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**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN
PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL
COMMITTEE AND THE COMMITTEE OF THE REGIONS**

An EU Strategy on adaptation to climate change

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1. INTRODUCTION: DEALING WITH A CHANGING CLIMATE

The consequences of climate change are increasingly being felt in Europe and worldwide. The average global temperature, currently around 0.8°C above pre-industrial levels, continues to rise¹. Some natural processes are being altered, precipitation patterns are changing, glaciers are melting, sea levels are rising.

To avoid the most serious risks of climate change and in particular large-scale irreversible impacts, global warming must be limited to below 2°C above pre-industrial level. Climate change mitigation must therefore remain a priority for the global community.

Whatever the warming scenarios, and however successful mitigation efforts prove to be, the impact of climate change will increase in the coming decades because of the delayed impacts of past and current greenhouse gas emissions. We therefore have no choice but to take adaptation measures to deal with the unavoidable climate impacts and their economic, environmental and social costs. By prioritising coherent, flexible and participatory approaches, it is cheaper to take early, planned adaptation action than to pay the price of not adapting.

In view of the specific and wide ranging nature of climate change impacts on the EU territory, adaptation measures need to be taken at all levels, from local to regional and national levels. There is also a role for the European Union to fill both knowledge and action gaps and complement these efforts through the following EU Strategy.

2. CURRENT AND PROJECTED IMPACT OF CLIMATE CHANGE IN THE EU

The temperature of the European land area over the last decade (2002-2011) has been on average 1.3°C above preindustrial level², meaning that the increase in Europe has been faster than the global average. Some extreme weather events have increased, with more frequent heat waves, forest fires and droughts in southern and central Europe. Heavier precipitation and flooding is projected in northern and north-eastern Europe, with an increased risk of coastal flooding and erosion. A rise in such events is likely to increase the magnitude of disasters, leading to significant economic losses, public health problems and deaths.

Impacts vary across the EU depending on climate, geographic and socioeconomic conditions. All the countries in the EU are exposed to climate change (see Figure 1 below). However, some regions are more at risk than others. The Mediterranean basin, mountain areas, densely populated floodplains, coastal zones, outermost regions and the Arctic are particularly vulnerable. Additionally, three quarters of the population of Europe live in urban areas, which are often ill-equipped for adaptation and are exposed to heatwaves, flooding or rising sea levels.

Many economic sectors are directly dependent on climatic conditions and are already facing the impact of climate change in areas such as agriculture, forestry, beach and snow tourism,

¹ EEA report N°12/2012. Climate change, impacts and vulnerability in Europe 2012

² *ibid.*

health and fisheries. Major utilities, such as energy and water providers, are also affected. Ecosystems and the services they provide are suffering from the adverse impacts of climate change, which is accelerating the decline of biodiversity and reducing their ability to buffer natural extremes. Climatic changes will have consequences for the availability of basic natural resources (water, soil) leading to significant changes in conditions for agriculture and industrial production in some areas.

Global warming may provide opportunities for specific sectors in certain areas, such as increased crop yields and forest growth, more hydropower or less energy needed for heating in northern Europe.³ However, the potential regional net benefits are highly uncertain.

