



Environmental Technology Markets in South-Eastern Europe

Environmental Policies, Strategies and Programmes
of the Countries

Czech Republic

Slovak Republic

Hungary

Slovenia

Poland

2004 Executive Summary

Environmental Technology Markets in South-Eastern Europe

Environmental Policies, Strategies and Programmes of the Countries

**Czech Republic
Slovak Republic
Hungary
Slovenia
Poland**

2004 Executive Summary

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

Kommunalkredit Public Consulting (KPC)

Authors: Albená Kisliakova, Austrian Society for Environment and Technology (ÖGUT)
Gerhard Bayer, Austrian Society for Environment and Technology (ÖGUT)
Bernadetta Szélag, Austrian Society for Environment and Technology (ÖGUT)

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

The current report presents an **update** of the 2002 report. In the meantime, the investigated countries have significantly enhanced and specified their environmental action programmes, so that the measures planned are now described in more detail. Since 2002, international treaties and the opportunity for emissions trading have enforced priority on **climate protection**, which has also resulted in a special focus laid on the Energy and Climate Protection chapter of the current report.

The **integration of the EU Environmental Acquis** in the national legislation of the Candidate Countries effects significant environmental improvements in these countries. The Accession Countries have worked out national plans for each environmental sector, representing a „roadmap“ for their future environmental policies, quantitative goals and funding concepts enclosed.

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 medium-sized enterprises who lack own resources for market monitoring, as a „guide“ and **as support for estimating the future market development** in the environmental sector.

The current study **addresses** the environmental activities to be performed in these countries within the **next 10 to 20 years**. 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 an overview of the national policies.

As a „guide“, the study may also serve the interested reader who would like to gather more knowledge of a certain country's environmental sector. **Key national documents** are presented in a document list supplied with key-word descriptions of the contents, as well as with source and national contacts, so that the reader can easily find more detailed and updated information in future.

A number of Austrian **environmental enterprises** have already established successful activities in the Accession Countries. The **potential of the environmental technology market** can be expected to **continue growing** within the next years, thus Austria, thanks to its advantageous geographical location and the common historical background with its Eastern neighbours, proves clear competitive benefits compared to other EU countries.



Dr. Stephan Schwarzer,
Austrian Federal Economic
Chamber, (WKÖ)



Alexandra Amerstorfer, M.Sc.
Kommunalkredit Public
Consulting (KPC)



Gerhard Bayer, M.Sc.
Austrian Society for Envi-
ronment and Technology



Alben Kislakova, M.Sc.
Austrian Society for Environ-
ment and Technology

Environmental **funding** in the Central and Eastern European countries is supported at only a small rate (max. 5 to 10%) by the EU. The main share of investments needed is to be provided by the Accession Countries themselves. The economic framework in these countries is characterised by a gradual **cutback of national subsidies, by privatisation of infrastructure facilities and by a shortage of public financial resources**. Almost all Accession Countries have declared to strictly apply the "polluter pays" principle in the funding of environmental projects in future.

In total, **environmental investments** in the 13 Accession and Candidate Countries will result in not only ca. 10 to 20 billion Euro annual investment but also in notable **economic advantages**. A study commissioned by the EU (The Compliance with the Environmental Acquis for the Candidate Countries, ECOTEC 2001) proves that by implementing the environmental acquis in the Accession Countries, annual environmental damage of 12 to 70 billion Euro will be avoided, which defines the **clear economic advantage of the environmental investments**.

Along with the current report on the "1st Accession Group" countries the Czech Republic, the Slovak Republic, Hungary, Slovenia and Poland, **a further report on the countries Bulgaria, Romania, Croatia and Serbia and Montenegro** has been issued, whose EU Accession is expected to occur within the framework of the "2nd Accession Group" in 2007 and whose policy addresses the EU Accession.

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, **for their highly co-operative support**.

2. Summary

The **environmental situation** in the investigated EU Accession Countries has notably changed in the last decade after the political turn in Central and Eastern Europe. In certain environmental sectors, such as sewage disposal or reduction of the “classic air pollutants” (e.g. acid rain), significant improvements have been achieved. In other sectors however, such as transportation, solid waste generation (packaging waste) or climate protection, the economic revival induces new, “Western-like” environmental problems.

