

# GREENHOUSE GAS EMISSIONS AND EUROPE 2020 STRATEGY

*János Lazányi*

University of Debrecen, Faculty of Applied Economics and Rural Development  
4032 Debrecen, Böszörményi str. 138, Hungary. E-mail: lazanyi@agr.unideb.hu

## **Summary**

*Common Agricultural Policy has identified three priority areas for action to protect and enhance rural heritage: (i) the preservation and development of natural farming and traditional agricultural landscapes; (ii) water management and sustainable use and (iii) dealing with climate change. Measures of Rural Development Plan in EU countries promote the development of agricultural practices for preserving the environment and safeguarding the countryside. This is achieved by targeting rural development and promoting environmental friendly, sustainable practices, like agri-environment schemes. Farmers are encouraged to continue playing a positive role in the maintenance of the countryside and the environment. Changes in total emission between 1990 and 2007 do not show any correlation with the total GHG emission. GHG emission was reduced in Hungary, Slovakia, Lithuania, Czech Republic, Romania, Poland, Estonia and Bulgaria, where GHG efficiency is low.*

**Key words:** *Climate change, greenhouse gas emissions, Europe 2020 strategy*

## **INTRODUCTION**

Climate change is considered as one of the biggest challenges of XXI century and global action is needed to mitigate greenhouse gases (GHG) and adapt to changing water levels and temperatures, which affect food supply and ecosystem integrity. Climate change will have significant economic and social impacts in many regions of EU and sectors like agriculture is considered to bear greater adverse affects. Less developed regions and certain sections of society (the elderly and/or low-income households) are expected to suffer more from climate change. Climate change policy of EU, adopted in December 2008, includes ambitious targets for 2020. The policy is focused on a sustainable future with an energy-efficient economy by (i) cutting greenhouse gases by 20% (30% if international agreement is reached), (ii) reducing energy consumption by 20% through increased energy efficiency and (iii) meeting 20% of energy needs from renewable sources. In the frame of the headline targets of Europe 2020 Strategy, this paper discusses most important greenhouse gas-emitting activities in agriculture, emphasizes the importance structural changes through the modernisation of infrastructure particularly in developing regions of EU and calls for enhancing the competitiveness of economy to promote energy efficiency (EC 2007, 2010).

In April 2009, the European Commission presented a White Paper laying out a European framework for action to improve resilience of Europe to climate change, emphasising the need to integrate adaptation into all key European policies and enhance co-operation at all levels of governance (CEC 2009a). Complementing to the White Paper, the report "The role of European agriculture in climate change mitigation" summarises the main impacts of climate change on EU agriculture, examines adaptation needs, describes the implications for the CAP and explores possible orientations for future action (CEC 2009b). It aims at engaging Member States and the farming community into actions on adaptation.

The Adaptation Framework respects the principle of sustainable development and is focused on four pillars; (1) building a solid knowledge base on the impact and consequences of climate change, (2) integrating adaptation into key policy areas; (3) employing a combination of policy instruments (market-based instruments, guidelines, public-private partnerships) and (4) stepping up international cooperation on adaptation. The Adaptation Framework complements action of Member States and supports wider international efforts to adapt to climate change. In the United Nations Framework Convention on Climate Change, EU is working with partner countries towards a climate agreement and the Communication entitled "Towards a comprehensive climate change agreement in Copenhagen" addresses both adaptation and mitigation activities (CEC 2009c).

## MATERIALS AND METHODS

Human activities contribute directly to emissions of greenhouse gases through a variety of different processes. Paper is based on National Inventory Report (NIR) submitted to the United Nations Framework Convention on Climate Change (UNFCCC) and contains national greenhouse gas emission estimates for the period 1990 to 2007. The estimation is compiled in accordance with the Inventory Reporting Guidelines agreed by the UNFCCC Conference, and set out in document IPCC Reference Manual (IPCC, 1996) and the Good Practice Guidance (IPCC, 2000). Member states emissions data are compared on CO<sub>2</sub> equivalence bases calculated total emission on tones per capita. Data are from the European Environment Agency (dataservice.eea.europa.eu).

