



DIRECTORATE-GENERAL FOR INTERNAL POLICIES

POLICY DEPARTMENT **A**
ECONOMIC AND SCIENTIFIC POLICY

Economic and Monetary Affairs

Employment and Social Affairs

**Environment, Public Health
and Food Safety**

Industry, Research and Energy

Internal Market and Consumer Protection



U.S. Climate Change Policy

In-depth Analysis for the ENVI Committee



DIRECTORATE GENERAL FOR INTERNAL POLICIES
POLICY DEPARTMENT A: ECONOMIC AND SCIENTIFIC POLICY

U.S. Climate Change Policy

UPDATE

IN-DEPTH ANALYSIS

Abstract

This document reviews and updates the previous 2013 report providing an overview of the climate change policy in the United States. Starting with the emissions trend it then makes some general remarks about policy making in the U.S. before entering into concrete climate policy, both domestically and at international level. Finally, there is a section displaying three climate topics of mutual interest for the EU and the U.S.

This document was provided by Policy Department A for the Committee on the Environment, Public Health and Food Safety (ENVI) in view of the ENVI delegation to Washington from 16-19 March 2015.

This document was requested by the European Parliament's Committee on Environment, Public Health and Food Safety

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LINGUISTIC VERSIONS

Original: EN

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Manuscript completed in March 2015.
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LIST OF ABBREVIATIONS

CAA	Clean Air Act
CCS	Carbon capture and storage
CO₂	Carbon dioxide
COP	Conference of the Parties
EC	European Commission
EPA	Environmental Protection Agency
EU	European Union
ETS	Emissions Trading Scheme
GDP	Gross domestic product
GHG	Greenhouse gas
Gt	Giga tonnes
ICAO	International Civil Aviation Organization
LULUCF	Land Use, Land Use Change and Forestry
PM_{2.5}	Particulate matter (fine particles - diameter of 2.5 micrometres or less)
RGGI	Regional Greenhouse Gas Initiative
SO₂	Sulphur dioxide
SOTU	State of the Union
t	Tonne
TWh	Terawatt hours
UIC	Underground Injection Control Program
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
USD	United States Dollar

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EXECUTIVE SUMMARY

2014 was the hottest year ever on record globally. According to a report of the State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience, established by President Obama in November 2013, weather disasters in 2012 alone have cost the American economy more than \$110 billion US Dollar.

"Climate change is already affecting communities in every region of the country as well as key sectors of the economy. Recent events like Hurricane Sandy in the Northeast, flooding throughout the Midwest, and severe drought in the West have highlighted the vulnerability of many communities to the impacts of climate change (...) and climate change will only increase the frequency and intensity of these events."¹

Though since 2010 a decrease in U.S. greenhouse gas emissions can be observed, this is not a result of a genuine climate policy but of a series of circumstances linked to other factors like the recent economic crisis or the shale gas boom.

There is no federal U.S. climate action policy in place but rather a patchwork of initiatives on different levels and with varying intensity. In June 2013, President Obama presented his national action plan to combat climate change. One of the major building blocks are proposed carbon pollution standards for both new and existing power plants, which are by far the biggest source of U.S. greenhouse gas emissions.

President Obama's national climate strategy is based on regulation-making through the federal Environment Protection Agency (EPA) in order to circumvent the current blockade in Congress on climate legislation. The legislation impasse is likely to further aggravate since Republicans in November 2014 also gained control of the Senate on top of their majority in both Houses of Congress.

On the other hand, also EPA's regulatory authority is limited by Congress' power, as the latest prominent example of the project to extend the keystone XL pipeline demonstrates. Republicans threatened to hold climate-relevant bills such as the newly proposed emission standards for power plants hostage after President Obama vetoed the pipeline project on procedural grounds.

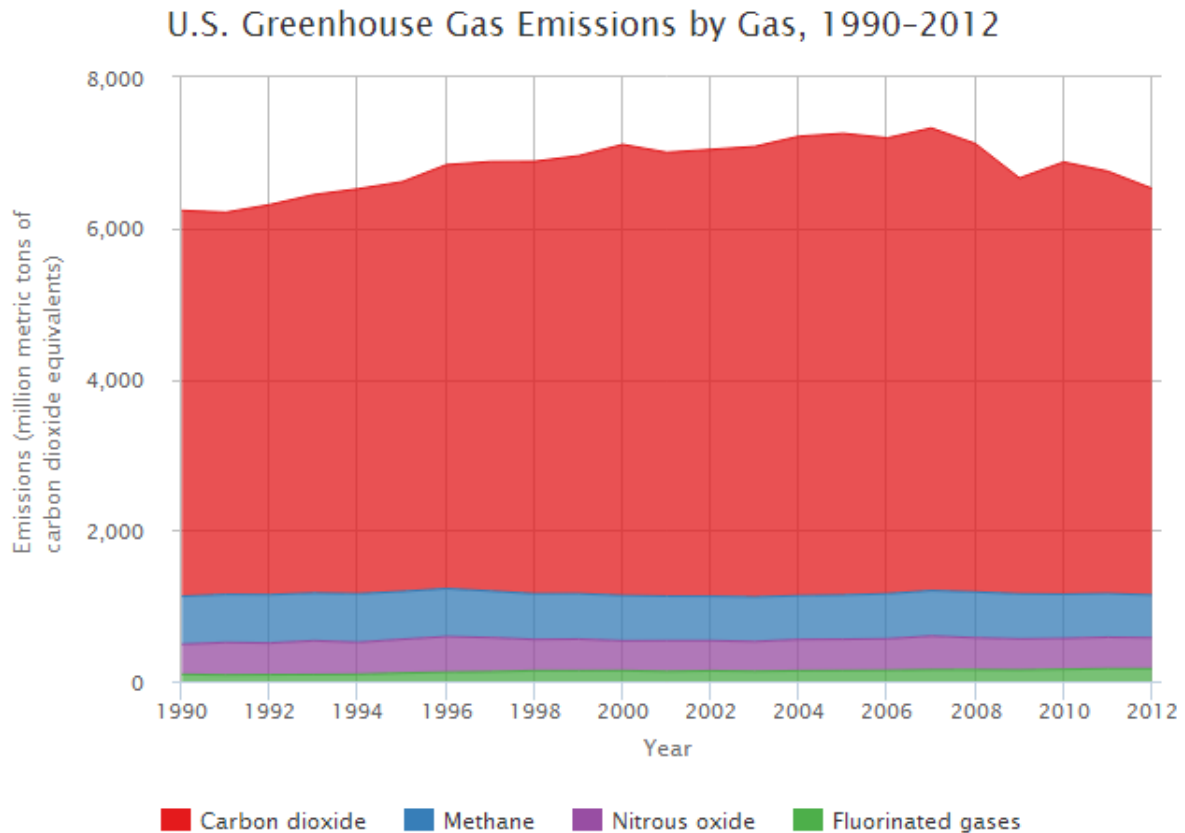
The other two main goals of the President's climate action plan, besides cutting carbon pollution, are to prepare the nation for the impacts of climate change and to lead international climate efforts - very topical in view of the upcoming 2015 United Nations Conference of the Parties in Paris to find a new global climate agreement. Already before the last negotiation round in Lima, Obama attracted the world's attention with the joint U.S.-China announcement on the reduction of their respective greenhouse gas emissions after 2020.