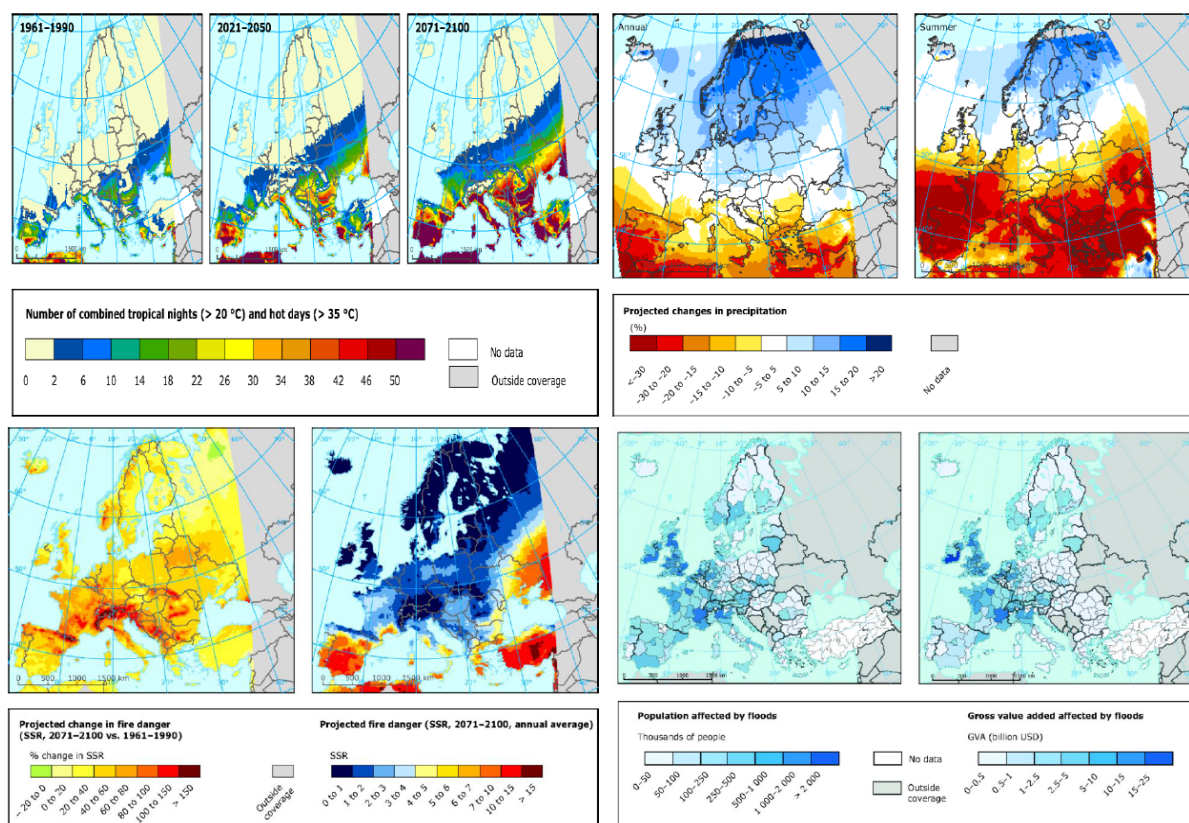


Figure 1: Projected impacts of climate change and associated threats⁴. Based on EEA report *Climate Change Impacts and Vulnerability in Europe (2012)*⁵

Failing to act or delaying action may put pressure on EU cohesion. Climate change impacts are also expected to widen social differences across the EU. We need to give special attention to social groups and regions which are most exposed and already disadvantaged (e.g. through poor health, low income, inadequate housing, lack of mobility).

The minimum cost of not adapting to climate change is estimated to range from €100 billion a year in 2020 to €250 billion in 2050 for the EU as a whole⁶. Between 1980 and 2011, direct

³ EEA Adaptation in Europe report (forthcoming 2013)

⁴ Number of tropical nights and hot days; change in annual and summer precipitation (2071-2100 compared to 1961-1990); change in fire danger; and number of people and gross value added affected by floods (2050)

⁵ Detailed explanations on each element included in this figure are provided in the Impact Assessment (SWD(2013)132, part 2, section 1.1.3.)

⁶ EEA report No 12/2012. Such estimates include impacts of climate change on river floods, coastal zones, energy for cooling and heat mortality. All figures presented in this section are based on the same medium to high greenhouse gas emissions scenario (A1B), leading to temperature increases above 2°C

economic losses in the EU due to flooding amounted to more than €90 billion⁷. This amount is expected to increase, as the annual cost of damage from river floods is estimated at €20 billion by the 2020s and €46 billion by the 2050s⁸.

The social cost of climate change can also be significant. Floods in the EU resulted in more than 2500 fatalities and affected more than 5.5 million people over the period 1980-2011. Taking no further adaptation measures could mean an additional 26 000 deaths/year from heat by the 2020s, rising to 89 000 deaths/year by the 2050s⁹.

Though there is no real comprehensive overview of adaptation costs in the EU, additional flood protection measures are estimated at €1.7 billion a year by the 2020s and €3.4 billion a year by the 2050s¹⁰. Such measures can be very effective, as for each euro spent on flood protection, we could avoid six euros of damage costs¹¹.

3. THE RESPONSE: AN ADAPTATION STRATEGY FOR THE EU

The 2009 White Paper ‘Adapting to climate change: Towards a European framework for action’ set out a number of measures that have largely been implemented¹². A key deliverable was the web-based European Climate Adaptation Platform (Climate-ADAPT¹³), launched in March 2012. It incorporates the latest data on adaptation action in the EU, together with several useful policy support tools. The EU has started to integrate adaptation into several of its own policies and financial programmes.