## RESULTS AND DISCUSSIONS

As farming activities depend on climatic conditions, agriculture is directly exposed to climate change, but agriculture can also help to provide solutions to the mitigation of greenhouse gases. The EU recently conducted a study of the impact of climate change on different European agri-climatic zones and options for adaptation. Even if some climate changes may be positive for some North European regions, most will be negative, affecting regions already suffering from changing economic situation and environmental regulations. Farming will be most affected in the Southern and South-Eastern Regions of Europe, but according to the Intergovernmental Panel on Climate Change, the worst consequences may not be felt until 2050, even if significant adverse impacts are expected from more frequent extreme conditions in the short term.

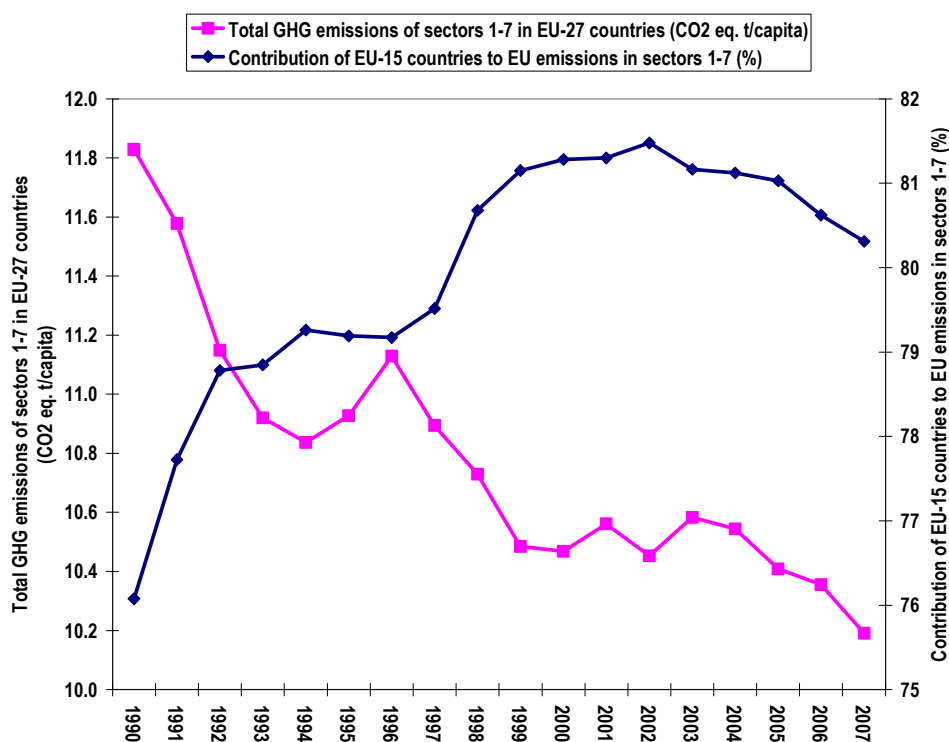


Figure 1: Total GHG emissions of sectors 1-7 (excluding LULUCF) in EU-27 countries (CO<sub>2</sub> eq. t/capita) and contribution of EU-15 countries to EU emissions (%)