¹ http://www.whitehouse.gov/sites/default/files/docs/task_force_report_0.pdf

1. TRENDS IN U.S. GREENHOUSE GAS EMISSIONS²

From 1990-2012, U.S. total greenhouse gas (GHG) emissions have increased by 4,7% to arrive at 6,525.6 million metric tons CO₂ equivalent³ in 2012. After a peak in 2007, the trend reversed with a short resurgence of greenhouse gas emissions from 2009-2010.⁴

Figure 1: U.S. Greenhouse gas emissions by gas, 1990-2012



Source: U.S. EPA's Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2012.
<http://www.epa.gov/climatechange/ghgemissions/usinventoryreport.html>

The **decrease in U.S. greenhouse gas emissions since 2010** can be mainly attributed to a lower carbon intensity of fuels consumed to generate electricity. This is a result, on the one hand, of slightly higher coal prices leading to less coal consumption and, on the other, considerably lower prices for natural gas stimulating the demand for electricity generation by natural gas and more use of hydropower. Improved fuel efficiency in vehicles with reductions in miles travelled, as well as a comparatively mild winter reinforced the downward trend in electricity demand in most sectors.

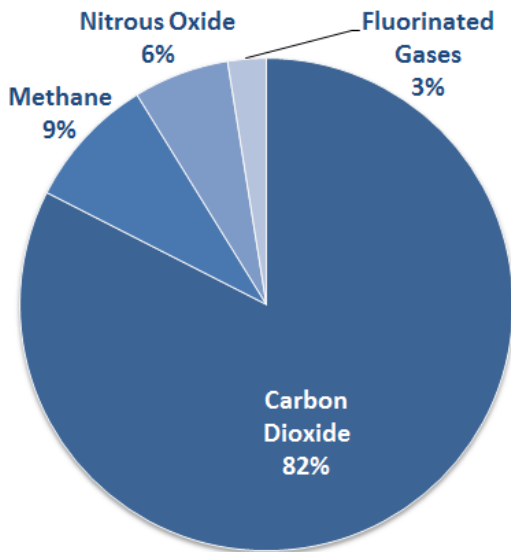
² See *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2012 (April 2014)*: <http://www.epa.gov/climatechange/ghgemissions/usinventoryreport.html>. The Inventory of US Greenhouse Gas Emissions and Sinks, yearly published by the US Environmental Protection Agency (EPA) tracks the national trend in greenhouse gas (GHG) emissions and removals associated with human activities back to 1990.

³ Carbon dioxide equivalents or CDE describe the total amount of CO₂ that would have the same global warming potential (GWP) as the quantity of greenhouse gas emissions ..., when measured over a specified timescale.

⁴ Percent change 1990-2012: Carbon dioxide ↑ 5.4%, Methane ↓ 10.8%, Nitrous oxide ↑ 2.9%, Fluorinated gases ↑ 83.0%, TOTAL: ↑ 4.7% (at an average annual rate of 0.2 percent).

Carbon dioxide is responsible for the lion share of U.S. emissions with 82% of total emissions in 2012.

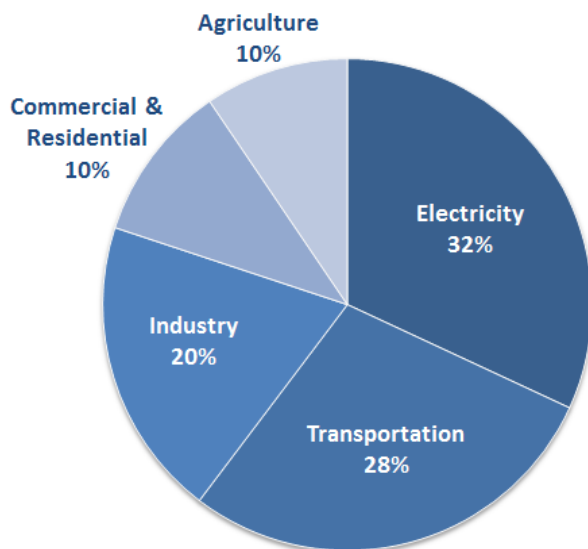
Figure 2: Total U.S. greenhouse gas emissions by GHG in 2012



The main sources of greenhouse gas emissions in the United States are electricity production (mainly from burning fossil fuels, mostly coal and natural gas), transportation (cars, heavy goods vehicles, ships, trains, and airplanes), industry, commercial and residential purposes (heat, handling of waste, use of certain products) and agriculture (livestock, soils, rice production). By far the **largest single source of U.S. greenhouse gas emissions** is **CO₂ stemming from fossil fuel combustion** which accounts for approximately 78% of total emissions.

Source: EPA

Figure 3: Total U.S. greenhouse gas emissions by economic sector in 2012



Total Emissions in 2012 = 6,526 Million Metric Tons of CO₂ equivalent

Land Use, Land-Use Change, and Forestry in the United States is a net sink and offsets approximately 15% of these greenhouse gas emissions. (All emission estimates from the Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2012)

Source: EPA

2. U.S. (CLIMATE CHANGE) POLICY MAKING

Since US policy making is quite different from policy making in the EU, the main players within the US process are briefly reviewed below - including their limitations.⁵

2.1 Presidential authority

Within the Executive Branch (*all* the Departments and Agencies– similar to Ministries in most European governments), the President has a fair amount of latitude, and he is taking advantage of these opportunities. He acts by issuing **executive orders** that require the federal government to follow certain rules (i.e., he can direct federal agencies to take various actions as he did in requiring that the federal government reduce its own carbon footprint), and through **rulemaking**. The most notable example of climate rulemaking is using Clean Air Act authority (see below, under 2.3.) to put obligations on regulated entities including businesses.

Even if coming from the same party, members of the House of Representatives do not necessarily identify themselves completely with the President's policies, nor do they automatically vote with him. Members of the House represent distinct districts within states. The allocation of 435 total Representatives is made based on population distribution and size; thus, a sparsely populated state might have only 1 Representative, while a state like California has more than 50. On the other hand, each state, regardless of population, gets 2 Senators, giving in some cases disproportionate power to very small and sometimes rural populations.⁶ Each House election is intensely local and specific, as are elections of Senators state-by-state.

The concept of party discipline is very different from the European model. The President can cajole, can offer incentives (including help in fundraising and campaigning), and can appeal to the sensibilities of disparate elected officials, but they are free to vote according to how they assess their own constituencies (e.g. whether they want to support the local coal industry or else) and their electoral fragility.

