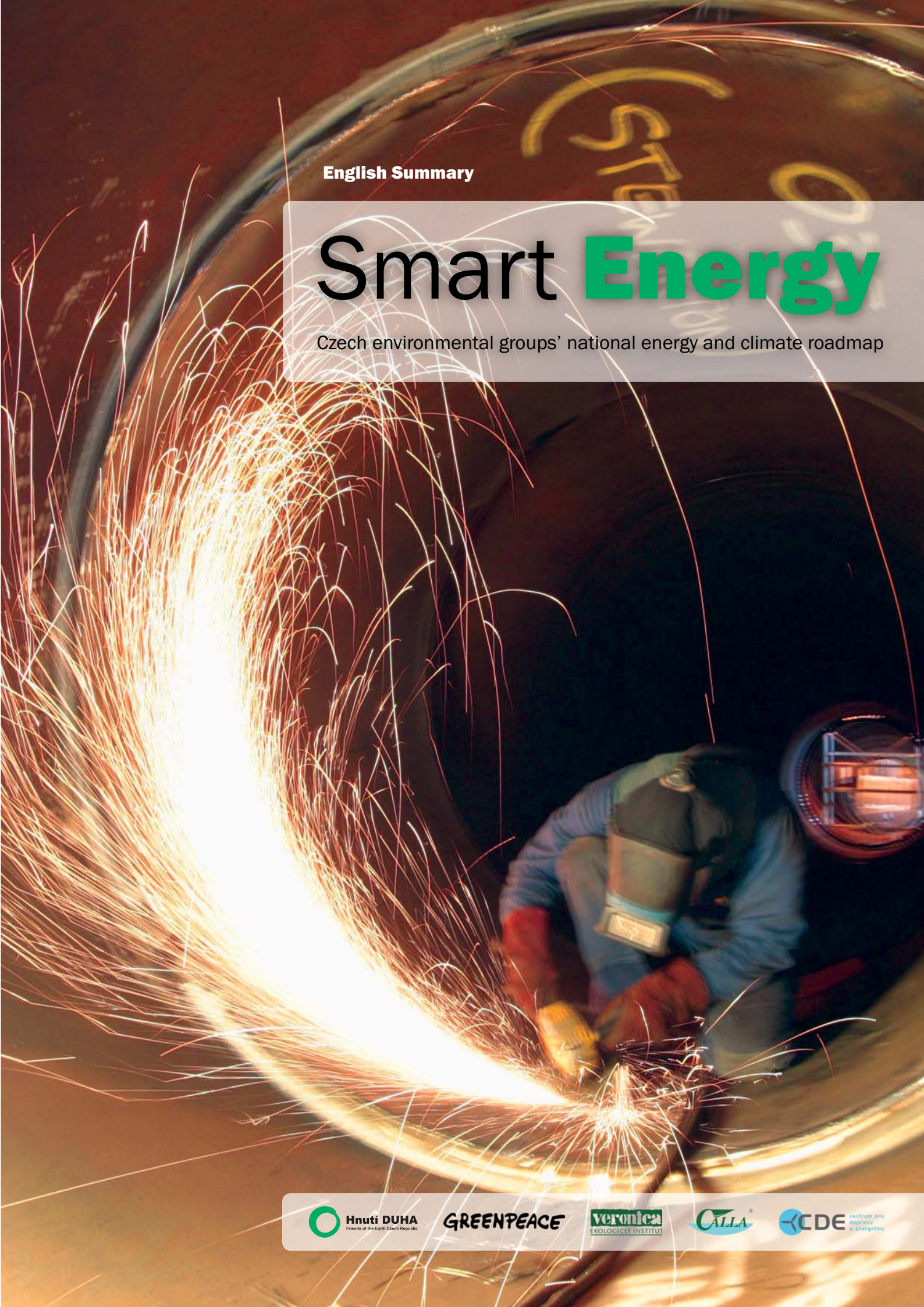

English Summary

# Smart Energy

Czech environmental groups' national energy and climate roadmap

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**The Czech Republic's first ever comprehensive roadmap to a low carbon economy, based upon research commissioned from the Wuppertal Institute, was published by the country's environmental groups in 2010. The report shows that oil and gas imports can be halved by 2050 and carbon emissions would drop by 88% as the country is freed from dependence on coal and nuclear energy.**