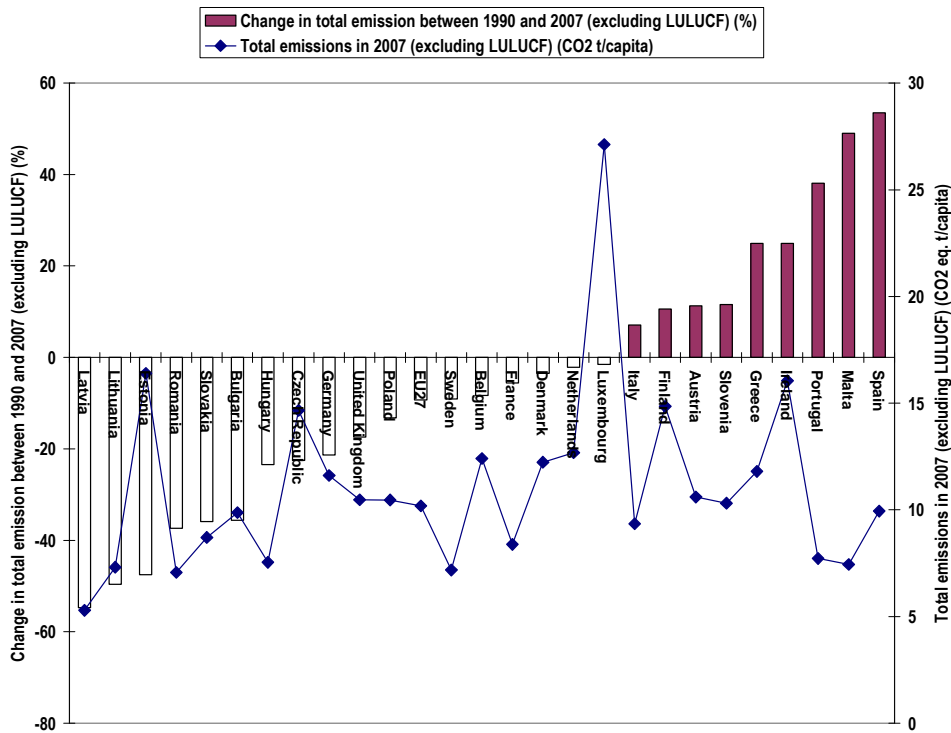


Figure 2: Total emissions in 2007 (CO<sub>2</sub> eq. kg/euro) (excluding LULUCF) and change in total emission between 1990 and 2007 (%) (Data are from dataservice.eea.europa.eu)