2.2 Passing new legislation in Congress

Legal requirements to govern broader society that cannot be achieved under existing legislation (such as the Clean Air Act) will require new legislation from Congress, the bicameral legislature of the federal government of the United States, consisting of the lower house known as the **House of Representatives** and the upper house known as the **Senate**.

Typically, bills are written and considered separately in each house of Congress (i.e. the House of Representatives and the Senate). Indeed, the two may not even communicate during this process, although the Speaker of the House and the Senate Majority Leader, especially if from the same party, might confer.

The initial bill writing responsibility lies in **committees** that have jurisdiction over the subject matter. In some cases, more than one committee has jurisdiction. For example, the Senate's Environment and Public Works Committee has jurisdiction over environmental

⁵ Chapter 2.1. and 2.2. are taken (slightly shortened/ modified) from the 'US Climate Change Policy' Briefing done in 2009 by the World Resources Institute (WRI) for the European Parliament

⁶ Representatives are elected for 2-year terms. Senators are elected for 6-year term, which was intended to make the Senate somewhat more insulated from momentary passions.

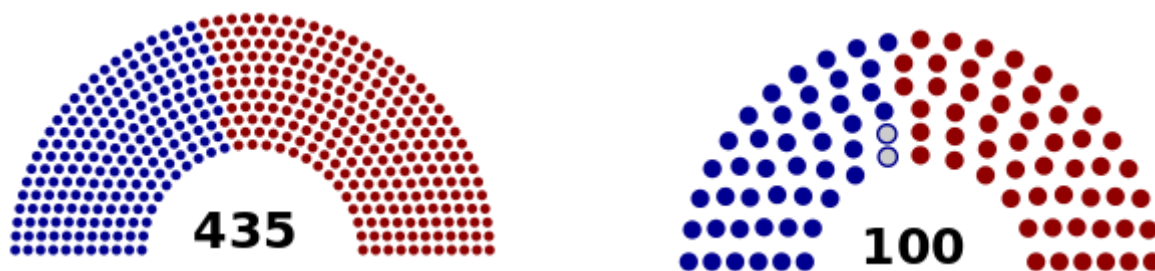
issues, but separate committees oversee energy, finance, agriculture, etc., all of which could be relevant to climate legislation.⁷

Another distinction is between the House and Senate process for passing legislation: responsibilities of the speaker of the House include passing legislation and preserving his majority, goals that sometimes conflict. The Senate faces a very different challenge. Although only 51 votes (a simple majority) are technically needed to pass legislation, the reality is that 60 votes must be found. This is due to the threat of a **filibuster** (debating a bill endlessly to keep it from a final vote), which can only be cut off by 60 votes (a process called cloture). This gives the Senate minority enormous power and poses a constant threat to Senate leadership.

Once legislation has passed both houses of Congress, there is a separate process to reconcile differences between the House and Senate bills and create an integrated, agreed bill. A joint committee of the two houses (called a **Conference Committee**) will be appointed by the leadership in each house to work together to produce this final bill. It is not a cut-and-paste job; the committee is where competing interests will be balanced and reconciled. Its final product is put to a vote in each house. The Conference Committee tries to put together a bill that is acceptable to both Houses and can get sufficient passing votes.

The opportunity to continue work on any particular set of bills is **time-limited**. For instance the bills currently discussed pertain only to the 114th Congress, which meets between January 3, 2015 and January 3, 2017 during the final two years of Barack Obama's presidency. The 2014 elections gave the Republicans control of the Senate (and control of both houses of Congress) for the first time since the 109th Congress (2005-2007 under George W. Bush). With 247 seats in the House of Representatives and 54 seats in the Senate, this **Congress** has the largest **Republican majority** since the 71st Congress of 1929-1931.

Figure 4: Seating in the 114th U.S. Congress



House of Representatives

Republicans (245)

Democrats (188)

Vacant (2)

Senate

Republicans (54)

Democrats (44)

Independent
(caucusing with Democrats) (2)

Source: Wikipedia

⁷ List of and link to all House and Senate Committees (and their subcommittees): <http://www.govtrack.us/congress/committees/>

Since House members must seek re-election every 2 years, and 1/3 of the Senators are up for re-election in the same time period, each of these 2-year periods becomes a separate, numerically identified "Congress". Failure to reach agreement on a bill within this **2-year period** kicks the process into the next session of Congress, where it must start again from the beginning.

The final bill that passes both houses of Congress will go to the **President for signature**. When a bill comes to the President, he has only two choices – sign or veto.⁸ A veto would send the bill back to Congress for more work.

Signature would begin the process of Executive Branch implementation, including potentially many rulemakings by the federal agencies involved. Typically, even detailed legislation requires further details to be filled in by Executive Branch agency rulemaking.

2.3 EPA and the Clean Air Act

The **United States Environmental Protection Agency (EPA)** is a federal government agency which was created in 1970 for the purpose of protecting human health and the environment. Laws written by Congress provide the authority for EPA to write regulations which explain the technical, operational, and legal details necessary to implement these laws. It is led by its Administrator, who is appointed by the president and approved by Congress. The current Administrator, who came to office in July 2013, is Gina McCarthy, a former Assistant Administrator for EPA's Office of Air and Radiation.

The **Clean Air Act (CAA)** of 1970 is a United States federal law designed to **control air pollution on a national level**. It requires EPA to develop and enforce regulations to protect the public from airborne contaminants known to be hazardous to human health. It authorizes EPA to develop comprehensive federal and state regulations to limit emissions from both stationary (industrial) and mobile sources. Thus EPA can make significant progress to **reduce emissions** through implementation of measures under the existing Clean Air Act. But there are some limitations to this.

In the Clean Air Act, which has been amended many times over its meanwhile 45-year history, Congress established limitations on EPA's regulatory power, requiring it to consider the cost of regulation and its other impacts. For instance, concerning the permitting requirements on new and modified large power plants and industrial facilities (in force since 2011) the Clean Air Act requires that these facilities install the Best Available Control Technology (BACT) to **control greenhouse gas emissions**. In determining what constitutes BACT for a specific facility, EPA or the delegated state permitting authority has to take into account "energy, environmental and economic impacts and other costs." Should the sponsor of a proposed facility think that the permitting authority has failed to reasonably account for the costs arising e.g. from a requirement to install a cleaner technology, he may appeal the permitting decision and ultimately seek judicial review.