*Smart Energy* not only aims to address the environmental impacts of the energy and transport sectors, but also strives to create an opportunity for the Czech economy. It shows the large potential for reduction of energy bills of households and businesses, cutting our increasing oil and gas imports and creating thousands of new green jobs. The report proposes a new approach to energy policy, which includes focus on energy efficiency and energy services, a massive innovation program and energy decentralisation.

## Background

The more than 100 page report was produced by Friends of the Earth Czech Republic (Hnutí DUHA), Calla, Greenpeace, Ecological Institute Veronica and Centre for Transport and Energy. It was developed from a technical report commissioned from the Wuppertal Institute for Climate, Environment and Energy, Germany, available in English at www.chytraenergie.info/images/stories/wi_final_cor.pdf. Czech consultants were commissioned to produce several technical background reports on the potential of energy efficiency in key sectors and renewable energy in the country. Also, the report draws upon findings of the Pačes Commission, a panel appointed by five major political parties in 2008 to assess the future of the energy sector.

**Smart Energy is divided into five parts:**

- ➔ It provides, in four chapters, a snapshot of key energy related problems the country faces: climate change – the Czech Republic is one of the worst per capita $CO_2$ polluters in Europe; coal dependence; economic costs of high energy bills; and energy security, especially oil and gas imports.
- ➔ The report discusses a proposed new approach to energy policy, which focuses on energy efficiency and energy services – rather than new energy sources – and puts a major emphasis on energy decentralisation and technological innovation. Coal and nuclear phase-outs are also important aspects of the strategy.
- ➔ Czech opportunities for low carbon solutions in three sectors – energy efficiency, renewable energy, and transport – are analysed in depth in the next three chapters.
- ➔ Results of the Wuppertal Institute's three scenarios of Czech energy (see below), and their real-life implications for the economy, are summarised.
- ➔ The report's closing chapter discusses eleven crucial measures – new regulation, green taxes, government investment programs, and others – that are needed in order to make the Smart Energy plan a reality for the Czech Republic.

## Opportunities

Clean energy opportunities are huge in the Czech Republic. The Pačes Commission's research revealed that the country could produce about 50 terawatt hours of renewable power by 2050, mainly from solar and biomass. This is about 65% of the country's current electricity consumption. In addition to that, long-term renewable heat potential is 152 petajoules, with 77% of that coming from the combustion of biomass.

Also, investment in green innovation would lead to major efficiency gains for the Czech economy. The Wuppertal Institute's modelling showed that with strong incentives, energy consumption could decrease by 58% by 2050 and by 23% by 2020. With effort, industrial energy consumption can be 4% lower by the end of the decade and 39% lower by mid-century, while households could cut their energy needs by 17% and 60%, respectively.

## Three scenarios

The key aspects of *Smart Energy* are the three in-depth scenarios of possible future developments of the Czech energy sector with a time horizon to 2050, as modelled and described by the Wuppertal Institute report. The same economic and population growth is assumed in all scenarios. All three scenarios also assume no expansion of coal mining and no extension of nuclear power generation.

