1. EXECUTIVE SUMMARY AND KEY RECOMMENDATIONS

EXECUTIVE SUMMARY

POLICIES AND MEASURES

The Slovak Republic has made sound progress since the last IEA in-depth review of its energy policies. The country's energy policies, outlined in the *Energy Policy of the Slovak Republic* (adopted in 2006 and whose updated version is currently under preparation) and the *Energy Security Strategy of the Slovak Republic* (2008) are in line with the IEA member countries' policy goals to achieve energy security, environmental sustainability and economic development. The key objectives of the Slovak energy policy agenda are increasing efficiency in the power and end-use sectors, reducing energy intensity, reducing dependence on energy imports, expanding the use of nuclear power, increasing the share of renewables in the heat and electricity sectors, and supporting the use of alternative fuels for transport. With these sound objectives in place, the government should now focus on the cost-effective implementation of the adopted policies through concrete actions.

ENERGY SECURITY

Because of high dependence on oil and gas imports, energy security is very high on the policy agenda in the Slovak Republic. Natural gas is currently the most significant energy source, accounting for about 30% of the country's primary energy supply. A considerable proportion of households depends on natural gas for heating. Moreover, gas import dependence is very likely to remain high in the future. Gas is supplied mainly from Russia with long-term import contracts. Dependence on a single supplier makes the Slovak Republic vulnerable to supply disruptions. The government took a proactive approach to improve the security of gas supplies following the January 2009 gas crisis, including through expanding storage capacities and enabling reverse flows at the country's two western interconnectors. These actions have appreciably improved the ability to respond to a gas supply disruption. The government should continue with plans to further expand storage capacity and to develop an interconnector with Hungary.

Since 99% of the crude oil used within the Slovak Republic is imported from Russia via the Druzhba pipeline, the government is rightly concerned about oil supply route diversification. The various potential pipeline projects to interconnect the Slovak pipeline network with other supply sources would improve supply security, particularly in light of the possible redirection of Russian exports via alternative routes in the coming years. The government should prioritise these projects and accordingly take tangible steps to promote and advance their development, including co-ordinating with industry and neighbouring countries on issues of reversibility and capacity expansions.

REGIONAL CO-OPERATION

The Slovak government recognises the importance of regional co-operation in meeting its energy policy objectives, particularly with regard to enhancing energy security and market competition. Notably, the Slovak Republic has moved forward with market coupling with the Czech Republic and has taken progressive steps to improve co-operation with other neighbouring countries. The successful coupling with the Czech Republic has greatly improved electricity market functioning. The Slovak energy regulator, the Regulatory Office for Network Industries (RONI), takes an active part in regional co-operation concerning cross-border network access for electricity transmission and gas pipelines. The government should continue to support infrastructure projects which will enhance energy security. In particular, initiatives in the framework of the Visegrád Group, which includes the Slovak Republic, Poland, Hungary and the Czech Republic, should be pursued.

The Slovak government is right to support the construction of a north-south connection linking the planned liquefied natural gas (LNG) terminals in Croatia and Poland, including an interconnector to Hungary in the framework of the collaboration with the Visegrád Group. This connection could significantly contribute to regional market integration.

With respect to the regional electricity market, generation fleet investments and upgrades to the Slovak power system will position it favourably within the regional marketplace. With heavy reliance on nuclear and hydropower, strengthened interconnection capability, storage and greater co-operation across regional markets will be needed to facilitate system balance in the Slovak Republic, particularly during periods of power imbalances and low domestic demand.

Formally engaging in long-term electricity system planning would greatly facilitate investment decisions in incremental generation, storage and transmission assets to the benefit of all countries in the Visegrád Group. With growing shares of intermittent renewables entering the marketplace, a regionally focused investment strategy will help minimise investments aimed strictly at improving system reliability from a national perspective.

LOW-CARBON ECONOMY

The Slovak Republic is to be commended for having decoupled economic growth from growth in greenhouse gas (GHG) emissions. The decline in GHG emissions since 1990 has been one of the steepest among OECD countries. Economic restructuring was the main driver behind the dramatic decrease in GHG emissions in the 1990s and the stabilisation of emissions in the 2000s, although energy efficiency improvements and fuel switching also played a role. Nevertheless, in 2009, the Slovak Republic ranked among the ten most GHG-intensive economies in the OECD. Energy-related CO_2 emissions account for the largest share of total GHG emissions (over 70%). Thus, reducing emissions related to energy production, transportation and consumption will have a huge impact on the country's overall GHG intensity.