To date, 15 EU Member States have adopted an adaptation strategy¹⁴. Others are under preparation. Some of the adopted strategies have been followed up by action plans, and there has been some progress in integrating adaptation measures into sectoral policies. However, adaptation is in most cases still at an early stage, with relatively few concrete measures on the ground. Some Member States have developed sector-specific plans, such as plans to cope with heat waves and droughts, but only a third carried out a comprehensive vulnerability assessment to underpin policy. Monitoring and evaluation is proving to be particularly difficult, as indicators and monitoring methodologies have hardly been developed.

There are several examples of joint adaptation projects between European countries or cities, some of them co-financed by the EU, such as by LIFE. In particular, Cohesion policy co-finances many cross-border, transnational and interregional programmes and projects on adaptation, including in the framework of the EU macro-regional strategies in the Danube area and in the Baltic Sea. Some cities have adopted comprehensive adaptation strategies or specific action plans (e.g. on risk prevention, flood or water management), or are in the process of doing so¹⁵.

Building on those initiatives, it would be useful to deepen our experience and to have a systematic exchange of best practice on how to adapt to climate change. It is therefore opportune to launch an adaptation strategy, covering the whole of the EU and respecting the

⁷ EEA report No 12/2012

⁸ Rojas, R., Feyen, L., and Watkiss, P. (2013)

⁹ Kovats et al. (2011). ClimateCost, as referred to in EEA report N°12/2012

¹⁰ Feyen, L. and Watkiss, P (2011)

¹¹ Ibid.

¹² COM(2009) 147 Final. See the impact assessment for a full review of implementation

¹³ <http://climate-adapt.eea.europa.eu/> focuses on EU-level information, with links to national action. Several Member States have developed national information platforms

¹⁴ See <http://climate-adapt.eea.europa.eu/web/guest/adaptation-strategies>

¹⁵ City-level adaptation has been addressed in detail in the EEA 2012 report ‘Urban adaptation to climate change in Europe’ (EEA 2012): <http://www.eea.europa.eu/publications/urban-adaptation-to-climate-change>

principles of subsidiarity and proportionality and the rights enshrined by the Charter of Fundamental Rights of the European Union.

The strategy takes account of global climate change impacts, such as disruptions to supply chains or impaired access to raw materials, energy and food supplies, and their repercussions on the EU. The EU's dialogue and cooperation with neighbouring countries and developing countries on adaptation issues is channelled through the Enlargement and European Neighbourhood policies and EU development cooperation policy.

Uncertainty regarding the trajectory of greenhouse-gas emissions, future impacts of climate change and related adaptation needs remains a challenge for policy making in this area. Yet, uncertainty cannot be seen as a reason for inaction. It notably calls for a strong emphasis on incorporating win-win, low-cost and no-regret adaptation options. These include sustainable water management and early warning systems. Ecosystem-based approaches are usually cost-effective under different scenarios. They are easily accessible and provide multiple benefits, such as reduced flood risk, less soil erosion, improved water and air quality and reduced heat-island effect.

Adaptation action is closely related and should be implemented in synergy and full coordination with the disaster risk management policies that the EU and the Member States are developing.

Adaptation action will bring new market opportunities and jobs, in such sectors as agricultural technologies, ecosystem management, construction, water management and insurance. European companies, including SMEs, can be early first movers in developing climate-resilient products and services and grasp business opportunities worldwide. In line with the Europe 2020 Strategy, the Adaptation Strategy will help the EU move towards a low-carbon and climate-resilient economy, and will promote sustainable growth, stimulate climate-resilient investment and create new jobs.

4. OBJECTIVES OF THE STRATEGY

The overall aim of the EU Adaptation Strategy is to contribute to a more climate-resilient Europe. This means enhancing the preparedness and capacity to respond to the impacts of climate change at local, regional, national and EU levels, developing a coherent approach and improving coordination.

4.1. Promoting action by Member States

One of the greatest challenges for cost-effective adaptation measures is to achieve coordination and coherence at the various levels of planning and management. The recommended instrument at global level, under the UN Framework Convention on Climate Change, is national adaptation strategies. These are key analytical instruments designed to inform and prioritise action and investment.

It is of particular importance to ensure joint approaches and full coherence between national adaptation strategies and national risk management plans. Many Member States are developing such plans as cross sectoral planning instruments to better prevent and prepare for disasters on the basis of comprehensive national risk assessments.

