



V.

ECONOMIC OPPORTUNITIES AND POLICY RESPONSES

It is the principal role of government to set a legal framework which motivates business to employ sustainable production principles and encourages citizens to change their life styles and product choice towards sustainable consumption. The government is expected to create a socio-economic environment which provides new opportunities for the private sector and generates new jobs. Both market and non-market policy instruments are needed to change the way our socioeconomic system transforms energy and materials and creates well-being.

Research, development and innovation are important for economic growth and this applies to green growth as well. The corner stone of innovation is education and research. Education represents an investment in future human and social capital, and research represents an investment in the knowledge base.

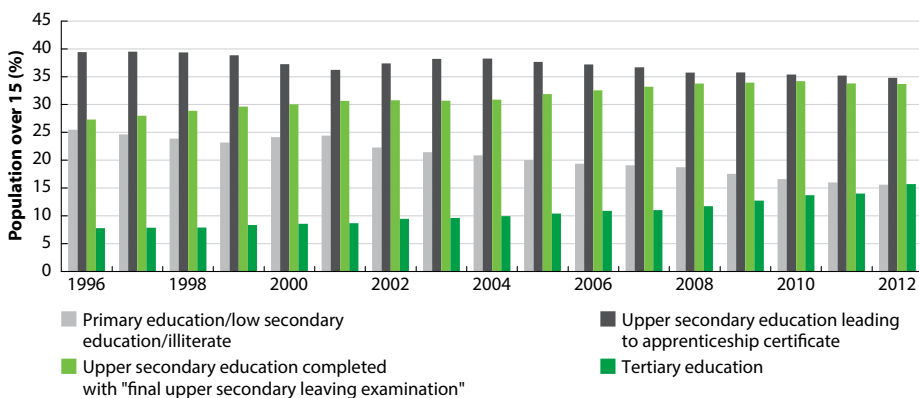
Investments in green technologies and environmental protection in general are a key element in moving towards green growth. Environmental taxation with energy pricing is a direct tool for governments to stimulate growth in a particular way. This is particularly true in the case of the Czech Republic since environmental levies are part of the environmental fund used for green innovations, the promotion of green jobs, and investment in the protection of the environment in general.

5.1. Educational attainment: population over 15 years

Educational attainment measures the highest level of education that an individual has successfully completed in formal education programmes.

Education today is inseparable from the development of human capital worldwide. That is why the majority of countries, economic and political unions, as well as different international organizations (e.g. OECD, World Bank and others) assess the level of educational attainment as one of the most important characteristics of a country's development. Educational attainment refers to an important direct outcome of education as opposed to the inputs. According to the OECD, for example, education is an essential investment for long-term growth, developing the potential of nations and for responding to the fundamental changes in technology and demographics that are shaping labour markets. The EU sees its future economic success as dependent on having a highly educated population to be able to compete effectively in a globalised knowledge-based economy. Naturally, green growth goals are also strongly linked to the level of educational attainment. As with other European countries (e.g. Germany, Austria, and Sweden) school attendance is compulsory for nine years, usually from the age of 6 to 15 (basic education) in the Czech Republic¹.

Figure 27: Educational attainment: population over 15 years (%)



Source: Czech Statistical Office

Educational attainment at the upper secondary and tertiary education level of the Czech population has increased considerably since 1995. The amount of people graduating with an upper secondary education has increased from 27% to 35%, and the share of the population that has completed tertiary education has increased from 8% to 16%.

This positive development is reflected in the slow but continuous increase in numbers of graduates. Nevertheless, the percentage of the population that has attained a tertiary level education is considerably below the OECD average (30%). The Czech Republic has achieved the OECD average proportion of the population over 15 years of age that has attained at least an upper secondary education.

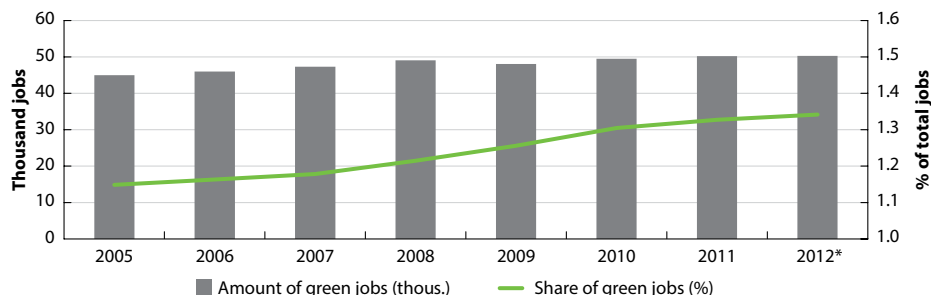
¹ The illiteracy rate of the Czech population is under 1%.

