Climate Change: *Impacts & Adaptation*

in this issue >>>

Global action for a global issue

While the functioning of the global change mechanism is still surrounded by great uncertainties, research on the phenomenon has been carried out at a rate that can now provide us with an overview of its impacts on our daily life, including weather, food security or nature. Some of the effects climate change exerts at regional or global level include:

- Influence on heat-related mortality in Europe;
- Allergic pollen in Northern Hemisphere at high and mid latitudes;
- Increased risk of glacier lake outburst floods caused by melting glaciers, for settlements in mountain regions;
- Reduced length of growing season with detrimental effects on crops in the Sahelian region of Africa due to warmer and drier conditions;
- Alterations in disturbance regimes of forests due to fires and pests in the high latitudes of the Northern Hemisphere;
- Increase in the frequency of extreme weather events and weather related natural disasters;;
- Sea-level rise and increased risk of coastal erosion;
- Alterations in the precipitation patterns;

(*EU Commission, 2009*; *IPCC, 2007*)

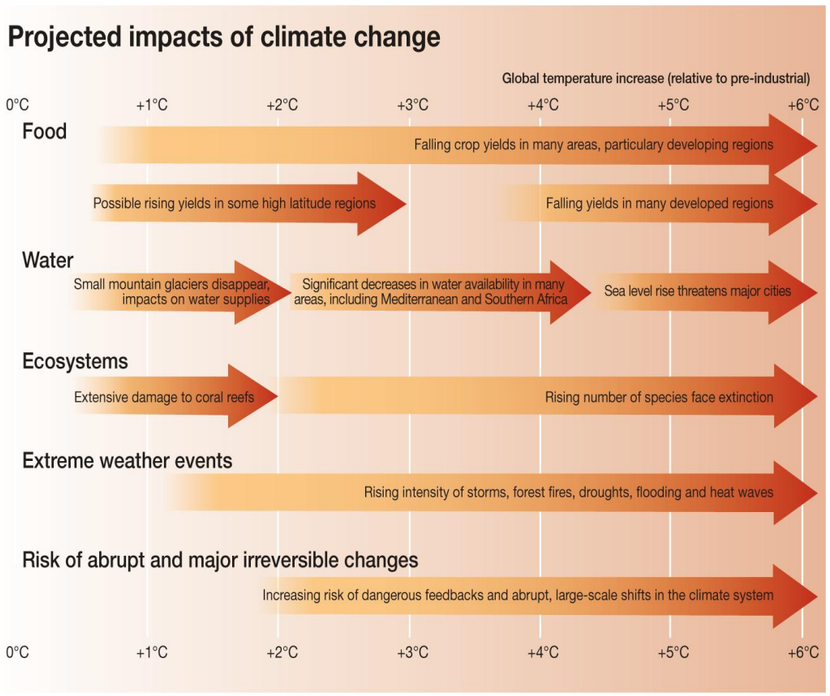

Fig. 1) Projected impacts of climate change at a global level (UNEP, 2008)

It is the global impact of climate change (see Fig.1) that has recently lead to a general agreement that countries must tackle the issue through international cooperation and commitment. It is on this note that several major international climate deals have been signed so far:

- ✓ the United Nations Framework Convention on Climate Change (UNFCCC) in 1992, which was the foundation of subsequent international climate deals;
- ✓ the legally binding Kyoto Protocol enforced in 2005 and designed to reduce emissions of greenhouse gases (GHGs);
- ✓ the Copenhagen Accord in 2009, where signatory countries committed (voluntarily) to elaborate a strategy to limit the increase of global temperature to 2°C;

*"Changing weather conditions will also have profound effects on **human health** and on **animal and plant health**. As extreme events become more frequent, weather-related deaths and diseases could rise"*

(EU Commission, 2012)

How will Climate Change affect Europe?