So far, meeting international commitments for emissions reductions has not been particularly challenging for the Slovak Republic. The country has exceeded its Kyoto target and has a significant surplus of tradable emission allowances in the first commitment period of the Kyoto Protocol. The profits resulting from the use of the flexible mechanisms of the Kyoto Protocol can be reinvested, for example through the

Green Investment Scheme, in measures aiming at further reductions of GHG emissions. However, the use of the Kyoto flexibility mechanisms is low in the Slovak Republic compared with neighbouring countries.

The Slovak Republic's participation in the EU Emissions Trading System (ETS) has been characterised by an over-allocation of allowances. The absence of challenging targets could explain why climate change has not been high on the government's agenda. It could also be the reason why a comprehensive and coherent climate change strategy is still lacking. However, GHG emissions reductions obligations in the Slovak Republic will likely become more stringent after 2020. Much deeper emission cuts up to 2050 have been discussed at the EU level. The forecast emission trends might not be in accordance with mitigation commitments, in particular in the longer perspective beyond 2020-2030.

According to government projections, GHG emissions to 2020 are expected to grow in the transport and industry sectors. The government recognises that such a trend presents a potential challenge for the Slovak Republic in meeting its reduction targets in the non-ETS sectors, particularly the transport sector. A detailed plan with specific actions and interim targets for each of the non-ETS sectors is therefore needed. An important general principle in the assessment and prioritisation of different GHG mitigation measures and policies should be cost-effectiveness.

The Slovak energy infrastructure is ageing and will require investment in replacement or modernisation, particularly when economic growth recovers, leading to increasing energy demand. Large parts of the building stock and of the vehicle fleet are also ageing, calling for modernisation and replacement. The Slovak government should seize the opportunity of anticipated economic growth and related investments to progress towards a low-carbon economy, primarily by maintaining a low-carbon electricity production, thanks to nuclear electricity and renewable energy, and by improving drastically energy efficiency and increasing the use of renewables.

With the planned commissioning of two new nuclear units at the Mochovce nuclear facility in 2012 and 2013, the generating portfolio of the largest Slovak utility will be strategically positioned with a fleet of low-carbon capacity. However, the large share of nuclear in the Slovak energy mix requires special attention to issues of decommissioning and waste management. The National Nuclear Fund in 2006 has put in place an effective institutional arrangement to collect and manage funds for decommissioning and long-term radioactive waste management and disposal. Moreover, the government has created a national company for decommissioning and for radioactive waste management and disposal. These steps are to be commended. However, the principal omission is a firm plan and timescale to develop a deep geological repository for final disposal of spent fuel. Despite its high degree of dependence on nuclear power, the Slovak Republic currently has no clear timeline to develop its own repository.

In its renewable energy policy, the government gives priority to biomass. Biomass represents a significant low-carbon energy resource for the Slovak Republic. However, strict rules and controls on biomass production may prevent the country from reaching its envisaged target. Agriculture and forestry policies should be aligned with energy policy to achieve the national goals in the most effective manner.

The Slovak government has introduced feed-in tariffs to encourage investment in renewable electricity technologies. In order to avoid excessive upward pressure on final electricity prices, it would be helpful to establish the annual maximum uptake of a particular technology. This should be determined in consultation with the transmission operator, SEPS, so that system security concerns can be adequately considered and the impact on rate structures can be effectively managed. It is vital to avoid retroactive reduction of support as this would severely damage investor confidence. On the other hand, it is important to develop and apply a predictable and transparent monitoring process, to analyse regularly the cost-effectiveness of the feed-in tariffs and to adjust them accordingly for new projects, in order to encourage investment while avoiding placing an excessive burden on consumers.

ENERGY EFFICIENCY

Given the multiple benefits of energy efficiency in terms of energy security, GHG mitigation, and the often low or negative costs of such measures, unleashing the energy efficiency potential should be a policy priority. Energy efficiency has had a relatively low profile on the agenda in some ministries in the Slovak Republic and this has been reflected in low levels of programme funding. Access to funding for energy efficiency improvement projects is still hampered by a lack of transparency and excessive administrative barriers. Based on the Strategy on Energy Efficiency, adopted in July 2007, a robust legal framework has been set up which should serve to partly rectify this situation. Now the focus on energy efficiency should shift strongly towards implementation of the Strategy's proposed measures to ensure the realisation of energy savings.

The Slovak Republic has realised impressive results in energy efficiency over the past five years. Energy intensity decreased by 33% between 2002 and 2008, but it still remains higher than the IEA European average and huge energy saving potential still exists in most sectors, especially in buildings and transport. Regarding buildings, low-energy and passive buildings should be clearly defined and included in a future revision of the building codes. As for transport, energy efficiency should be an integral part of the transport policy, especially in the context of a projected rise in fossil fuel use in the transport sector. Policy measures aimed at improving the fuel efficiency of the Slovak vehicle fleet should be implemented.