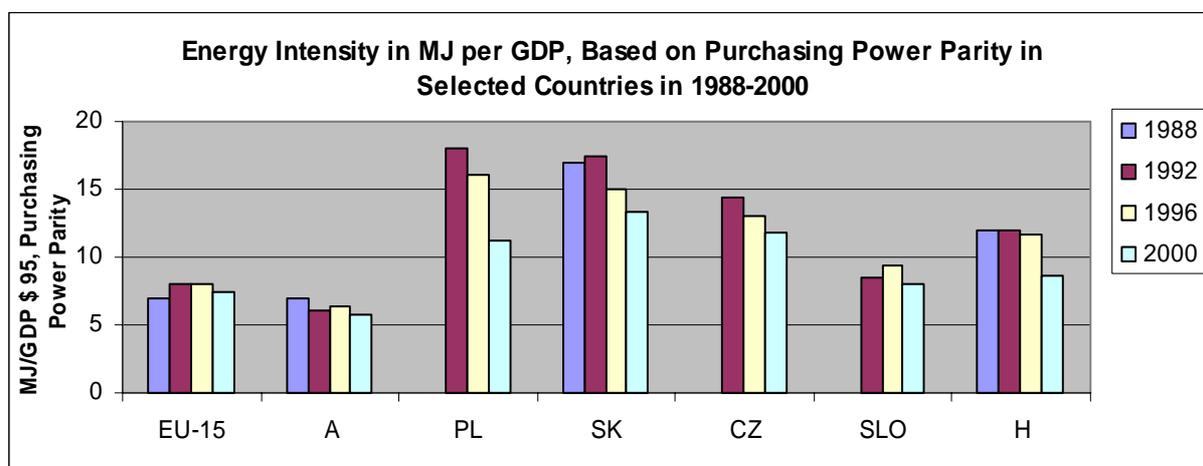
The environmental policies planned are driven by the **EU environmental legislation (Environmental Acquis)** having been an object of preparatory work for the EU Accession Countries for years. Based on the different

- geographical and climate conditions
- economic structures (sector distribution)
- economic situation, per-capita income
- consumption habits and
- social and political values

of each EU Accession Country, the single national environmental strategies and programmes differ as well. So for instance, the varying urban structures and geographical background result in **different strategies and pace** when upgrading the sewage disposal. In most Accession Countries, **energy efficiency in buildings** is emphasised.

2.1 Energy and Climate Policy

The energy systems of the investigated EU Accession Countries are characterised by a **high energy intensity**, that is, a high energy consumption per 1000 USD GDP, being twice to three times higher than the EU average. This problem of both economic and ecological aspects has been recognised by the Accession Countries in the recent years and has been considered within the national energy and environmental policies. Whereas the modernisation of the industrial sector has proven fast progress thanks to foreign investors, the energy efficient **building sanitation** is following only a very low pace.



Source: Data from Energieverwertungsagentur (EVA), www.eva.ac.at Graphics: ÖGUT

In the sector of **transportation**, intermediately linked by the fuel consumption with the sectors of energy and climate protection, the environmental policies of the EU Accession Countries have registered **no success** yet. Similarly to the EU Member Countries, the policy here emphasises primarily on “prevention of damage”; national transportation plans assume motorised individual traffic, truck freight traffic and air traffic all further increasing, and thus a rise of emissions is presupposed as well.

All investigated Accession Countries have signed the **Kyoto Protocol** aiming at reducing the greenhouse gas emissions. In the beginning of the Nineties, most Central and Eastern European Countries in Transition were still below the reduction targets fixed; but due to the economic growth and the changed consumption behaviour (transportation intensity, consumption goods), in the recent years the emissions have begun to rise again.

A framework of relevance with regard to encouraging electricity generation from **renewable energy** is given by the EU Directive 2001/77/EC. The latter provides the increase of the electricity rate gained from renewable energy in the EU Members. For example, the Czech Republic, has already adapted its national programmes to increase the share of renewable energy. It has even legislated attractive feed-in tariffs for electricity originating from renewable energy.

In the recent years, **specific support tools** for funding of energy-saving projects and the use of renewable energy have been developed. Their application is being enhanced. Since these projects address cost-efficient but long-term goals, the funding instruments are often designed as „beneficial loans“, „project risk sharing“ or „project co-operations“.

2.2 Waste Management

The waste management sectors of the investigated Countries in Transition are characterised by an **increasing of residual wastes quantities** within the municipal solid wastes and by stagnating or decreasing industrial wastes. A crucial framework for the waste disposal infrastructure is defined by the EU Directives on:

- „Landfill“ (99/31/EC) claiming for a stepwise reduction of the organic fraction in the wastes to undergo landfilling, and
- „Packaging“ (94/62/EC) fixing the minimal limits for material recovery and thermal recovery of the packaging components.