In Europe, the most vulnerable regions are Southern Europe, the Mediterranean Basin, Outermost regions and the Arctic (see Fig.2). Mountain areas (especially the Alps), islands, coastal and urban areas and densely populated floodplains are also in the category. All the essential sectors of the European society will be affected:

- In **agriculture**, the amplified frequency of extreme weather events, prolonged droughts, and change in precipitation patterns will increase the risk of crop failure. Also, climate change is already an important factor when it comes to soil degradation, a process that will intensify in the future;
- In the **forestry sector**, climate change is likely to induce changes in forest health and productivity and geographical distribution of certain tree species;
- **Energy** will also be affected. Estimates indicate a 5% or more increase in hydropower production in Northern Europe, due to increase in glacier meltdown. On the other hand, in the south hydropower is expected to decrease by 25% or more. Electricity distribution is also anticipated to be affected by extreme weather events;
- Rising sea level is already posing an increasing pressure on densely populated coastal areas and **infrastructure** is expected to be further affected in the future;
- Decreasing snow cover in the mountains (particularly Alps) and increasing temperatures in Mediterranean regions are likely to have a negative effect on **tourism**, a phenomenon that can be further affected by unsustainable tourism practices;
- Climate change will have serious effects on **human, animal and plant health**. Weather-related deaths and diseases could rise as a result of weather conditions and animal wellbeing as well as plant health could be threatened by migration of new or migrant harmful organisms;

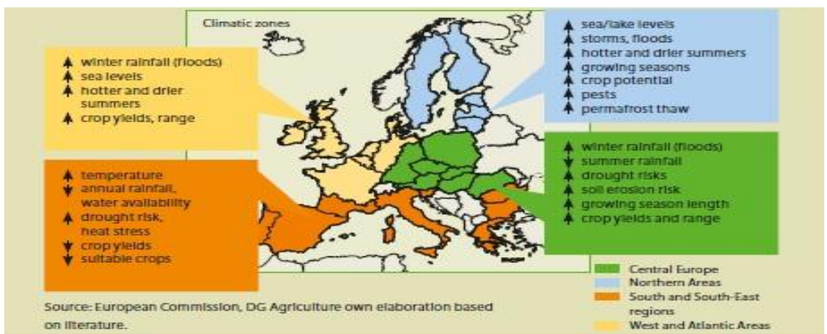

Fig 2) Projected effects of climate change in Europe (EU Commission, 2008)

EU Climate Change Adaptation Strategy >>>

The European Union has adopted a number of policies and strategies designed to increase resilience in the context of climate change. Almost all EU Member States are well on track to meet the **Kyoto Protocol** requirements of 6% or 8% decrease in their GHG emissions compared to the 1990 levels. For 2020, EU has already elaborated a strategy to cut down its emissions by 20% compared to 1990 levels, while for 2050, the reduction is set at 80-95% compared to the same levels. In order to meet its 2020 targets, EU has adopted a package of **binding legislation know as the '20-20-20'**:

- ✓ A 20% of EU GHG emissions by 2020;
- ✓ Raising the share of EU energy consumption produced from renewable resources to 20% by 2020;
- ✓ A 20% improvement in the EU's energy efficiency by 2020; (EU Commission, 2012)

The 20-20-20 package is supported by four additional legislation measures:

- ✓ The reform of the **EU Emission Trading System** (EU ETS), starting from 2013. The EU ETS is the main EU tool for cutting industrial GHG emission;
- ✓ **National targets** for non-EU ETS emissions, in order to reduce GHG emissions in sectors other than industry, such as agriculture, housing, waste or transport;
- ✓ National renewable energy targets, designed under the **Renewable Energy Directive** to increase the share of renewable energy in the energy consumption of Member States;
- ✓ The Directive on the Geological Storage of CO_2 (the CCS Directive), which establishes a legal framework for the environmentally safe geological storage of CO_2 to contribute to the fight against climate change. (EU Commission, 2012)

In 2009, the EU Commission released a White Paper entitled 'Adapting to climate change: towards a European framework for action'. The paper recognizes that 'a more strategic approach is needed to ensure that timely and effective adaptation measures are taken, ensuring coherency across different sectors and levels of governance' (EU Commission, 2009). The paper identified the need for:

- Clearing House Mechanism, an IT tool and database on climate change impact, vulnerability and best practices on adaptation;
- Integrating adaptation into EU policies by increasing the resilience of sectors;
- Developing financing mechanisms to support climate change adaptation;
- Working in close partnership with Member States by creating an Impact and Adaptation Steering Group (IASG);
- Cooperating externally with other countries (particularly developing countries) and continuing the work under the UNFCCC. (EU, 2009)