Likewise, under **section 111** of the Clean Air Act (on standards of performance for new stationary sources), EPA establishes New Source Performance Standards (NSPS) for new facilities within specified categories of emission sources such as refineries, cement kilns and power plants. While setting the requirements to reach these standards, EPA must emanate from the "best system of emission reduction" that has been adequately demonstrated in

⁸ Suggestions have been made over the years for a "line-item" veto, which would allow a President to veto only certain provisions within a bill and leave the remainder intact. However, these efforts have not succeeded as they raise serious Constitutional questions about the balance of power between the branches of government.

practice, and is to “take into account the cost of achieving such reduction and any non-air quality health and environmental impact and energy requirements.”⁹

In addition to the legal constraints on EPA contained in the Clean Air Act, the agency 2010 issued the so-called greenhouse gas **tailoring rule**¹⁰ to take account of significant practical constraints. EPA namely decided that it would be unworkable to apply the Clean Air Act to all facilities - as many as 6 million - that could be covered under the law by pre-construction permitting requirements. By this rule, it made sure to focus on the largest greenhouse gas emitters first while leaving small businesses outside the scope.

In other words, **EPA has no more regulatory authority than Congress has granted it.** Time and again, Members from both parties have raised questions about the cost-effectiveness of EPA's greenhouse gas regulations expressing concerns about the major economic impacts they might have. Some argue that the case for greenhouse gas emission controls has not been proven and/or that the agency has exceeded its statutory authority in promulgating these and other rules.

Environmental groups, on the other hand, generally disagree that the agency has overreached in setting Clean Air Act standards and rather maintain that the agency's standards are not strict enough, don't meet statutory requirements, or disregard the findings of the agency's science advisors. As a result, EPA Clean Air Act standards generally are **challenged in court** both by industry and by environmental groups, with various states supporting each side.

A 2007 Supreme Court decision interpreting EPA's Clean Air Act authority - **Massachusetts v. Environmental Protection Agency** - ¹¹, found that greenhouse gases fit within the Clean Air Act definition of air pollutants and that the agency must weigh whether greenhouse gas emissions endanger public health and welfare and, if it concludes that they do, proceed with regulation. In response to that decision, the agency made in December 2009 its so-called **endangerment finding** (which actually consists of two different findings)¹² in which it finds "that greenhouse gases (GHGs) threaten the public health and welfare of the American people" and "that GHG emissions from on-road vehicles contribute to that threat." Although the endangerment finding does not as such impose any obligations on industry or other entities, it is a **prerequisite for implementing greenhouse gas emissions standards** for vehicles.

Subsequently, the agency proceeded to promulgate greenhouse gas emission standards for new passenger cars (in May 2010) and light trucks (in August of 2011). Furthermore, the implementation of the standards for motor vehicles automatically triggered two Clean Air Act provisions affecting *stationary* sources (power plants, manufacturing facilities, refineries, etc.) of carbon pollution: Best Available Control Technology requirements for *new* major *stationary* sources of greenhouse gases and permitting requirements for existing (and new) ones beginning of 2011.

⁹ <http://www.law.cornell.edu/uscode/text/42/7411>

¹⁰ <http://www.gpo.gov/fdsys/pkg/FR-2010-06-03/pdf/2010-11974.pdf>

¹¹ Case 549 US 497(2007), <http://www.supremecourt.gov/opinions/06pdf/05-1120.pdf>

¹² See <http://www.epa.gov/climatechange/endangerment/>: On December 7, 2009, the Administrator signed two distinct findings regarding greenhouse gases under section 202(a) of the Clean Air Act:

- **Endangerment Finding:** The Administrator finds that the current and projected concentrations of the six key well-mixed greenhouse gases — carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆) — in the atmosphere threaten the public health and welfare of current and future generations.

- **Cause or Contribute Finding:** The Administrator finds that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare.

2.3.1 Recent greenhouse gas related EPA-actions

Even though President Obama and his administration made repeatedly clear that they would prefer to see new legislation, over the last few years the **Clean Air Act** has become the **primary vehicle to pass federal greenhouse gas regulation** in the United States. Since the Supreme Court clarified in its 2007 decision *Massachusetts v. EPA* that the Environmental Protection Agency has the authority to do so, EPA has exercised this authority to regulate greenhouse gas emissions from automobiles, light trucks, and large stationary sources.

In September 2013, the Environmental Protection Agency (EPA) announced proposed [carbon pollution standards for new power plants](#) that would, for the first time, set national limits.¹³

In June 2014, EPA proposed the [Clean Power Plan](#) — the first-ever carbon pollution standards for **existing power plants**, that would tackle the country's **biggest source of emissions**¹⁴ in view of a 30 percent reduction (below 2005 levels) by 2030. It plans to issue the final rules by mid-summer 2015.

Significant **final rules** issued in recent years by EPA and other federal agencies to directly or indirectly reduce greenhouse gas emissions are¹⁵:

- [Updated fuel economy and new greenhouse gas emission standards for passenger cars and light-duty trucks](#) for model years 2017–2025 (finalised in August 2012 by EPA and the National Highway Traffic Safety Administration (NHTSA)). These standards equate to a fleet-wide average of 101 g CO₂/km if met solely through fuel economy improvements. This is estimated to double the fuel economy of vehicles sold in 2010 and cut passenger vehicle emissions in half by 2025.
- The first [fuel efficiency and greenhouse gas emission standards for medium- and heavy-duty vehicles](#) for model year 2014 - 2018 (finalised in August 2011 by EPA and NHTSA). According to EPA's estimates this rule will reduce CO₂ emissions by approximately 270 million metric tons over the life of vehicles sold during the 2014–2018 model years.
- [Emission reductions of volatile organic compounds, sulphur dioxide \(SO₂\), and air toxics from oil and natural gas systems](#). (Four regulations finalised in April 2012 by EPA). EPA suggests that the new standards will have the co-benefit of reducing annual methane emissions by an estimated 19–33 million metric tons of CO₂ emissions.
- [Energy efficiency standards for new appliances](#). Between 2009 and 2011, the Department of Energy established 17 new standards. According to analysis by the Appliance Standards Awareness Project and the American Council for an Energy-

¹³ One and a half years before, on March 27, 2012, an earlier attempt to propose such standards got blocked. EPA started to rewrite the rule after it had received more than 2,5 million public comments on it in order to address the concerns raised by industry to make sure it can withstand a legal challenge. The rule would have effectively bared construction of new coal-burning generating stations since they emit almost twice as much carbon per unit of electricity as natural gas plants and there is no technology yet available to bring the emissions under the limit.

¹⁴ Stationary sources, including power plants, refineries, manufacturing facilities, and others account for 69% of US emissions of greenhouse gases. The rest comes from mobile sources, primarily cars and trucks. See James E. McCarthy and Larry Parker, Congressional Research Service: EPA Regulation of Greenhouse Gases: Congressional Responses and Options (June 2010).

¹⁵ See World Resources Institute and Franz T. Litz a.o. (2013): Can The U.S. Get There From Here? Using Existing Federal Laws and State Action to Reduce Greenhouse Gas Emissions

Efficiency Economy, these standards are expected to save 126.2 TWh in 2025 and 146.8 TWh in 2035.