Whereas the **infrastructure for separate waste collection and utilisation** has been gradually built up in Austria and Germany in the last 20 years, such systems are being established in significantly shorter terms (within the next 10 years) in the EU Accession Countries. Most progress has been achieved at the restructuring of the collection and recycling / recovery infrastructure in Slovenia where regional waste centres are established nationwide.

Most countries give effort to meet the requirements defined in the EU Landfill Directive by encouraging **waste incineration**. Here, emphasis is on the energy recovery of off-heat and electricity generation. Several incineration plants being currently in use do not correspond to the EU environmental standards and thus are due to reconstruction. New or modernised facilities of existing incineration plants is however related with high expenses. Furthermore, new incineration plants and landfills, for

instance in Slovenia, are facing an increasing civil opposition by citizens being concerned about life quality in their regions.

The waste management infrastructure is, as in Austria, usually provided by the municipalities. All investigated countries have adopted the „**polluter pays**“ **principle** as a measure of environmental policy in their environmental concepts and as an additional process support. Since public finance sources in the EU Accession Countries could subsidise only a minor part of the investments needed, in particular as far as structural and cohesion funds are concerned, waste disposal costs will notably increase in the next years.

2.3 Water and Wastewater

Sewage disposal progress in the Accession Countries is particularly induced by the EU **Directive on Urban Wastewater Treatment** (91/271/EEC, complemented by 98/15/EC). Sewage disposal restructuring is quite advanced in greater cities. Main attention will be paid in the next 10 years to the sewage disposal systems of medium-sized and small towns over 15.000 PE. In the Czech Republic, new sewage connecting will concentrate on settlements between 2.000 and 15.000 PE.

The project priority focuses on recognised **sensible and particularly sensible regions** in each country. Similarly to the Seventies, as the Carinthian Lakes region in Austria was declared a priority zone with regard to sewage disposal, sensible regions have been now defined in the Accession Countries as well. Sensible regions are e.g. **catchment areas for drinking water**, such as the karst regions in Slovenia, regions of intensive **tourism**, such as the Balaton Lake in Hungary, or the surroundings of the Bled Lake in Slovenia. Also water resources or regions of distinct nature quality or water resources of low self-rehabilitation potential, due to their specific water flow, are provided for sensible regions.

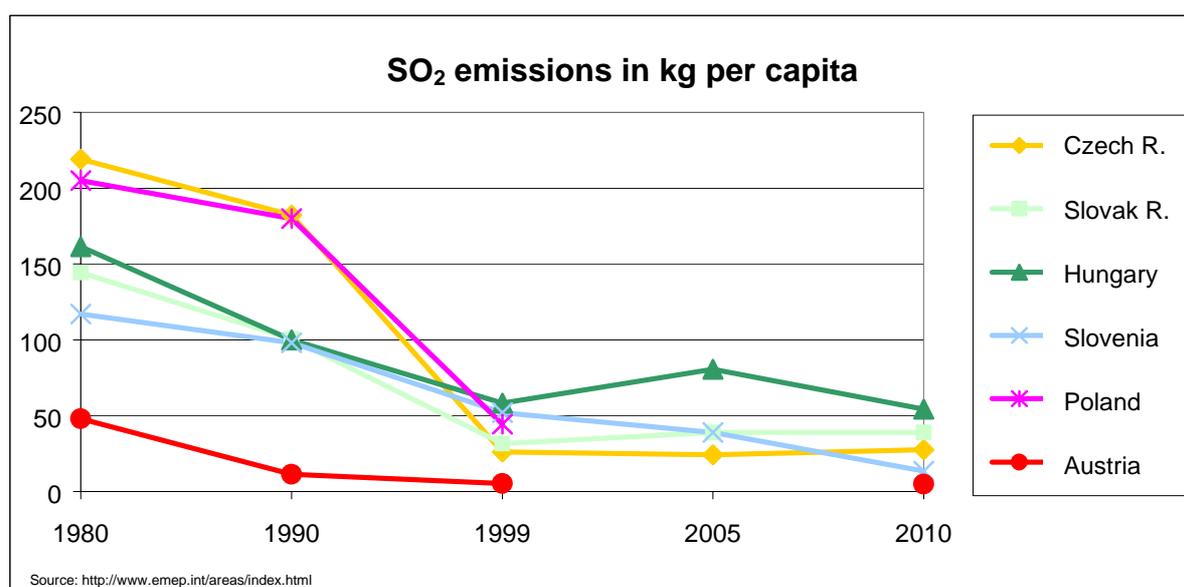
Similarly to the waste disposal, sewage disposal restructuring in the Accession Countries is to occur in significantly shorter terms compared to the implementation in e.g. Austria in the last decades. In the Czech Republic, all agglomerations >10.000 PE are to be enclosed by constructing 100 wastewater treatment plants by 2010. In the Slovak Republic, 90 facilities are foreseen for this purpose in the same term. In Hungary, all agglomerations up to 15.000 PE are to be supplied with wastewater treatment plants by 2010 within the “National Sewage Collection and Treatment Implementation Programs”. Poland has planned a reduction of the pollutant freight input from the industry by 50% and from the municipal wastewater by 30%, both compared to the situation in 1990 and both to implement by 2010.