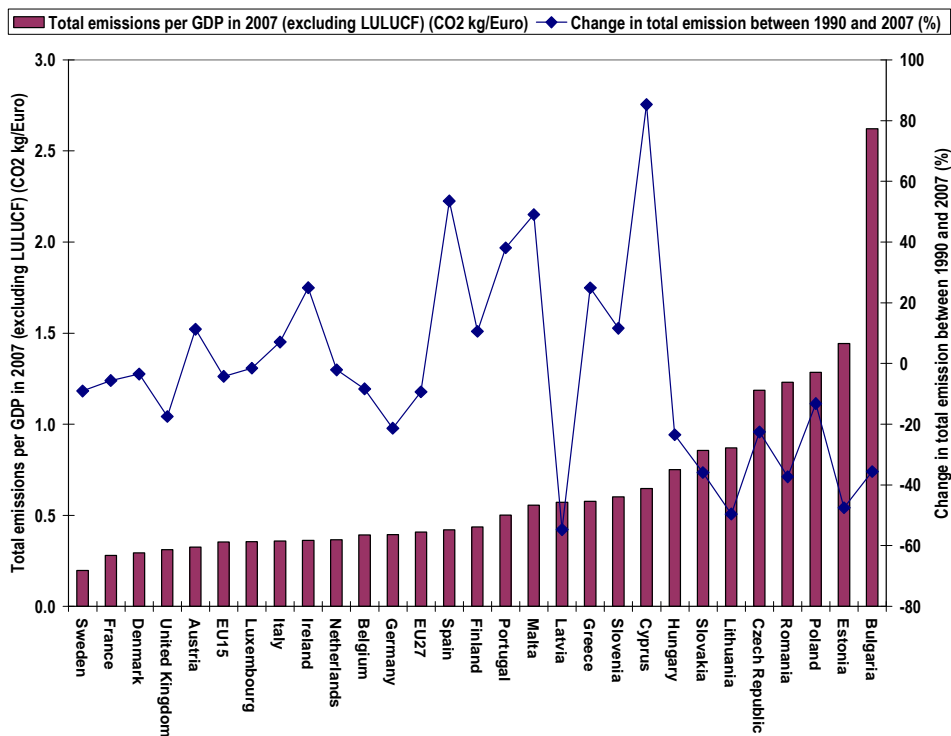


Figure 3: Total emissions per GDP in 2007 (CO<sub>2</sub> kg/Euro) (excluding LULUCF) and change in total emission between 1990 and 2007 (%) (Data are from dataservice.eea.europa.eu)

Total GHG emissions of 1-7 sectors (excluding LULUCF) were reduced from 11.645 tons of CO<sub>2</sub> eq. per capita to 10.343 tons of CO<sub>2</sub> eq. capita in EU-27 countries between 1990 and 2007. The larger part of reduction took place in East European countries and EU-15 countries

have increased their contribution to the GHG emission from 76.1% to 80.3% (Figure 1). Changes in total emission between 1990 and 2007 do not show any correlation with the total GHG emission in year 2007 (Figure 2). GHG emission was reduced in Hungary, Slovakia, Lithuania, Czech Republic, Romania, Poland, Estonia and Bulgaria, where GHG efficiency is low (Figure 3).

Hungary, Slovakia, Lithuania, Czech Republic, Romania, Poland, Estonia and Bulgaria have paid a high price for the challenging data in GHG emission reduction as their agricultural production went back in a similar scale. Except for cereals, the EU is contributing less and less to world total food and agricultural production. According to FAO statistics, EU-27 countries produced 27% of total world meat production in 1961 and this has reduced to 15%. Contribution of EU countries to total world fruit production was more than 30% at the beginning of the 1960s and now it is close to 10%. EU produced more than 20% of vegetables and this number has reduced to less than 7%. To ensure adequate food supplies, produce raw material for industry and energy sector, preserve the countryside and provide a reasonable living for agricultural and related populations we need Europe 2020 strategy.

**Measures of Rural Development Programmes (RDP) may not achieve their optimal effect without the realization of comprehensive Europe 2020 strategy.** The key drivers for growth are valid for rural area. **Number one is smart growth for fostering knowledge, innovation and education in agriculture.** The second is sustainable growth for making our production more resource efficient while boosting European competitiveness in food and agriculture sector. **The third one is inclusive growth**, which is especially valid for rural area, where the employment rate is low and the acquisition of skills to fight against poverty is difficult. Progress in rural development and in **CAP should be measured against five representative headline targets:** 75% of the population aged 20-64 should be employed; 3% of the GDP should be invested in R&D even in rural area; the "20/20/20" climate/energy targets should be met by agriculture. The share of early school leavers should be under 10% also in rural area, reduce the number of people living in poverty and improve skills and knowledge of the younger generation - not only in volume, but also in quality - to reduce asymmetrical interdependence in and of rural region.

#### References

- Commission of the European Communities CEC (2009a): Adapting to climate change: Towards a European framework for action. White Paper, COM(2009) 147.*
- Commission of the European Communities CEC (2009b): Adapting to climate change in Europe options for EU action. Green Paper, COM(2007) 354.*
- Commission of the European Communities CEC (2009c): The role of European agriculture in climate change mitigation. Commission staff working document, SEC (2009) 1093.*
- Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020.*
- European Commission (2007): The Common Agricultural Policy explained. European Commission, Directorate-General for Agriculture and Rural Development.*
- European Commission, DG Agriculture and Rural Development (2010): Agricultural policy perspectives. The CAP in perspective: From market intervention to policy innovation.*
- IPCC (1995): Climate Change: Impacts, Adaptations and Mitigation of Climate Change. Scientific-Technical Analyses, Cambridge Univ. Press, Cambridge.*
- Metz, B., Davidson, O.R., Bosch, P.R., Dave, R., Meyer L.A. (2007): Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.*