CEEweb's recommendations >>>

The Resource Cap Coalition

In our understanding, GHG emissions, excessive use of natural resources and degradation of natural ecosystems are equivalently important Pressures leading to climate change via interrupting global biogeochemical cycles, which form the basis of the climate system. This means that all three has to be targeted at the same time, and the Drivers behind them need to be identified and tackled as well. To be able to target the drivers, climate policy needs to be integrated in a wider framework of sustainable development. Sustainability needs to be the central element of future economic strategies, changing unsustainable patterns of consumption and production, re-defining growth and development, and eventually supporting a transition process to a new socio-economic framework which stays within the physical limits to growth.

Agrofuels are perfect examples for this, supposed to contribute to emission cuts by replacing fossil fuels, but in fact if produced in large scale and highly industrialized plantations, they often cause huge damage to ecosystems by accelerating direct or indirect land conversions. In addition to this, they can even result in net increase in GHG emissions, considering the enormous amounts of CO2 released from the ecosystems and soils which were destroyed or degraded due to agrofuel production.
Another example is the energy efficiency, which holds huge potential for emission savings, yet this saving can easily be overgrown by the even faster increase of needs, as described by the Jevons paradox (also known as the rebound effect).

As a first step to achieve this eventual goal, CEEweb and a number of European stakeholders have established a coalition on capping resource use in order to decrease human pressure on the environment and achieve sustainability within the EU.

The leaflet is financially supported by the European Commission, but does not necessarily reflect its opinion.

CEEweb for Biodiversity is an umbrella organization of NGOs in the Central and Eastern European region. Our mission is the conservation of biodiversity through the promotion of sustainable development. Further information is on www.ceeweb.org

The Ecosystem approach to climate change

Ecosystems are extremely important in regulating and stabilizing the climate of the planet, as half of the anthropogenic emissions are currently absorbed by marine and terrestrial ecosystems, functioning as huge buffers between emissions and the warming caused by them, and storing enormous amounts of carbon fixed in biomass, soils and the oceans. Besides capturing and storing carbon, ecosystems play key role in the global circulation of nitrogen and water too, both very important in the climate system.These funtions of ecosystems are stabilized by the huge diversity of life forms hosted by them (i.e. biodiversity), which makes ecosystems resilient to stress: able to survive and keep or restore their functions after disturbances. Nevertheless, ecosystems are only able to function properly, if they have sufficient cover and spatial coherence.

Despite, natural habitats are still lost or degraded with a frightening speed worldwide, forcing more and more ecosystems into collapse and irreversibly change. As these systems are exposed to climate change and are simultaneously losing their ability to cope with it, at a point they may easily turn from carbon sinks into sources, releasing greenhouse gases in a magnitude which is comparable or even bigger than anthropogenic emissions.

In CEEweb's view, biodiversity and ecosystems should be given much higher priority in climate negotiations and the loss and degradation of forests as well as other natural habitats should be halted urgently.The ecosystem-approach should be applied in both mitigation and adaptation. Any planned investment should undergo a 'biodiversity check' and measures which are mutually beneficial for the climate and for biodiversity should be widely supported. These win-win solutions are ready to use, safe and work locally even if the international negotiations fail (so-called no-regret options). In most cases they are even much cheaper than sophisticated and energy-demanding technologies.

It is very important that the ecosystem-approach should be applied already at the planning phase. If we apply win-win-win solutions in time, namely, beneficial for the climate, for the ecosystems and for the people too, the area will get a substantial benefit in the coming decades. Therefore, implementing measures of spatial planning and land management that is safeguarding the coherence, connectivity and functionality of ecosystems should be one of our most urgent tasks. This involves integrated spatial planning involving all possible stakeholders influencing. As integrated spatial planning is the more effective at local or regional level, in 2009 CEEweb has initiated a series of pilot projects on ecosystem-based adaptation to climate change in CEE microregions.

CEEweb has also released a leaflet on mainstreaming agriculture and forestry in climate change adaptation strategies.