Relevant Sewage Disposal in the Accession Countries		
Czech Rep.	Disposal in all settlements >10.000 PE	by 2010
Slovak Rep.	Disposal in all settlements >10.000 PE	by 2010
Hungary	Disposal in all settlements >15.000 PE	by 2010
Slovenia	Disposal in all settlements >2.000 PE	by 2008
Poland	Reduction of pollutant input by the industry by 50% and by municipalities by 30%	by 2010

Another pollutant source is presented by agriculture. In some of the countries, **Action Programmes for Reduction of the Water Pollution by Nitrates and Pesticides** are being currently elaborated where corresponding measures are set. These programmes contribute in particular to meeting the targets of the EU Directive for Drinking Water (98/83/EC).

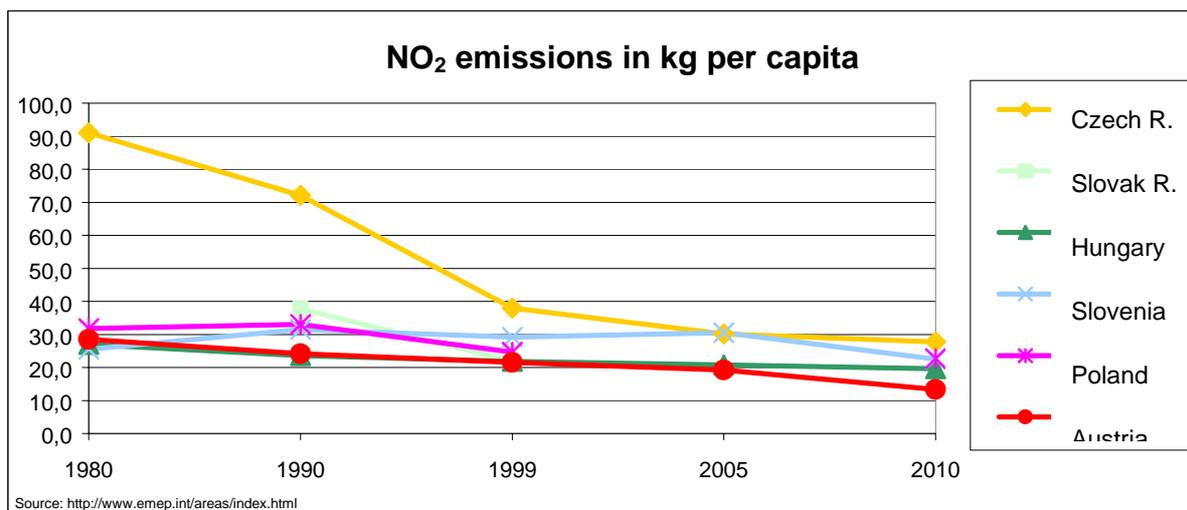
2.4 Air Quality

The emissions of the “classic air pollutants”, such as sulphur dioxide (SO₂), nitrogen oxides (NO_x), dust or soot, have been significantly reduced in the recent decades thanks to technical and organisational measures in all investigated Accession Countries. So for instance, the SO₂ emissions in the Czech Republic were reduced by about 90% between 1980 and 1999. For the next years, further emission reductions for larger stationary sources have been planned with regard to these pollutants, such as for coal-fired power stations in Slovenia; at the same time, a notable rise of pollutant emissions originating from the transportation sector is expected. The total balance forecast assumes thus only marginal emission changes by 2010.



Source: emep-program data base

Graphics: ÖGUT



Source: emep-program data base

Graphics: ÖGUT

The Accession Countries have committed themselves in a number of protocols within the “UN Convention on Long-Range Transboundary Air Pollution (UN/ECE CLRTAP)” to a reduction, respectively, restriction of a variety of air pollutant emissions.

With regard to the **ozone layer protection**, systems for collection and recovery, respectively disposal, of ozone depleting substances are being arranged in the Accession Countries, with 2008 as deadline. In particular, coolants from existing cooling aggregates as well as ozone depleting substances from fire extinguishers are to be disposed this way.