The EU will provide financial support for adaptation through the proposed LIFE instrument, which includes a climate action sub-programme. The Commission will use multi-annual work programmes to define strategic goals and thematic priorities. Priority will be given to adaptation flagship projects that address key cross-sectoral, trans-regional and/or cross-border issues. Projects with demonstration and transferability potential will be encouraged, as will

green infrastructure and ecosystem-based approaches to adaptation, and projects aiming to promote innovative adaptation technologies. This comprises both hard and soft technologies, such as more resilient construction materials or early warning systems.

Seeking EU-wide cooperation and coherence, the Commission will support the exchange of good practice between Member States, regions, cities and other stakeholders. For instance, the Commission is preparing together with Member States guidance based on good practices in disaster prevention. Active engagement on the part of local and regional authorities will be essential.

Building upon the success of its pilot project 'Adaptation strategies for European cities'¹⁶, the Commission will continue to promote urban adaptation strategies. Adaptation action by cities will, in particular, be developed in coordination with other EU policies following the model of the Covenant of Mayors, an initiative of more than 4000 local authorities voluntarily committed to improving the quality of urban life by pursuing EU climate and energy objectives.

Action 1: Encourage all Member States to adopt comprehensive adaptation strategies

The Commission is providing guidelines for formulating adaptation strategies. They are designed to help EU countries to develop, implement and review their adaptation policies. They cover aspects which are missing from existing adaptation strategies, such as cross-border issues, and the need to ensure coherence with national disaster risk management plans.

By 2014 the Commission will develop an adaptation preparedness scoreboard, identifying key indicators for measuring Member States' level of readiness.

In 2017, basing itself on the reports it receives as set out in the Monitoring Mechanism Regulation and on the adaptation preparedness scoreboard, the Commission will assess whether action being taken in the Member States is sufficient. If it deems progress to be insufficient, by reference to the coverage and quality of the national strategies, the Commission will consider without delay proposing a legally binding instrument.

Action 2: Provide LIFE funding to support capacity building and step up adaptation action in Europe. (2013-2020).

The Commission will promote adaptation particularly in the following vulnerable areas:

- cross-border management of floods, fostering collaborative agreements based on the EU Floods Directive;
- trans-boundary coastal management, with emphasis on densely populated deltas and coastal cities;
- mainstreaming adaptation into urban land use planning, building layouts and natural resources management;
- mountain and island areas, with emphasis on sustainable and resilient agricultural, forestry and tourism sectors;
- sustainable management of water; combating desertification and forest fires in drought-prone areas.

The Commission will support the establishment of vulnerability assessments and adaptation strategies, including those with a cross-border nature.

The Commission will promote awareness-raising on adaptation, including indicators, risk

¹⁶

See <http://eucities-adapt.eu/cms/>

communication and management.

Action 3: Introduce adaptation in the Covenant of Mayors framework (2013/2014).

The Commission, on the basis of the model of the Covenant of Mayors initiative, will support adaptation in cities, notably by launching a voluntary commitment to adopt local adaptation strategies and awareness-raising activities.

4.2. Better informed decision-making

Adaptation knowledge for decision-making is improving: there are a growing number of research programmes, national and regional adaptation strategies and vulnerability assessments. More climate data, climate services and web portals have become available¹⁷. The 5th Assessment Report of the IPCC will be adopted in 2014. Still, substantial knowledge gaps need to be filled.

A solid knowledge base is also essential to drive innovation forward and support the market deployment of innovative climate adaptation technologies. The future EU programme for research and innovation – Horizon 2020 – will address climate change adaptation through its "societal challenges" priority, and by investing in excellent science and promoting innovation.

Action 4: Bridge the knowledge gap.

The key knowledge gaps are:

- information on damage and adaptation costs and benefits;
- regional and local-level analyses and risk assessments;
- frameworks, models and tools to support decision-making and to assess how effective the various adaptation measures are;
- means of monitoring and evaluating past adaptation efforts.

As part of the implementation of the Strategy, the Commission will further work with Member States and stakeholders in refining these knowledge gaps and identifying the relevant tools and methodologies to address them. The findings will be fed into the programming of Horizon 2020 (2014-2020) and will address the need for better interfaces between science, policy making and business. They will also be used to improve the information available on Climate-ADAPT.

The Commission will promote EU-wide vulnerability assessments, taking into account, inter alia, the cross-sectoral EU overview of natural and man-made risks that it will produce in 2013. It will notably support the Joint Research Centre in its work on estimating the implications of climate change, and undertake a comprehensive review of what global climate change will mean for the EU. This will feed into the upcoming 'Integrated threat and risk assessment reports' to be adopted by the Commission and the High Representative (2015).