- **Non-greenhouse gas regulations for power plants and large industrial facilities**, most notably for [mercury and other air toxics](#). These rules could lead to the retirement of old, inefficient, coal-fired power plants. Power plants are not only considered major sources of fine particles (PM2.5), but in addition, they account for about 40% of US anthropogenic emissions of CO₂.

2.4 Why Congress does not pass more climate change legislation

Why does Congress not pass more climate change legislation? This question seems to be linked among other to the latest **economic crisis**: US senators seem to be far less likely to vote in favour of climate friendly legislation when the **unemployment** rate in their state is high - similar to the public support for action on climate change that tends to drop when unemployment rises.¹⁶ This is true for senators in both parties, although conservatives saw a steeper decline.

Others say that Congress is unlikely to pass comprehensive climate legislation, because of the **Republican** trend to **deny** existence of **climate change**, as demonstrated by the Chairman of the House Committee on Science, Space and Technology, Republican Lamar Smith who stated that "there is a great amount of uncertainty associated with climate science."¹⁷

During the last years, Congress interest in air quality or climate issues was dominated by efforts to **prevent the Environmental Protection Agency from promulgating and implementing new emission control requirements**.

There are only a few circumstances that could eventually play in favour of climate legislation, for instance a (revenue neutral) fiscal reform putting forward a **carbon tax** to compensate for a decline in corporate tax income. A report on the "Effects of a Carbon Tax on the Economy and the Environment", released by the Congressional Budget Office (CBO) in May 2013, says that: "Lawmakers could increase federal revenues and encourage reductions in emissions of carbon dioxide (CO₂) by establishing a carbon tax, which would either tax those emissions directly or tax fuels that release CO₂ when they are burned (fossil fuels, such as coal, oil, and natural gas)."¹⁸

Furthermore, Congress might prefer new legislation to EPA regulations in order to **prevent uncertainty** and not to discourage **investment** in the whole US (also in low carbon technologies). The triggering of standards for stationary sources (resulting from the regulation of standards for new car and light trucks) has raised a lot of concern in Congress. Even the much weakened coal lobby might prefer federal legislation to tedious battles in courts and in each state. Last but not least, serious future **adverse weather events** could pave the way towards legislation.

¹⁶ See article in Washington Post of 20 May 2013: "What's the best way to pass a climate bill? Fix the economy first" by Brad Plumer

¹⁷ Washington Post (opinions) "Overheated rhetoric on climate change doesn't make for good policies" by Lamar Smith, May 19, 2013.

¹⁸ http://www.cbo.gov/sites/default/files/cbofiles/attachments/44223_Carbon_0.pdf. The report was prepared at the request of the then Ranking Member of the House Committee on Energy and Commerce, Representative Henry A. Waxman, the California Democrat who had co-sponsored an unsuccessful cap-and-trade bill in 2009 and has released a draft carbon-pricing legislation in 2013.

3. OBAMA'S CLIMATE CHANGE POLICY

The United States have no comprehensive climate policy at federal level but rather a **patchwork** of different policies spread unevenly across states, sectors, and levels of government.¹⁹ The decline of carbon dioxide emissions from factories, automobiles and power plants is attributed to other factors, such as the effects of the financial crisis on the U.S. economy or increasing energy efficiency. Many experts put it mainly down to the **switch from coal to natural gas** for electricity generation. Namely, a **boom in shale gas** has transformed the US energy landscape. The sudden abundance of cheap natural gas seems to be driving short-term emissions reductions in the electric power sector.

During President **Obama's first term**, opposition especially from hydrocarbon lobbies and their political representatives in both parties, as well as overwhelming control of the House by Republicans in the last two years of that term, prevented any federal climate change legislation. At that time, the public message had more been about energy security and creating jobs than about climate change.

Though public concern has risen in the light of extreme weather events like **hurricane Sandy** in 2012, the same trend is reflected in President Obama's main political objectives for his **second term**, i.e. resolving the country's economic problems, strengthening U.S. energy independence and creating "green" jobs. For instance, Obama encourages the drilling for oil and domestic natural gas, both to ensure energy independence and to promote a cleaner (than coal) energy source. Likewise he promotes investment into renewable energies as future technologies in order to reduce dependence on oil imports and not to fall behind industrial competitors, notably China and to reduce emissions.

3.1 Slow start for Obama's second term

Shortly after his re-election in November 2012, President Obama promised leadership on climate change and energy. In both his **Plan for a Strong Middle Class & a Strong America**²⁰ and his **State of the Union** (SOTU) address²¹ given in February 2013, he showed himself determined to bring about broad climate legislation should Congress fail to do so. In his speeches, he emphasized the goal of reducing reliance on foreign oil and increasing energy security through clean (home-grown) energies (from natural gas to renewables). In particular, he

- urged **Congress** to **pass climate change legislation** along the lines of the McCain-Lieberman cap and trade bill²², threatening to direct his cabinet to come up with executive actions should Congress fail to do so;
- directed his Cabinet to identify additional **executive actions** to **reduce carbon pollution**, prepare for the consequences of climate change and speed the transition to more sustainable sources of energy;

¹⁹ See the [U.S. Climate Action Report 2014](http://www.state.gov/e/oes/rls/rpts/car6/index.htm) (2014 CAR) issued by the U.S. Department of State (<http://www.state.gov/e/oes/rls/rpts/car6/index.htm>) for an overview over regional and state level policies that tackle climate change and reduce emissions. These include GHG emission reduction targets on state level, market based cap and trade programmes as set up by the Regional Greenhouse Gas Initiative, power sector standards or energy efficiency programs.

²⁰ http://www.whitehouse.gov/sites/default/files/uploads/sotu_2013_blueprint_embargo.pdf

²¹ <http://www.whitehouse.gov/state-of-the-union-2013>

²² The Climate Stewardship Acts are a series of three acts introduced (2003, 2005, 2007) to the United States Senate by Senator John McCain (R-AZ) and Senator Joseph Lieberman (ID-CT), with a number of other co-sponsors. Their aim was to introduce a mandatory cap and trade system for greenhouse gases, as a response to the threat of anthropogenic climate change. All three acts failed to gain enough votes to pass through the senate.

- called on Congress to make the **renewable energy** Production Tax Credit permanent and refundable as part of a comprehensive corporate tax reform, providing incentives and certainty for investments in new clean energy.
- called for an "**energy efficiency race to the top**" and to cut in half waste over the next 20 years; and
- called on Congress to create an Energy Security Trust funded from oil and gas revenues, to help shift cars and trucks off oil.

Despite these **announcements**, regulation in this area almost came to a **halt**. Climate change had been knocked off the agenda by more imminent subjects like gun control, immigration and federal budget issues and external challenges like terrorism or North Korea.