2.5 Transition Deadlines Agreement for the Accession Countries in the Environmental Sector

Within the accession negotiations between the European Commission and the Accession Countries, transition terms and corresponding deadlines have been settled addressing the implementation of the EU Standards. The deadlines agreed upon so far are listed in the following table.

Transition Deadlines for the Accession Countries for Meeting the Requirements of the EU Directives on Environmental Protection ^{*)} , Situation on 28 th June 2002
Czech Republic
Utilisation and recycling of packaging materials - Directive 94/62/EC by 2005
Urban wastewater treatment - Directive 91/271/EEC (complemented by 98/15/EC) by 2010
Slovak Republic
VOC emissions from petroleum storage - Directive 94/63/EC by 2007
Urban wastewater treatment - Directive 91/271/EEC (complemented by 98/15/EC) by 2015
Hazardous substances discharge into surface water - Directive 76/464/EEC (2000/60/EC) by 2006
IPPC Directive 96/61/EC by 2011

Transition Deadlines for the Accession Countries for Meeting the Requirements of the EU Directives on Environmental Protection^{*)}, Situation on 28th June 2002
Air pollution from large incineration plants– Directive 88/609/EEC (2001/80/EC) by 2007
Hazardous waste incineration - Directive 94/67/EC by 2006
Metal and all-over recycling rate as to the packaging directive - Directive 94/62/EC by 2007
Hungary
Recovery and recycling of packaging materials - Directive 94/62/EC by 2005
Urban wastewater treatment - Directive 91/271/EEC (complemented by 98/15/EC) by 2015
Air pollution from large incineration plants– Directive 88/609/EEC (2001/80/EC) by 2004
Hazardous waste incineration - Directive 94/67/EC by 2005
Slovenia
Recovery and recycling of packaging materials - Directive 94/62/EC by 2007
Urban wastewater treatment - Directive 91/271/EEC (complemented by 98/15/EC) by 2015
IPPC Directive 96/61/EC by 2011 (instead of 2007, as for EU Members)
Poland
Sulphur contents of liquid fuels - Directive 99/32/EC by 2006
VOC emissions from petroleum storage - Directive 94/63/EC by 2005
Recovery and recycling of packaging materials - Directive 94/62/EC by 2007
Landfill Directive 99/31/EC by 2012 (instead of 2009, as for EU Members)
Waste shipments - Regulation 93/259/EEC by 2007
Urban wastewater treatment - Directive 91/271/EEC (complemented by 98/15/EC) by 2015
Hazardous substances discharge into surface water - Directive 76/464/EEC (2000/60/EC) by 2007
IPPC Directive 96/61/EC by 2010 (instead of 2007, as for EU Members)
Recycling goal for glass by 2003
All-over recycling rate - Directive 94/62/EC by 2007
Health protection of individuals against the dangers of ionising radiation in relation to medical exposure - Directive 97/43/Euratom by 2006

^{*)} In the Agreements with the Accession Countries, the EU Directives are pointed to as titles but without numbers, since the Accession Countries are committed also to an ongoing accordance of their legislation with the EU updates. For this reason, the table presents on first position the EU Directives valid at the time of the Agreements. In the brackets, the corresponding update of the same Directives is given.

^{**)} since 27.11.2002 replaced by the Directive on Emissions of Large Incineration Plants 2001/80/EC.

Sources: Enlargement of the European Union - Guide to the Negotiations S. 62,
<http://europa.eu.int/comm/enlargement/negotiations/chapters/negotiationsguide.pdf>
 Key Documents related to the Enlargement Process,
<http://europa.eu.int/comm/enlargement/report2001/index.htm>
 Communications of the Austrian Federal Economic Chamber, <http://wko.at/up>

3. Market Opportunities for the Austrian Environmental Technology Enterprises

The investigated Accession Countries face highly ambitious programmes in each environmental sector. The time frame to adjust to the EU environmental standards can be resumed with deadlines by 2010 and 2015. Compared to environmental technology markets in other continents, **timetables and quality standards defined by the EU environmental acquis apply to the environmental goals of the EU Accession Countries are fairly concrete and binding**. Within the EU accession negotiations, each country was obliged to deliver an implementation plan (National Programme for the Adoption of the Acquis, NPAA) supplied with specific time and funding planning.

The gradual market liberalisation as well as the resource shortage in public budgets in Central and Eastern Europe result in a cutback of formerly applied subsidising for resource consumption, energy and infrastructure facilities. This **development towards market costs** will continue also in future. Related to this subject, another key instrument integrated in the environmental policy in all Accession Countries is the implementation of the “polluter pays” principle.