Improving energy efficiency in the electricity and heating sectors will also be important in order to achieve major energy savings over the long term. Currently, there is little incentive for distribution utilities to invest in end-use efficiency programmes that would help residential and commercial consumers save electricity or heat in a cost-effective manner. The current rate and ownership structure across these systems largely favours throughput rather than efficiency. Given that energy security is a priority for the Slovak government, electricity and heat suppliers should be encouraged to implement end-use energy savings, without compromising their profitability as sales decline.

The transmission company, SEPS, has been upgrading its transmission system and strengthening interconnection capability over the past decade and has clearly defined investment plans extending out to 2020. The distribution system operators may wish to monitor developments in relevant smart grid-related technologies as these, where appropriately deployed, can reduce transmission losses and environmental impacts while helping to maximise system reliability and stability. Smart grid-related investments, including advanced metering infrastructure, and additional transmission system interconnections will strengthen the flexibility of the Slovak power system, which will facilitate the effective integration of new nuclear and variable renewable generating capacities to the generation mix.

Another important area for the government's attention is the efficiency of the heating sector. The Slovak Republic has a long tradition of district heating and overall consumption in the form of heat represents nearly half of total final energy consumption. Improving the efficiency and lowering the environmental impact of district heat production and consumption has been a low priority, compared with measures in the electricity and transport sectors. A successful strategy on heat should integrate the entire energy chain from generation to end-use. Several components of these successful strategies that the Slovak government should consider are: collecting statistics on heating and cooling markets; creating an adequate policy and regulatory framework for the heating sector; supplying heat to consumers at a reasonable cost; developing a framework which provides long-term predictability for investors in district heating networks; and further promoting combined heat and power (CHP) generation, energy efficiency and renewable energy sources.

MARKET REFORMS AND REGULATORY FRAMEWORK

The Slovak Republic has achieved notable progress in market liberalisation. Both the electricity and natural gas markets have been opened, and competition in the industrial segment of each market increased markedly in 2009. In the electricity sector, the number of residential and non-residential consumers switching suppliers in 2009 was dramatically higher than 2008 levels. The Slovak government should be commended for making the strategic decision several years ago to access managerial and operational expertise by partnering with leading power companies across Europe. This has given the electricity sector considerable strength in serving the needs of residential, commercial and institutional customers.

In the gas sector, many challenges still remain. Despite the fact that a legal framework to open the gas market has been in place since 2006, competition among private sector companies has been gradually increasing in recent years. At present, there are several active suppliers on the gas market. The supply to households comes mostly from the incumbent supplier; however, additional suppliers entered the market in 2011. Regulated end-user prices for households are functioning as a barrier to more competition and new market entrants, and this may prevent necessary private investment in the market. Further, the Regulatory Office for Network Industries should assess whether the network fees are at the appropriate level to cover the need for investment in reconstruction and should make information about the gas market publicly available.

A stable, predictable and transparent regulatory environment is the key prerequisite not only to well-functioning markets but also to attracting the needed investment in the energy infrastructure. Following years of underinvestment, the need for investments to upgrade the Slovak Republic's energy infrastructure is pressing. It is commendable that the government is committed to creating conditions for the efficient development and safe and reliable operation of energy systems, while allowing appropriate returns on their investment. The role of the energy regulator in creating a stable, predictable and transparent framework is of utmost importance since the national utility and the transmission company still have dominant positions in the electricity and gas markets respectively. As part of the implementation of the Third Energy Market Liberalisation Package, the government will ensure that RONI has full autonomy, the decisive powers and the resources necessary to carry out its role effectively. The regulatory process should be carried out in a transparent manner and should include consultations with stakeholders.

KEY RECOMMENDATIONS

The government of the Slovak Republic should:

- ☐ *Enhance energy security by supporting infrastructure projects which diversify energy supply sources and routes.*
- ☐ *Continue to pursue its national energy policy objectives within a regional context, strengthening regional co-operation, integrating regional energy markets and supporting increased interconnections.*
- ☐ *Step up CO_2 emissions reduction efforts, notably in the transport and buildings sectors, including through the creation of a detailed plan with specific actions and interim targets and an assessment of the cost-effectiveness of different mitigation measures, to ensure the national target for non-ETS emissions is achieved.*
- ☐ *Ensure timely implementation of energy efficiency policies and measures and raise public awareness of energy efficiency improvement options, given the critical importance of energy efficiency for energy security, climate change mitigation and economic competitiveness.*
- ☐ *Ensure a stable and predictable legislative framework, with an independent and adequately resourced regulator, and encourage investments in energy projects in accordance with the long-term national energy strategy.*