Furthermore, all three cabinet-level **agencies** that address climate change and energy (i.e. EPA, as well as the Interior and the Energy Departments) were about to **change heads** for the second term.²³ This slowed down daily work, even more so since the necessary confirmation hearings in Congress in parts took abnormally long, like in the case of EPA where Gina McCarthy who was nominated by President Obama in March 2013 to lead the agency and confirmed as head of the Environmental Protection Agency only after 4 months of lengthy hearings.²⁴

3.2 The Keystone XL pipeline

Another gridlock was provoked by a pending decision on the **Keystone XL pipeline**, the extension of an existing oil pipeline system, which would carry heavy crude oil from tar sands in the Canadian province of Alberta to refineries on the U.S. Gulf Coast.

On 11 February 2015 the House passed a bill approving the Keystone XL pipeline. The Senate, since the last elections also under Republican control, had approved the project end of January. On 24 February President Obama **vetoed**²⁵ the bill as previously announced, arguing that he did not want to bypass an **ongoing review process** at the **State Department** which has to find whether the project would be in the **national interest**. During his speech in June 2013 announcing his national climate change strategy, he made clear that the Keystone XL pipeline would not be in the national interest if it significantly raised carbon emissions. His final decision on this project will follow the State Department's review.

Proponents say the extension of the pipeline would create thousands of **jobs** and foster **energy security**; opponents deny this and criticise the expected big negative impact on **climate change** and the **environment**.

On 4 March 2015, the U.S. Senate failed to override President Obama's veto, short of 5 votes for the necessary two-thirds majority. However Republicans warned Barack Obama

²³ Sally Jewell, former chief executive of Recreation Equipment Inc. in Seattle, was sworn in as Interior Secretary on April 12, 2013. Ernest Moniz, an energy specialist at the Massachusetts Institute of Technology and a former Energy Department official, only received confirmation as Energy Secretary on 21 May 2013. Gina McCarthy, who ran the Environmental Protection Agency's office of air and radiation and as such had written many GHG regulations, including the new emissions rules for power plants, had to wait until July 18 2013 before she was confirmed EPA Administrator. Also the fairly unknown post of administrator of the White House Office of Information and Regulatory Affairs (OIRA, part of the Office of Management and Budget (OMB)) who reviews all federal regulations and can exercise sweeping authority to veto or rewrite important climate change rules was newly filled.

²⁴ Gina McCarthy was finally confirmed after a record 136-day confirmation fight and 1100 written questions, i.e. 7 times as many as her predecessor Lisa Jackson, Obama's first term EPA-chief; most of them from Republicans.

²⁵ This was President Obama's first veto of the 114th Congress and his third throughout his mandate.

not to veto the project otherwise they would **block other initiatives** (like for instance the greenhouse-gas regulation of power plants and refineries).²⁶

3.3 Obama's national climate change strategy

Only in his [speech at Georgetown University](#)²⁷ on 25 June 2013 President Obama has revealed his [climate action plan](#)²⁸, for the first time giving details on how he wants to tackle climate change during his second term. The plan is built upon three key pillars, namely

1. **Cut carbon pollution** in America (mitigation)
2. **Prepare the U.S. for the impacts** of climate change (adaptation)
3. **Lead international efforts** to combat global climate change

Obama's national plan to combat climate change includes the first-ever regulations to **limit carbon dioxide emissions from existing power plants** - on top of the already proposed (but delayed) regulations for **new power plants** (see chapter 2.3.1.) - the most important step to reduce carbon pollution: According to the US Energy Information Administration, the statistical branch of the US Department of Energy, power plants actually are the **single biggest source** of US carbon pollution accounting for 40% of US carbon dioxide emissions and one-third of overall greenhouse gas emissions.²⁹

Other foreseen **mitigation measures** include:

- Doubling electricity generated from **renewable energy** (solar, wind and geothermal projects) by 2020 (after a first duplication during his first term);
- Increase **energy efficiency** for appliances such as refrigerators and dishwashers, as well as for federal buildings (including through the reduction of investment barriers);
- Expanding the **Better Buildings Challenge** programme (i.e. helping commercial and industrial buildings become at least 20 % more energy efficient by 2020);
- Increase **fuel economy standards** and develop and deploy **advanced transport technologies** including next-generation biofuels and electric cars;
- Reduce other ghg emissions (**Hydrofluorocarbons, methane**);
- Preserving the role of **forests** in mitigating climate change.

Among the **adaptation measures** foreseen in Obama's climate change strategy are:

- Directing agencies to support **climate-resilient investment**;
- Establishing a **leaders' task force on climate preparedness and resilience**³⁰;
- Supporting **communities** as they prepare for climate impacts;

²⁶ See for instance Suzanne Goldenberg, The Guardian, 11.02.15, [Keystone pipeline passes House vote as Republicans defy Obama veto threat](#)

²⁷ <http://www.whitehouse.gov/the-press-office/2013/06/25/remarks-president-climate-change>

²⁸ <http://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf>

²⁹ <http://www.eia.gov/tools/faqs/faq.cfm?id=77&t=11>;

Also see: <http://www.epa.gov/climatechange/ghgemissions/sources/electricity.html>;

³⁰ See their report of November 2014: President's state, local, and tribal leaders task force on climate preparedness and resilience, Recommendations to the President: http://www.whitehouse.gov/sites/default/files/docs/task_force_report_0.pdf

- Improving the resilience of **buildings** and **infrastructure**;
- Rebuilding and **learning** from **hurricane Sandy**;
- Identifying **vulnerabilities** of key sectors;
- Promoting resilience in the **health sector**;
- Promoting **insurance** leadership for climate safety;
- Conserving **land and water** resources;
- Maintaining **agricultural sustainability**;
- Managing **draught**;
- Reducing **wildfire** risks;
- Preparing for future **floods**.

All actions proposed in President Obama's national climate action plan can be implemented via the US EPA, thus **bypassing Congress**.

As a third pillar of his climate action plan, President Obama announced his intention to make the U.S. **lead international efforts** to combat climate change.

4. THE U.S. IN INTERNATIONAL CLIMATE NEGOTIATIONS

4.1 Short history³¹

Shortly after he took office in 2001, former President George W. Bush withdrew the USA's support for the Kyoto Protocol and refused to submit it to Congress for ratification. Since this time the USA continued to **refuse to commit to a legally-binding international instrument** with a **quantitative emission reduction target**. This position of the **second largest global emitter** after China has strongly affected the UNFCCC (United Nation's Framework Convention on Climate Change) negotiations. Key emerging countries such as China, India and Brazil are not willing to adopt legally-binding mitigation targets unless the USA is going ahead and also commits to such targets. For many years this situation has made progress in the UNFCCC negotiations very difficult.

At the 2009 Copenhagen Summit, the United States made a **pledge** in the range of a **17 % emission reduction by 2020 compared with 2005 level** in conformity with anticipated US energy and climate legislation (28 January 2010). This pledge has been officially anchored via the 2010 Cancún Agreements within the UNFCCC. In his June 2013 climate action plan Obama announced specific measures to reach this emission reduction target.