Latest developments have shown that there will be paid more attention to **operator and concession models** in the future. Such models are characterised by a private enterprise operating an infrastructure facility, such as a landfill, a water supply network or a wastewater treatment plant, under clearly contracted framework provisions. Operator and concession models are often applied when public funding is shortened and thus not able to perform urgently needed investments, or when a private enterprise offers more cost-effective conditions. **Contracting models** enjoy also increased attention, mainly in the energy, water supply and sewerage sectors. In particular, Saving Contracting appears a highly appropriate funding instrument in Central and Eastern Europe, thanks to high saving potentials and low own investments. With regard to this instrument, the Austrian Society for Environment and Technology (ÖGUT) launched in 2002 the pilot project CONVIBA <http://www.oegut.at/themen/moe/conviba.html>, which aims at the implementation of projects on energy saving contracting in public buildings in Bratislava.

The fact that public authorities in Central and Eastern Europe often lack experience in construction and operation of environmental infrastructure suggests **a crucial competitive advantage** to enterprises who offer **all-over concepts (turnkey projects)** with design, funding, construction and operation all inclusive. It would be thus of great importance that Austrian environmental enterprises join forces in future as **bidding consortia**.

3.1 Energy und Climate Protection

For the Austrian economy, the chances in the energy sector mainly refer to the **implementation of energy efficiency measures**. Austrian enterprises prove here, in comparison with the Accession Countries, a high technological potential (measurement and test engineering, air conditioning technology, building insulation, low-energy and passive house technology). While the majority of industrial facilities have already been modernised by foreign investors, there has been hardly any opportunity for the sanitation of residential buildings due to unclear or much too complex ownership relations. In the Czech Republic, the entire energy saving potential for residential and public buildings is estimated at 30%; the implementation corresponds to investments of 23 to 41 billion Euro. The Austrian Energy Agency (EVA) estimated in 1994 the energy saving potential of the residential and public buildings in the Accession Countries even at 50%. Amortisation periods of single energy efficiency measures range between 3 and 25 years; technology development and increasing energy prices would even further improve profitability in future.

In the sector of **renewable energy**, the EU has defined the goal of increasing its share in the gross domestic consumption from 6% to 12% (White Book on Renewable Energy). **Directive 2001/77/EC on promotion of electricity from renewable energy** plays a key role. Some of the Accession Countries, e.g. the Czech Republic, have already reacted to this directive by integrating regulations in the national legislation, on attractive and binding minimal feed-in tariffs for electricity from renewable energy. In its national energy policy, the Czech Republic has also defined the target of increasing the share of renewable energy within the total energy generation from 1,5% (1997) onto 6,2% (2010). Poland, too, is planning an increase of the share of renewable energy within the primary energy structure from 6% (1999) onto 7,5% in 2010 (corresponding to additional 5,4 TWh/a) and onto 14% until 2020. For this, Poland estimates the necessary investments at 3,6 billion Euro.

A large potential for Austrian environmental enterprises results also from the foreseen **restructuring of the hydropower** in Slovenia. Within the planned closure of the nuclear power plant Krsko, new power production capacities are to be constructed on the Sava river (220 MW installed power, 900 GWh/a, investment volume of 500 Mio. Euro), and additionally, small hydropower is to be modernised, respectively, revitalised. Small hydropower reconstruction is also envisaged in the Czech Republic and in Slovakia.

Significant potentials exist also with regard to the massive restructuring expected in the agricultural sector in Central and Eastern Europe – in particular in Poland, Hungary and Slovakia – in terms of **biomass and biogas utilisation** where Austrian enterprises dispose of well developed know how and long-term experience. This market segment offers good chances also to small Austrian companies. In Slovenia, reinforced utilisation of biogas is integrated in the National Environmental Action Programme as a tool for reducing the climate-relevant methane emissions.

Thermal solar energy utilisation where Austria holds the leadership throughout Europe will be, too, paid increasing attention in the Accession Countries if considering the EU directives in the field of renewable energy combined with the notable rise of energy prices. This is valid in particular for those large country parts in Central and Eastern Europe where no natural gas infrastructure is developed.

All investigated countries have signed the **Kyoto Protocol** and have committed to greenhouse gas emission reductions of 8% (CZ, SK, SLO), respectively, 6% (PL, H) related to the base year 1990 (PL

1988). Apart from Slovenia, in 2000 all countries were clearly under their Kyoto target values, however, a continuous increase of the CO₂ emissions resulting from increasing road transport is expected again within the next years. If during the Kyoto Reduction Period (2008–2012) the Accession Countries remain below their reduction target values, selling of “emission contingents” to other countries will be possible.