5.2. Green jobs

A green job is defined as a job that contributes substantially to preserving or restoring environmental quality. Due to data constraints, the green jobs indicator presented in this publication is composed of the number of employees who are working in enterprises and institutions producing services for environmental and natural resources protection (mainly NACE codes 37 – sewerage, 38 – waste collection, treatment and disposal activities; materials recovery, 39 – remediation activities and other waste management services, 8130 – landscape service activities, 841 – administration of the State and the economic and social policy of the community, 8559 – other education n.e.c., 9104 – botanical and zoological gardens and nature reserve activities). This indicator does not include employees producing products used for resources and environmental protection.

Environmental protection may result in ambiguous impacts on employment. On the one hand, environmental policy creates new job opportunities while contributing to an improvement in the environment. On the other hand, phasing out environmentally harmful industries has adverse impacts that contribute to unemployment. This indicator is focused on the first effect and quantifies the green jobs whose role in the national economy should be strengthened.

Figure 28: Green jobs (in thousands) and as a proportion of total employees (%)



* Preliminary data

Source: Czech Statistical Office

The absolute number of green jobs was quite stable during the period in question. It shows a slight increase in the first half, a slight reduction in 2009 with a subsequent increase in the following years, and reaches its maximum in 2012. This contrasts with the development of the Czech economy, which has shown a fall in total jobs since 2008 (the total change in 2008–2012 is –7.2%). In relative terms therefore, of the total number of jobs in the Czech Republic, the number of green jobs increased over the whole period.

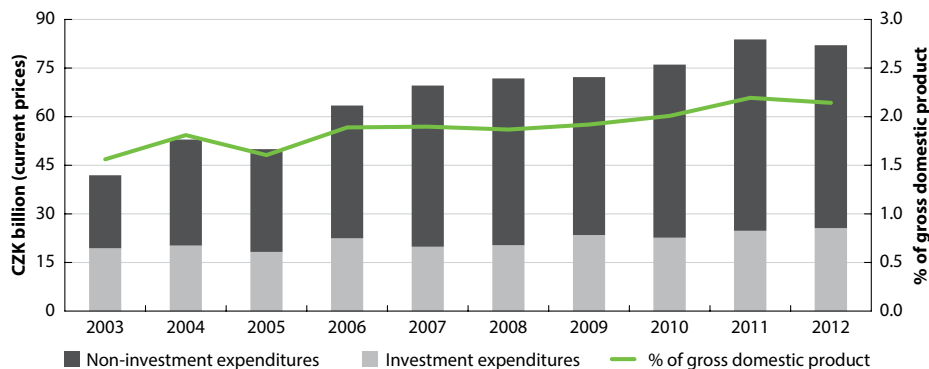
More than 50% of green jobs in the Czech Republic is concentrated in waste collection, treatment and disposal activities (52.4% in 2012), followed by employees in public administration involved in environmental protection, with an approximate 20% share (19.5% in 2012). Compared to other developed countries, the Czech Republic has a smaller share of green jobs than the EU15 average of about 2%. However, this comparison may not be representative due to differences in the definition of green jobs across countries.

5.3. Environmental protection expenditure

Environmental protection expenditure consists of environmental protection investment and non-investment expenditure. Investment expenditure includes all expenditure on acquiring long-term tangible assets for the protection of the environment. The general objective of environmental protection investments is to gather, manage, monitor and control, reduce volume, and prevent and eliminate pollutants or any other environmental damage ensuing from business activities. Environmental non-investment expenditure includes payroll, rental payments, utilities, energy and materials, as well as payments for services for which the main purpose is environmental protection. The general objective of environmental non-investment expenditure is prevention, reduction, adjustment or disposal of pollution and pollutants originating from commercial production.

Total environmental protection expenditure demonstrated an upward trend (except for 2005) and doubled over the period 2003–2011. A slight decrease can be observed in 2012. The proportion of total environmental protection expenditure to GDP was more stable and ranged from 1.6 to 2.2% during the whole period.

