ROADMAP FOR MOVING TO A COMPETITIVE LOW-CARBON ECONOMY IN 2050

KEY FACTS & FIGURES

- **The Roadmap provides a cost-efficient pathway to a cleaner, climate-friendly and competitive European economy in the long term.**
- **The EU should achieve an overall 80% reduction in domestic emissions by 2050.**
- **To achieve this long-term target cost-efficiently, the EU should reduce its domestic emissions by 40% and 60% by 2030 and 2040, respectively.**
- **The Roadmap will help to put key economic sectors on the right track from the beginning.**

The low carbon Roadmap sets out cost-efficient pathways for key economic sectors for achieving an **overall 80% reduction in the EU's emissions by 2050** (compared to 1990). This would be accomplished solely through reduction measures within the EU and does not include the possible use of international credits to offset emissions.

Extensive economic modelling undertaken to prepare the Roadmap shows that domestic emission cuts of the order of **40% and 60% below 1990 levels** could be achieved in a cost-effective way **by 2030 and 2040, respectively**. Current policies are projected to reduce emissions domestically to -30% in 2030 and -40% in 2050.

By 2009 the **EU reduced greenhouse gas emissions by around 16%** compared to 1990 levels, whereas the economy grew by 40% over the same period. For 2020 Member States have committed to reduce emissions by 20%, to increase the share of renewables in the EU's energy mix to 20% and to achieve a 20% energy efficiency improvement. With full implementation of current policies, the EU is on track to achieve a **20% domestic reduction in 2020** below 1990 levels. However, with current policies, only half of the 20% energy efficiency target would be met by 2020.

The **Energy Efficiency Plan** (EEP) presented at the same time as the *Roadmap for moving to a low-carbon economy in 2050*, sets out the necessary measures to achieve this energy efficiency target. Among other things, the EEP proposes binding targets for the refurbishment rate of public buildings, energy efficiency requirements for industrial equipment, energy audits, improving the efficiency of power and heat generation, and the roll-out of smart power grids.

If the EU delivers on its current policies, including its commitment to reach 20% renewables and achieve 20% energy efficiency by 2020, this would enable the EU to outperform the current 20% emission reduction target and achieve a **25% reduction by 2020**.

In **international climate negotiations**, the EU's conditional offer to reduce emissions by **30%** over the next decade if other major economies make similar efforts remains very much on the table, but these conditions have not been met yet.

The modelling and analyses which the Roadmap builds on takes into account global trends such as population growth, evolution of oil prices, technological developments, and different levels of global climate action. The impacts for Europe's competitive sectors were projected to assess the risk of stepping up climate action without our main competitors doing so as well.

- **To achieve a 80% reduction in emissions in the EU by 2050, investment in clean and energy-efficient technologies needs to be increased by 1.5% of GDP per year, or € 270 billion.**
- **This investment will be largely paid back, or even over-compensated, through lower energy bills; fuel savings amount to € 175-320 billion on average per year by 2050.**
- **The low carbon economy will also improve air quality, reducing air pollution control and health care costs by up to €88 billion a year by 2050.**

Making our economies energy-efficient and climate-friendly would lead to a massive shift from fuel expenses to investment expenditure. The investments will add value to and increase output from our domestic economy, while fuel expenses largely flow out of the EU.

Over the next 40 years additional **annual investment equivalent to 1.5% of the EU's GDP, or around € 270 billion**, would be needed on top of current annual investment equivalent to 19% of GDP. The increase would simply bring back the EU's overall investment expenditure to the level of before the economic crisis. In comparison: in 2009 emerging economies like China (48%), India (35%) and Korea (26%) allocated much larger shares of GDP to investments.

Energy consumption will go down by almost 30%, thanks to improved energy efficiency, from 1800 million tonnes of oil equivalent (Mtoe) in 2005, to 1650 Mtoe in 2030 and 1300-1350 Mtoe in 2050.

More domestic energy sources will be used, in particular wind, solar, biomass and water. This will improve the EU's security of energy supply and make our economies less vulnerable to oil price shocks. By 2050, **fossil fuel imports will be more than halved** compared to today; whereas without action, these imports are projected to double. Over the whole 40 year period average fuel costs will fall by **between € 175 billion and € 320 billion a year**.

Air pollution levels would on average be more than **65% lower** in 2030 than in 2005. This would reduce healthcare and mortality costs drastically, by € 7-17 billion a year by 2030 and by **€17-38 billion a year** by 2050. In addition, savings on air pollution control measures could amount to close to **€ 50 billion a year** by 2050.

Delaying climate action would require additional investment expenditure of around **€ 100 billion per year** between 2030 and 2050, but would not reduce investment needs before 2030 by a comparable amount. Also fuel savings would be lower over time.

- **Investments in clean technologies will spur economic growth, as well as preserve and create jobs.**
- **Clean technology is a booming sector, which other parts of the world are also investing in. The EU must stay in pole position in the low carbon race to reap the benefits of green growth.**

Renewable energy has a strong track record in job creation. In just 5 years, the renewable industry has increased its work force from 230,000 to 550,000. A 25% reduction in the EU's greenhouse gas emissions could create **1.5 million additional jobs** by the end of this decade if governments use revenues from auctioning of CO2 emissions and carbon taxes to reduce labour costs.

In the longer term, the creation and preservation of jobs will depend on the EU's ability to lead in the development of new low carbon technologies through increased education, training, R&D and innovation, as well as maintaining favourable economic framework conditions for investments.

Changing the energy system, transport and the housing sector will increase demand for new skills and competences. Sectors that will profit most from 'decarbonising' the economy are construction, power, transport and renewable energy.

The recovery of **construction sector**, which was particularly hard hit by the economic crisis, could get a significant boost through a major effort to accelerate the renovation and building of energy efficient houses. Investments in residential and commercial buildings are projected to increase by € 20 billion a year over the coming decade, raising annual investment to € 70 billion. The additional investment could create or maintain 150,000-500,000 direct construction jobs a year.

Under decarbonisation scenarios investments in **smart grids** and **clean power plants** are also projected to increase by more €30 billion annually by 2030. A recent study by the European Commission has estimated that an additional €50 billion investment in this sector would add 400,000 direct and indirect jobs.