Performing Joint Implementation Projects (JIP, joint climate protection projects among industrial countries) within the Flexible Mechanisms foreseen offers the opportunity to Austria to meet part of its Kyoto reduction commitment by implementing JIP in Central and Eastern European countries. Climate protection projects within the Joint Implementation include mainly measures in the fields of energy efficiency and renewable energy. Austria has so far signed bilateral „Memoranda of Understanding“ enabling cooperation for Joint Implementation Projects with the Czech Republic, Slovakia and Hungary. In August 2003, the **Austrian JI/CDM Programme** was launched, which is executed by the Kommunalkredit Public Consulting (KPC). More information is available at www.ji-cdm-austria.at.

The market opportunities for the Austrian economy related to the CO₂ emission reduction are thus mainly in the fields of **construction industry and the technical building equipment** (building sanitation), utilisation of renewable **energy, facility construction** (industrial enterprises) and construction and modernisation of **public transport infrastructure**.

3.2 Waste Management

The Landfill Directive 99/31/EC requiring the stepwise reduction of the **organic substance** in the landfilled waste will offer a challenge for the waste managements of the Central and Eastern countries. Thus, large investments will be necessary for the establishment of

- collection systems and composting plants for biogenous waste,
- mechanical-biological treatment plants for residual waste, and
- waste separation plants.

According to the Packaging Directive 94/62/EC, the Accession Countries shall build up also systems for **separate waste collection and utilisation**. So far, Austrian enterprises have been successful at the waste management market in the Accession Countries, and have thus gained a clear headstart with regard to the future market expansion. Austrian enterprises have built up a solid know how regarding the separate collection and utilisation of biogenous waste, waste glass, waste paper and waste metals, based on the well developed own market and on their activities in the Accession Countries.

Hitherto practice of enhanced landfilling of untreated waste mixed with organic substance has resulted in the investigated countries in a large number of **landfills with significant biogas generation**. Avoiding biogas emissions into the atmosphere is of key relevance for the Accession Countries in terms of climate protection, energy utilisation and safe landfill operation. Applying the Flexible Mechanisms within the Kyoto Protocol on minimising **biogas emissions through energy utilisation** offers also an additional economic advantage. Austrian enterprises provide expertise and long-term experience in both biogas collection and energy utilisation (e.g. electricity generation).

The national environmental plans and programmes of the Accession Countries contain the investment calculation as well, including waste collection, utilisation and disposal. Expected costs for each implementation period are summarised in the table below.

Necessary Investments in the Waste Management for Each Period		
Country	Period	Costs in Mio. Euro
Czech Republic	2001 – 2005	400
Slovakia	2001 – 2007	450 ¹⁾
Hungary	2003 - 2008	408
Slovenia	2001 - 2006	631
Poland	n.a.	3.600

n.a.: not available

1) operation costs included

Sources: Data for Poland are taken from the publication of the ISPA Management Committee „The Challenge of Environmental Financing in the Candidate Countries, 2000“, data for other countries originate from the corresponding national programmes.

3.3 Wastewater

The implementation of the **Directive on Municipal Wastewater Treatment 91/271/EEC** providing for the wastewater treatment in settlements larger than 2000 population equivalents will result in an enormous demand for medium-sized wastewater treatment plants. Wastewater disposal in the Accession Countries would thus probably emerge as the environmental sector of the largest investment need. The national environmental plans and programmes of the Accession Countries display the investment demand of the wastewater disposal sector. **Estimated costs** for each implementation period are summarised in the following table.

Investment Need in Wastewater Disposal for Each Period		
Country	Period	Costs Mio. Euro
Czech Republic	2001 - 2010	3.224
Slovakia	n.a.	499
Hungary	2001 - 2010	2.800
Slovenia	2001 - 2006	456
Poland	n.a.	11.000

n.a.: not available

Source: Estimations for Slovakia and Poland are taken from the publication of the ISPA Management Committee „The Challenge of Environmental Financing in the Candidate Countries, 2000“, data for other countries originate from the corresponding national programmes.

Austrian enterprises provide remarkable know how and long-term experience within a well-established national market in particular for **medium-sized and small wastewater treatment plants**. Decentralised wastewater treatment technology has significantly improved within the last 10 years, so

that its employment is considered more and more the cost-effective alternative to long sewerage networks. In this sector, Austrian enterprises could enjoy a major economic potential and thus a competitive advantage thanks to their know how and the close location to the market despite the relatively small scale of Austrian enterprises if considered in international terms.