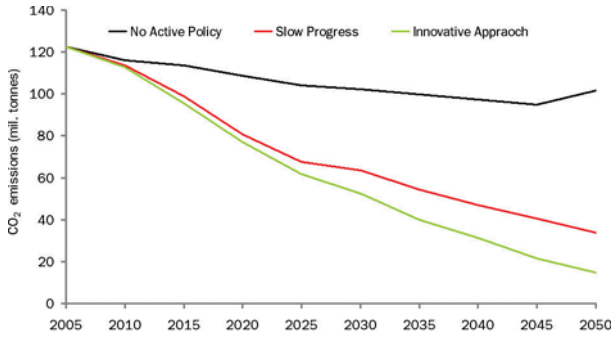
The first scenario, *No Active Policy*, is the reference development scenario for the Czech Republic's energy system. For this scenario it is assumed no new energy policies aiming to bring about structural changes to the country's energy system will be implemented.

The second scenario, *Slow Progress*, assumes that some policy measures intended to reduce energy consumption and promote renewable energy sources will be introduced and enacted. Renewable energy potential in particular would be more or less totally used by 2050.

The most ambitious scenario, *Innovative Approach*, is the basis for the environmental groups' energy and climate plan. It leads the way toward realising a sustainable, low carbon Czech energy system. It is characterized by several innovative elements that ensure that $CO_2$ emissions in 2050 would be more than halved compared even to the *Slow Progress scenario*. The key difference is an emphasis on energy efficiency, which leads to a further reduction of energy demand by another 20%. Carrying out this scenario would require higher penetration of electric cars and increasing imports of renewable energy sources, as a replacement for oil and gas imports.

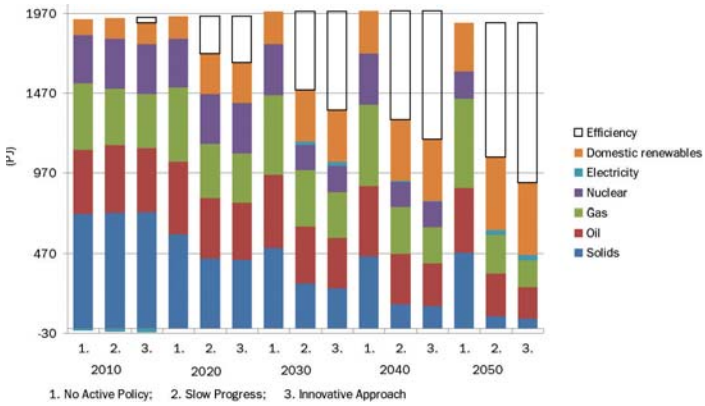
$CO_2$ emissions drop by 88% (compared to 2005) under the *Innovative Approach* scenario (Figure 1). Annual per capita $CO_2$ emissions decrease from 12.0 t to only 1.5 t.

**Figure 1: Comparison of energy-related $CO_2$ emissions between three scenarios**




Domestic renewable energy would, by 2050, meet almost half of all energy demand. The country's total final energy consumption would decrease by 40% (Figure 2).

**Figure 2: Comparison of primary energy supply in three scenarios**




However, electricity demand drops only by 13% by 2050, mainly due to the high penetration of electric cars (Figure 3). The resulting gap would be covered by renewable electricity imports from e.g. concentrated solar plants in the Sahara desert and North Sea offshore wind power.

Also, electricity production will change significantly. In 2050 more than 93% of Czech electricity consumption will be produced from renewable energy sources. Around 16% of electricity will be imported (Figure 4).