Figure 29: Environmental protection expenditure in current prices (billion CZK) and as a share of GDP (%)



Source: Czech Statistical Office

In 2012, environmental protection investment amounted to 25.6 billion CZK (a 3.2% increase compared to 2011). This related mainly to wastewater management that accounted for 46%. Ambient air and climate protection accounted for 16%, waste management 12%, soil, groundwater and surface water protection and remediation 10%, and noise and vibration abatement 4%. The rest, 12%, was related to other activities (such as landscape and biodiversity protection, environmental R&D, and protection against radiation, etc.). Environmental non-investment expenditure amounted to 56.5 billion CZK (a 4.3% decrease compared to 2011). The vast majority of non-investment expenditure, 64%, was related to waste management. The rest was distributed as follows: 19% for wastewater management, 6% for ambient air and climate protection, 6% for soil, groundwater and surface water protection, and remediation, 2% for landscapes and biodiversity protection, and 3% for other activities (such as noise and vibration abatement, environmental R&D, and protection against radiation, etc.).

5.4. Environmental taxes

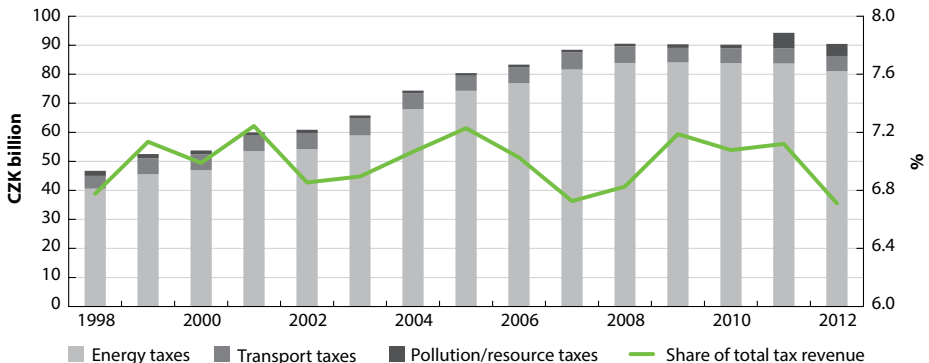
Environmental taxes as a market-based instrument are levied on products and activities with a proven negative impact on the environment with the aim to stimulate activities that minimize this negative impact. The higher the stimulus, the faster and stronger the response. Therefore, it is desirable to shift the tax burden from labour and consumption towards taxing negative environmental impacts. Here we present absolute values of environmental taxes and their contribution to total revenue from all taxes and social contributions.

Environmental taxes can be divided into three main categories: (1) energy taxes (taxes on energy products used for both transport, e.g. petrol and diesel, and stationary engines and heating purposes, e.g. fuel oil, natural gas, coal and electricity); (2) transport taxes (related to the ownership and use of motor vehicles); and (3) pollution/resource taxes, which are usually small and therefore often grouped together. Pollution taxes include taxes for emissions into the air (except for carbon dioxide taxes) and water. In the Czech Republic, energy taxes represent the largest amount of environmental taxes – almost 90% in 2012.

In 2012, revenues from environmental taxes in the Czech Republic were over 3.4 billion EUR, or 90.4 billion CZK, which accounts for 6.7% of total revenue from all taxes and social contributions (TSC). The Czech Republic is slightly above the EU27 average (6.2% in 2011) due to the downward trend in this ratio in the rest of the EU.

In period 1998 to 2012, the highest share of environmental taxes was in 2001, reaching 7.2%, with revenues from environmental taxes reaching 60 billion CZK. In 2011, on the other hand, the highest revenues from environmental taxes were 94.3 billion CZK, accounting for 7.1% of TSC.

Figure 30: Environmental taxes (billion CZK) and their share of total tax revenues (%)



Source: Czech Statistical Office

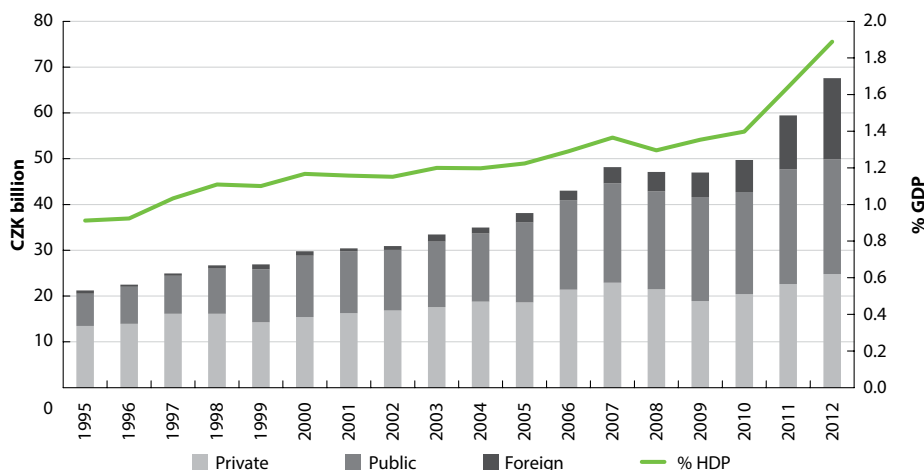
5.5. Expenditure on research and development

The **Gross domestic Expenditure on Research and Development (GERD)** indicator includes investment and non-investment expenditure on research and development by government, higher education institutions, business enterprises and private non-profit organisations. Research and development (R&D) refers to creative work undertaken on a systematic basis in order to increase the pool of knowledge (including knowledge of humanity, culture and society), and the use of this knowledge to devise new applications.