In addition, the USA communicated that the pathway set forth in pending legislation would entail a 30 % emission reduction by 2025 and a 42 % emission reduction by 2030, in line with the goal to reduce emissions by 83 % by 2050. The reported GHG emissions for 2012 were 10 % below 2005 levels for total emissions excluding LULUCF (Land Use, Land-Use Change and Forestry) and 11 % below 2005 levels for total GHG emissions including LULUCF.

4.2 Towards a global agreement in 2015

On 12th November 2014, just ahead of the start of a new round of international climate talks under the UNFCCC (COP 20) in Lima, the [United States announced jointly with China](#) its **post-2020 mitigation targets**. The United States intends to achieve an economy-wide target of **reducing its emissions by 26 %-28 % below its 2005 level in 2025** and to make best efforts to reduce its emissions by 28 %. Put in the context of previous mitigation targets, the new target adds a reduction of 9 to 11 percentage point over the additional 5 year period compared to the Cancún pledge of 17 % by 2020.

The new U.S. goal will double the pace of carbon pollution reduction from 1.2 percent per year on average during the 2005-2020 period to 2.3-2.8 percent per year on average between 2020 and 2025. Both sides intend to continue to work to **increase ambition over time** and that these targets are part of the longer range effort to achieve the deep **decarbonisation of the global economy** over time. According to the fact sheet released with the announcement, this new target intends to keep the United States on the right trajectory to achieve deep economy-wide reductions on the order of **80 percent by 2050**.

Regarding the envisaged **2015 global agreement** on climate change, the U.S. argues in favour of quantified contributions by all Parties unless they have limited capabilities or their

³¹ Chapter 4.1. and parts of 4.2. (incl. table 1), both slightly modified, are taken from the European Parliament study 'The Development of Climate Negotiations in View of Lima (COP 20)', A. Herold, A. Siemons, M. Cames, M. Scheffler, Öko-Institut (2014)

contributions to global emissions are not significant. It advocates a common transparency framework for all Parties but wants to see appropriate flexibility.

With regards to **climate finance**, the U.S. considers private sources of financial flows more important than public sources for financial support; with regard to management, it prefers involvement of the World Bank and their Climate Investment Funds as financial institutions to provide finance support related to climate.

To **increase global pre 2020 ambition** the U.S. proposes³²

- clarification of existing pledges;
- encouragement of Parties to include additional sectors or actions in their pledges;
- encourage Parties that have not yet pledged to do so;
- public recognition of countries' mitigation pledges.

With the "[Lima call for climate action](#)"³³ finally **all Parties to the Convention**, including the U.S., have agreed to come under a **common legal framework** and to contribute to the reduction of greenhouse gases.

The agreed document calls for: A **legally binding ambitious agreement** in 2015, **applicable to all Parties**, that reflects the principle of "**common but differentiated responsibilities and respective capabilities**" (CBDR) of each nation "in light of different national circumstances", and that "shall address in a balanced manner, inter alia mitigation, adaptation, finance, technology development and transfer, and capacity -building, and transparency of action and support".

Table 1: Emissions profile for USA compared to EU-27

	USA	EU-27
CO₂ emissions (2012)		
Absolute (Gt) without LULUCF	5.4	3.7
Absolute (Gt) with LULUCF	4.4	3.4
Rank	2	3
Change from 1990 to 2012 (without LULUCF)	+ 5.4 %	-16.2 %
Of global total	15.1 %	10.9 %
Per capita (t/capita) without LULUCF	17.12	7.3
Per GDP (t/Mio. USD) without LULUCF	0.33	0.22
GHG emissions (2012)		
Absolute (Gt) without LULUCF	6.5	4.5
Absolute (Gt) with LULUCF	5.5	4.2
Change from 1990 to 2012 (without LULUCF)	+ 4.3 %	-19.2
Per capita (t/capita without LULUCF)	20,7	9,0
Per GDP (t/Mio. USD without LULUCF)	0.40	0.27

Sources: <http://edgar.jrc.ec.europa.eu>, <http://data.worldbank.org/indicator/NY.GDP.MKTP.CD>, Annual GHG inventories submission

³² U.S. submission under the UNFCCC process: ADP (Ad hoc Working Group on the Durban Platform) Workstream 2: Mitigation ambition, March 11, 2013

³³ Consisting of slightly over 3 pages of decisions + almost 39 pages annex with a range of different options for a final Paris deal ("elements for a draft negotiating text"); In February 2015 the annex was transformed by delegates from over 190 countries into an 86-page formal negotiating text for COP 21 in Paris

5. CLIMATE TOPICS OF MUTUAL INTEREST TO EU AND U.S.

5.1 Emission Trading

5.1.1 United States

The Climate Stewardship Acts, a series of three acts introduced (2003, 2005, 2007) to the United States Senate by the Republican Senator John McCain from Arizona and Independent Senator Joseph Lieberman from Connecticut, with a number of other co-sponsors, aimed at introducing a mandatory cap and trade system for greenhouse gases in response to the threat of anthropogenic climate change. All three acts however failed to gain enough votes to pass the senate. In his 2013 State of the Union Address, President Obama referred back to these acts, announcing executive actions should Congress not come up with similar legislation.

Another attempt to introduce a federal CO₂ cap-and-trade system (similar to the EU emission trading scheme) in the US in 2009 did not come through. Namely, the American Clean Energy and Security Act or "Waxman-Markey Bill", named after its authors, Representatives Henry A. Waxman of California (chairman of the Energy and Commerce Committee) and Edward J. Markey of Massachusetts (chairman of that committee's Energy and Power Subcommittee), both Democrats, was approved by the House of Representatives on June 26, 2009 by a scarce vote (219 to 212), but was defeated in the Senate.

In the absence of federal climate legislation, states continue to pursue **regional initiatives** to cap carbon and institute trading systems. For example, California, the US leader for progressive fuel and emissions standards, has designed an enforceable cap-and-trade program that has started in January 2012, with an enforceable compliance obligation beginning with the 2013 greenhouse gas emissions.

Already in 2008, a coalition of states in the U.S.'s Northeast implemented a smaller-scale emissions trading system, the **Regional Greenhouse Gas Initiative** (RGGI, pronounced "Reggie"). This first mandatory cap-and-trade program for greenhouse gas emissions in the US started in January 2009. Since the beginning of 2012, RGGI involves nine states - Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. The RGGI cap-and-trade system applies only to carbon dioxide emissions from electric power plants with capacities to generate 25 megawatts or more (i.e. approximately 168 facilities). Due to the cap design, the economic crisis and a substantial shift to less carbon intensive fuels, this regional initiative has however not yet forced regulated entities to make internal emission reductions or purchase emission credits from other sources.