**Figure 3: Comparison of electricity consumption in three scenarios**

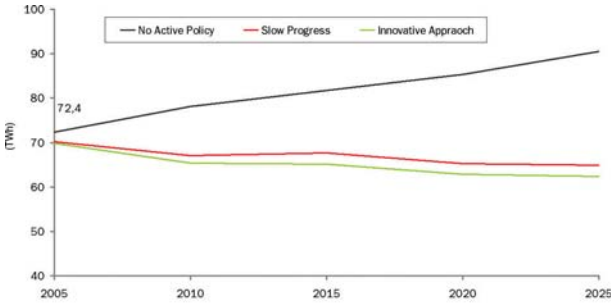
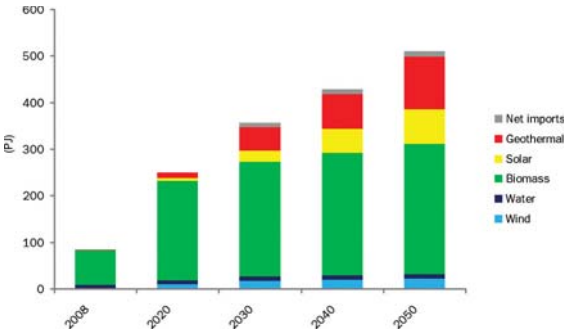
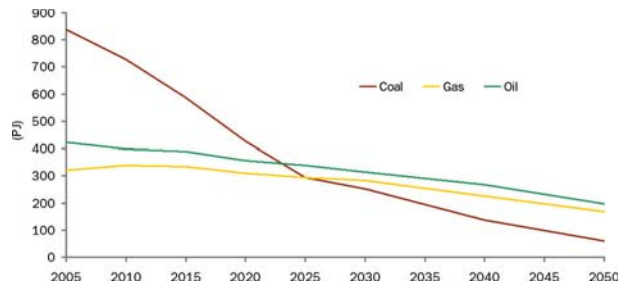



**Figure 4: Renewable energy potential (primary energy supply)**




Oil makes up a rising share of fuel imports – currently more than two thirds in terms of costs – most of which is used for road transport. The future of low carbon transport is in highly efficient electric cars running on renewable electricity. Also, the *Smart Energy* plan calls for a shift from cars to public transport, from roads to rail as well as for better urban planning and investment in cycling. Also, massive government support for energy efficient buildings – both spending and new standards – would cut gas consumption in heating. The *Innovative Scenario*, consequently, expects a 50% reduction of oil and natural gas consumption (and imports) by 2050 (Figure 5).

**Figure 5: Primary energy supply of coal, gas and oil in the Innovative Approach scenario**



## Recommendations

Environmental groups propose and discuss details of eleven key programmes that are needed in order to put the country on the path towards a hi-tech, low-carbon, innovative economy:

1. A UK-style Climate Change Act, with binding annual $CO_2$ cuts, will kick-start green innovation and low carbon businesses.
2. An ambitious green tax reform would shift taxes from jobs to energy consumption.
3. Reform of the EU Emissions Trading System will improve its effectiveness - tighten the cap, stabilise the carbon price, close loopholes – and fuel modernisation of the industry.
4. The Czech government's active support for a comprehensive global climate treaty would ensure that carbon emissions cuts are made globally, deforestation is stopped and the poorest countries receive necessary help for both adaptation to climate change impacts and transformation to a green economy.
5. A new *Energy Independence Fund* should spend almost EUR 900 million per year on subsidies for energy efficiency of buildings and renewable heating.
6. Energy efficiency standards for buildings should be tightened so that only low-energy houses are built after 2010, and only passive houses after 2015.
7. The government should introduce new legislation on energy efficiency of electric appliances.
8. The government should introduce a new Renewable Heat Act, in order to boost investments similarly to how feed-in tariffs for renewable electricity were introduced.
9. Binding standards must require that all new or retrofitted combustion plants – biomass and fossil fuel-powered – apply best-available-techniques (BAT) standards. Note that the *Innovative Approach* scenario, which the report is based on, does not expect any new coal-fired power plants in the Czech Republic.
10. A gradual radical increase of lorry road tolls would shift transport of goods from roads to rail, and motivate companies to buy from local suppliers.
11. A new Waste Act should introduce a range of measures to ensure more waste recycling and reuse, accompanied by government spending.

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http://chytraenergie.info/images/stories/wi_final_cor.pdf

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The Czech version of the *Smart Energy* roadmap and all the background reports are available online at:
**www.chytraenergie.info**

**Photos:** Greenpeace, Nordex, Schott, Rockwool