Meeting the pollution limits for **drinking water** according to Directive 98/83/EC will induce a significant need for action in many regions of the countries investigated. Although contamination prevention for drinking water is addressed as a priority goal in the environmental policies of each country, a notable demand for water purification plants, e.g. for nitrate reduction, is expected. This concerns mainly the countries Poland, the Czech Republic, Slovakia and Hungary where drinking water supply generally relies on groundwater use.

3.4 Air Quality

Along with the establishment of waste disposal systems, additional construction of **waste incineration plants** should be considered. The Czech Republic plans the construction of new waste incineration capacities of 1,4 Mio. t/a until 2020, which corresponds to approximately five medium-size incineration plants. Both new plants and modernisation of existing ones will require up-to-date technology for off-gas filters and purification where Austrian enterprises hold a worldwide leadership in know how and technology.

Since all Accession Countries have defined in their environmental programmes a successive **down-turn of coal utilisation** in favour of natural gas, classical filter technologies, such as desulphurication and dust separation as applied at large coal power plants, will not enjoy highest priority anymore. The chances for Austrian enterprises can be defined in the field of implementing modern and environmentally-friendly **technology (cleaner production)** where air pollution is prevented already in the production processes. This strategy will gain in importance in the Accession Countries in particular in terms of emission limits values growing stricter and thus environmental subventions for cost-intensive „end of pipe“ technology being shortened due to the budgetary situation in these countries.

Emission prevention for ozone depleting substances, such as volatile carbo-hydrogen compounds or NO_x, will also be paid more attention in future, out of the existing international commitments. The individual road traffic is the largest source of this pollution group. In the last decade, almost no investment has been made in the public transport infrastructure in Central and Eastern Europe. Considering the quickly growing traffic in these countries (Transport Policy in the Accession Candidate Countries, Institute for European Environmental Policy, 2001), **investments** particularly in **urban public transport** should be performed. Austrian enterprises could thus gain advantage of their know how in rail transportation. Since a significant amount of air pollutants shipped to Austria originates from the EU Accession Countries, a successive reduction of these emissions will prove a positive effect also for Austria in terms of a reduced environmental damage and related economic expenditures.

Market Chances for Environmental Enterprises in the Prospective EU Member Countries in Central and Eastern Europe

	CZECH REPUBLIC	SLOVAKIA	HUNGARY	SLOVENIA	POLAND
ENERGY AND CLIMATE PROTECTION					
Kyoto Protocol Reduction Period 2008-2012	Reduction of 8% (Base: 1990)	Reduction of 8% (Base: 1990)	Reduction of 6% (Base: 1990)	Reduction of 8% (Base: 1990)	Reduction of 6% (Base: 1988)
Memorandum of Understanding for JIPs with Austria	yes	yes	yes	no	no
Renewable Energy	Wind power (min. fed-in tariff 9,4 Cent/kWh), small hydropower	Biomass, wind power, small hydropower	Wind power, biogas	hydropower, biomass	Biomass, wind power, geothermal energy
Energy Efficiency	Building sanitation, heat-power co-generation	Building sanitation, industrial plants, district heating, heat-power co-generation	Building sanitation, district heating, heat-power co-generation	Building sanitation, district heating	Building sanitation
WASTE MANAGEMENT					
Landfilling	no priority yet	Closure of small local landfills	Construction of 6 regional landfills of 20 Mio. m ³ in total	Construction and enlargement of regional landfills for municipal waste	Sanitation of old landfills for industrial and municipal waste
Waste Incineration	Additional capacity of 1,4 Mio. t/a for municipal waste	Low priority	Modernisation of existing plants (e.g. Budapest)	High priority, construction of plants close to urban centres	Low priority
Recycling, Waste Collection	Modernisation of collection and utilisation systems, composting plants	Modernisation of collection and utilisation systems, composting plants	Modernisation of collection and utilisation systems, composting plants	Biowaste collection, composting plants	Modernisation of collection and utilisation systems, composting plants
WATER / WASTEWATER					
Wastewater Treatment	New WWTP for 9,6 Mio. PE for settlements >2.000 inhabitants by 2010	New WWTP for 90 settlements >10.000 inhabitants by 2010	WWTP for 9 Mio. PE, focus: lake protection	Priority: drinking water quality (Karst) and coastal region	Priority: drinking water quality, Baltic Sea
AIR QUALITY					
Classic Air Polluters	Switch from coal to natural gas (planned turndown of coal utilisation)	Off-gas desulphurication at thermal plants	Modernisation of public transport	Modernisation of public transport	Off-gas desulphurication at thermal plants

Legend: JIP - Joint Implementation Project; PE – Population Equivalent; WWTP - wastewater treatment plant