The role of R&D is essential in the green economy, since it directly contributes to growth by extending the knowledge base. R&D further indirectly influences the whole economy by creating innovations and information. Spending on R&D is an investment in knowledge capital. We present total expenditure on R&D here since it is difficult to distinguish R&D of importance to green growth; most R&D is indirectly related to green growth and sustainable development.

The chart shows the development of R&D expenditure in absolute terms and as a ratio to GDP. It reports a steady increase since 1996, with a slight drop in 2008 and 2009 related to the financial crises. A rapid increase in the last few years is mainly related to an increase in foreign investment (mainly due to the EU Framework Programme) and indicates a positive development in R&D expenditure.

Figure 31: Expenditure on R&D by source in 2005 constant prices (billion CZK) and as a ratio to GDP (%)



Source: Czech Statistical Office

In an international comparison of R&D expenditure as a ratio to GDP in 2011, the Czech Republic was below the EU27 average (1.9%), but it exceeds Southern European countries and most of the new EU member states (except for Slovenia and Estonia).

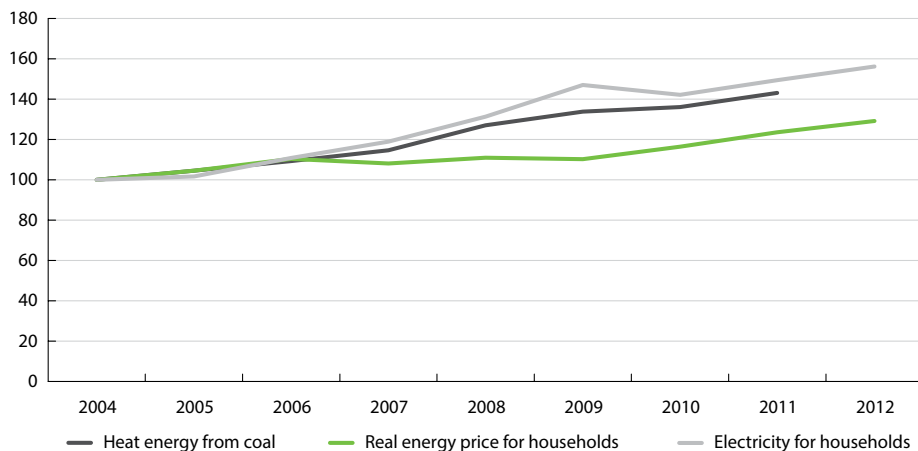
5.6. Energy prices

Energy prices are expressed as the average electricity price for a medium sized household, the weighted average price for heat generated from coal and the real energy price for households. The real energy price is derived from IEA data and reflects consumer and producer price indices.

Increasing energy prices provide negative motivation for energy consumption, encourage energy savings and have a positive influence on innovation and use of alternative fuels. However, high energy prices for industries might result in the favouring of imports and decreasing competitiveness of domestic enterprises on the international market.

We present three indicators related to the price of energy in the Czech Republic: The Figure below shows changes comparing the baseline level in 2004 (2004=100). All these indicators show a steady increase during the period in question which can be seen positively from a green growth perspective, since it motivates energy savings. The price for electricity has also been increasing because it has included financial support for renewable energy sources, which have shown a rapid increase in recent years. While the price of heating energy from coal has been increasing almost at the same pace, the overall real energy price index for households has recorded a much lower increase within the period in question.

Figure 32: Energy prices (index, 2004=100)



Source: Energy Regulatory Office, IEA.

In comparison to the development of the real energy price for households in OECD Europe, which has increased about 26.4% since 2005, the real energy price for households in the Czech Republic increased only about 23.6% within the same timeframe. The electricity price for households in the Czech Republic in 2012 (154 EUR per MWh) was lower in comparison with neighbouring countries, such as Austria (198 EUR per MWh), Germany (264 EUR per MWh) and Slovakia (179 EUR per MWh), and higher in comparison to Poland (148 EUR per MWh).