Action 5: Further develop Climate-ADAPT as the 'one-stop shop' for adaptation information in Europe.

The Commission and the EEA will improve access to information and develop interaction between Climate-ADAPT and other relevant platforms, including national and local adaptation portals (2013/2014).

Special attention will be given to cost-benefit assessments of different policy experiences and to innovative funding, via closer interaction with regional and local authorities and financial

¹⁷

As reported to Climate-ADAPT. Source: EEA Adaptation in Europe report (forthcoming, 2013)

institutions.

The inclusion of the future Copernicus¹⁸ climate services will be prepared in 2014.

4.3. Climate-proofing EU action: promoting adaptation in key vulnerable sectors

One priority and responsibility for the Commission is to mainstream adaptation measures into EU policies and programmes, as the way to ‘climate-proof’ EU action.

Adaptation has already been mainstreamed in legislation in such sectors as marine waters¹⁹, forestry²⁰, and transport²¹; and in important policy instruments such as inland water²², biodiversity²³ and migration and mobility²⁴. The Commission staff working document on climate change, environmental degradation and migration accompanying this Communication provides further insight on the latter.

In addition, the Commission has tabled legislative proposals on integrating adaptation in agriculture and forestry²⁵, maritime spatial planning and integrated coastal management²⁶, energy²⁷, disaster risk prevention and management²⁸, transport²⁹, research, health³⁰, and the environment³¹.

These moves to mainstream climate change adaptation into EU policies will be pursued in priority fields such as energy and transport. In health policy, most human, animal and plant health measures and systems are already in place, but they need to be adjusted to whatever new challenges climate change will bring. The three Commission staff working documents on health, marine and coastal areas, and infrastructure, accompanying this Communication set out what the Commission is currently doing in this area.

Forthcoming policy initiatives, in areas such as invasive alien species (2013), green infrastructure (2013), land as a resource (2014-15), and a new Forest Strategy (2013) are also expected to consider adaptation. Guidelines on adaptation and coastal zone management are being formulated (2014), and guidelines on adaptation and the Natura 2000 network are shortly to be issued (2013).

Infrastructure projects, which are characterised by a long life span and high costs, need to withstand the current and future impacts of climate change. Building on the recent mandate to assess the climate change implications for Eurocodes³², our work with standardisation organisations, financial institutions and project managers needs to analyse to what extent standards, technical specifications, codes and safety provisions for physical infrastructure should be strengthened to cope with extreme events and other climate impacts.

¹⁸ Previously known as GMES (Global Monitoring for Environment and Security)

¹⁹ Council Directive 2008/56/EC and EU Regulation No 1255/2011

²⁰ Regulation (EC) 2152/2003

²¹ Decision 661/2010/EC

²² COM(2012)673 final

²³ COM(2011)244 final

²⁴ COM(2011) 743 final

²⁵ http://ec.europa.eu/agriculture/cap-post-2013/legal-proposals/index_en.htm

²⁶ COM(2013) 133 final

²⁷ COM(2011) 665/3

²⁸ COM(2011)934 final

²⁹ COM(2011) 650/2 final

³⁰ http://ec.europa.eu/governance/impact/planned_ia/docs/2013_sanco_002_eu_plant_health_law_en.pdf

³¹ COM(2012) 628 final

³² Eurocodes are a set of harmonised technical rules for the structural design of construction works in the EU developed by the European Committee for Standardisation

Disaster insurance has a generally low market penetration rate at the moment in Member States³³. Discussions should take place with stakeholders on the basis of the Green Paper on the insurance against natural and man-made disasters.

Action 6: Facilitate the climate-proofing of the Common Agricultural Policy (CAP), the Cohesion Policy and the Common Fisheries Policy (CFP).

Guidance is being provided as part of the Strategy on how to further integrate adaptation under the CAP and the Cohesion Policy. Similar guidance will be issued in 2013 for the CFP. It is aimed at managing authorities and other stakeholders involved in 2014-2020 programme design, development and implementation.

Member States and regions can also draw on the 2014-2020 Cohesion Policy and CAP to address the knowledge gaps and invest in the needed analyses, risk assessments, tools and build up capacities for adaptation.

Action 7: Ensuring more resilient infrastructure

In 2013 the Commission will launch a mandate for European standardisation organisations to start mapping industry-relevant standards in the area of energy, transport and buildings, identifying standards to be revised for better inclusion of adaptation considerations.

