yet; evtl. switch to natural gas

Legend: JIP - Joint Implementation Project; TPP - Thermal Power Plant; HPP – Hydro Power Plant; NPP – Nuclear Power Plant