It will also provide with the Strategy guidelines for project developers working on infrastructure and physical assets, with a view to climate-proofing vulnerable investments.

Drawing on the results of its Communication on Green Infrastructure, the Commission will in 2013 explore the need for additional guidance for authorities and decision makers, civil society, private business and conservation practitioners to ensure the full mobilisation of ecosystem-based approaches to adaptation.

Action 8: Promote insurance and other financial products for resilient investment and business decisions.

The Green Paper on the insurance of natural and man-made disasters, adopted together with this Strategy, is a first step in encouraging insurers to improve the way they help to manage climate change risks.

The Commission's aim is to improve the market penetration of natural disaster insurance and to unleash the full potential of insurance pricing and other financial products for risk-awareness prevention and mitigation and for long-term resilience in investment and business decisions (2014-2015).

5. GOVERNANCE, FINANCING AND REVIEW

5.1. A framework for coordination

The Commission will facilitate policy coordination and will seek to cooperate with Member States through the existing Climate Change Committee. Member States should also appoint national contact points by the end of 2013, to coordinate communication between their countries and the Commission and contribute to awareness-raising and reporting activities.

The Commission will continue to consult and cooperate with stakeholders to ensure proper and timely implementation of the Strategy.

³³ Joint Research Centre, European Commission (2012), *Natural catastrophes: Risk relevance and insurance coverage in the EU*

5.2. Financing adaptation

Improved access to funding will be a critical factor in building a climate-resilient Europe. The draft 2014-2020 Multi-annual Financial Framework (MFF) includes a proposal for increasing climate-related expenditure³⁴ to at least 20 % of the EU budget. It is strategically important for such investment to be climate-resilient. Specifically, the Commission has included climate change adaptation in its proposals for all relevant EU finance programmes for 2014-2020. The European Structural and Investment funds³⁵ as well as Horizon 2020 and the LIFE programme will provide significant support to Member States, regions and cities to invest in programmes and projects on adaptation, especially in the framework of the dedicated Investment Priorities on adaptation in the ERDF and Cohesion Fund.

Moreover, several EU funds and international financing institutions, such as the European Investment Bank and the European Bank for Reconstruction and Development, also support adaptation measures. The Commission will explore further ways of accommodating some adaptation investment expenditure, such as expenditure co-financed by the EU in the assessment of Stability and Convergence Programmes³⁶.

In addition, there are specific funds – including at national level – and public financial institutions that support adaptation action, e.g. on flood control and drought management. Climate-ADAPT will be providing more information on potential sources of funding. Member States can also use EU ETS auction revenues as a source of financial support for adaptation³⁷.

To ensure successful implementation, authorities in the Member States are encouraged to develop synergies between the various funding streams, especially EU funding and support programmes in order to strengthen the impact of investments and avoid, where possible, funding gaps.

5.3. Monitoring, evaluation and review

Monitoring and evaluating climate change adaptation policies are crucial. The emphasis is still on monitoring impacts rather than adaptation action and its effectiveness. The Commission will develop indicators to help evaluate adaptation efforts and vulnerabilities across the EU, using LIFE funding and other sources.

In 2017 the Commission will report to the European Parliament and the Council on the state of implementation of the Strategy and propose its review if needed. The report will be based on information provided by Member States under the Monitoring Mechanism Regulation³⁸ on national adaptation planning and strategies, the annual implementation reports for programmes funded by the European Structural and Investment funds in the period 2014-2020 and the Intergovernmental Panel on Climate Change's 5th Assessment Report to be issued in 2014.

³⁴ referring to both climate change mitigation and adaptation

³⁵ The Cohesion Fund, the European Regional Development Fund (ERDF), the European Social Fund (ESF) the European Agricultural Fund for Rural Development (EAFRD) and the European Maritime and Fisheries Fund (EMFF)

³⁶ As set out in the recent Blueprint for a deeper and genuine economic and monetary union, COM(2012) 777 final

³⁷ Article 10(3)(a) of Directive 2003/87/EC as amended by Directive 2009/29/EC

³⁸ <http://ec.europa.eu/clima/policies/g-gas/monitoring/>

6. CONCLUSION

This Strategy sets out a framework and mechanisms for bringing the EU's preparedness for the current and future impacts of climate change up to a new level. It is proposed to do this by encouraging and supporting action by the EU Member States on adaptation, by creating a basis for better informed decision-making on adaptation in the years to come, and by making key economic and policy sectors more resilient to the effects of climate change.