To address the disparity between the cap and actual emissions, in 2014 the cap was shortened of 91 million tons with a further yearly 2,5%-reduction planned between 2015 and 2020. Almost all emission allowances are distributed through auctions; revenues are invested in energy efficiency, renewable energy or other clean energy projects.³⁴

³⁴ For more information on RGGI see <http://www.rggi.org/>.

The average transfer price of CO₂ allowances during the fourth quarter of 2014 was \$5.22, approximately 7 percent higher than in the prior quarter and 69 percent higher than the fourth quarter of 2013.³⁵

Although RGGI's has had limited impact on the region's power plant emissions, its existence (coupled with unlimited emission allowance banking and an auction reserve price) attaches a price to the regulated entities' CO₂ emissions and therefore acts like an emissions fee or carbon tax.

5.1.2 European Union

The **EU's Emission Trading Scheme** (ETS) is currently the **largest international carbon market** and one of the main instruments of the EU policy to combat climate change. It was introduced in 2005 to help achieve the EU's commitment under the 1997 UN Kyoto-Protocol on climate change (to reduce CO₂ emissions of 8% in 2008-12 compared with 1990 levels) and continues to be a cornerstone on the way to reach the EU's medium and long-term climate targets (greenhouse gas emission reduction of 20% by 2020 and of 80-95% by 2050).

In 2012 the EU ETS was expanded to include emissions from **aviation**, for all flights arriving at or departing from an EU airport. Following massive international opposition, notably from the US, the scheme's application to flights coming in or going out the EU is temporarily suspended in view of a possible global solution under the International Civil Aviation Organization (ICAO) while maintaining its application to intra-EU flights.

Given that the **carbon price** currently is **too low** to stimulate investments into low-carbon innovation, the EU is taking **steps to fix** the ETS: After the **'back-loading'** (temporary freeze of auctions of a part of CO₂ permits) the Commission proposed a **'market stability reserve'** to counter the structural surplus of emission allowances by automatically adjusting the supply of auctioned allowances and at the same time to give an international signal³⁶.

The further fate of the carbon price is closely linked to various other developments in the energy sector, such as the level of increase of renewables, the future treatment of fossil fuel subsidies, and the question whether carbon capture and storage (CCS) technology or the exploitation of shale gas will be developed on a large scale or whether new cost-effective low-carbon technologies will be available in the near future.

5.2 Shale gas

5.2.1 United States

Shale gas extraction involves injecting large quantities of water into rock formations to recover gas trapped one or two kilometres beneath the surface.

The U.S. shale gas **boom** has changed its whole energy-landscape by significantly minimising the natural gas price. The consequent use of gas instead of coal for the

³⁵ See Report on the secondary market for RGGI CO₂ allowances : fourth quarter 2014 (http://www.rggi.org/docs/Market/MM_Secondary_Market_Report_2014_Q4.pdf)

³⁶ Proposal for a decision of the European Parliament and of the Council concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and amending Directive 2003/87/EC (COM(2014)20 of 22.1.2014;voted in ENVI on 24 Feb 2015.

generation of electricity reduced carbon emissions by half and constitutes one of the main causes for U.S. emission reductions.³⁷

While displacing coal or other high greenhouse gas emitting fuels by gas certainly brings a clear climate and air quality benefit, questions remain about the **full climate impact** of shale gas. Fugitive emissions from gas extraction are poorly understood and could make a big difference in the true climate effects of natural gas. Moreover, if natural gas is not displacing coal but is instead displacing low-carbon sources of power, it becomes a worse alternative.

In March 2011, President Obama announced a plan for US **energy security** in which he instructed his Energy Secretary Steven Chu to work together with other agencies, industry, states and environmental experts to improve the safety of shale gas development. A subcommittee on shale gas production was set up within the energy department to provide recommendations on how to improve the safety and environmental performance of fracking. In its final report³⁸ (of 8 November 2011) the subcommittee, although generally favourable, concluded that:

"(1) If the country is to enjoy the economic and other benefits of shale gas production over the coming years disciplined attention must be devoted to reducing the environmental impact that accompanies this development, and

(2) a prudent balance between development and environmental protection is best struck by establishing a strong foundation of regulation and enforcement, and adopting a policy and practice that measures, discloses, and continuously improves shale gas operations.

The Subcommittee believes that if action is not taken to reduce the environmental impact accompanying the very considerable expansion of shale gas production expected across the country – perhaps as many as 100,000 wells over the next several decades – there is a real risk of serious environmental consequences causing a loss of public confidence that could delay or stop this activity."

At the request of Congress, EPA is conducting a study to better understand any potential impacts of hydraulic fracturing on drinking water resources³⁹. The scope of the research includes the full lifespan of water in hydraulic fracturing.

5.2.2 European Union

In times of increasing energy prices (three to four times higher than in the U.S.) and questions about security of supply and dependence on imported energy, shale gas and shale oil extraction is also a hot topic in Europe. The other side of the coin are the potential effects on the environment (risk of blowouts, above ground leaks, seismic effects and wastewater and chemicals being spilled, contamination of groundwater), as well as the question in how far these energy carriers can play a role in the **low-carbon economy** model towards which the EU intends to shift.

A [2011 EC legal assessment](#) found that existing EU environmental legislation indeed applies to practices required for the extraction of unconventional hydrocarbons, such as shale gas; it left however doubts about its adequacy to manage the identified risks. Even if commercial shale gas production has not yet started in the EU, some Member States have

³⁷ See for instance: <http://www.energytrendsinsider.com/2013/06/24/why-a-global-shale-gas-boom-is-key-to-combating-climate-change/>: "From a peak of \$10.54 per million btu (mbtu) in July 2008, the spot price of gas at the well-head had fallen to less than \$2/mbtu by April 2012. (...) this caused fuel-switching of base load electricity production from coal to natural gas."

³⁸ http://www.shalegas.energy.gov/resources/111811_final_report.pdf

³⁹ <http://www2.epa.gov/hfstudy>.

set up **pilot projects**, whereas others have announced **bans and moratoria**. EU environmental legislation has been interpreted in different ways, leading to a fragmented and more and more complex operating framework hampering any level playing field.

In two resolutions adopted on 21 November 2012⁴⁰, **MEPs** called for shale gas drilling to be subject to **tough rules**.

In January 2014 the Commission adopted a [Recommendation](#)⁴¹ on **minimum principles** for the exploration and production of hydrocarbons (such as shale gas) using high-volume hydraulic fracturing, as well as a [Communication](#)⁴² about the risks and chances of fracking.

Even if it's too early to say whether significant volumes can be extracted in the EU, shale gas exploration has already been permitted in a number of Member States: Denmark, Germany, Hungary, the Netherlands, Poland, Portugal, Romania, Spain, Sweden and the UK. Other countries - such as France and Bulgaria - have decided for the time being to suspend exploitation plans.

5.3 Carbon Capture and Storage (CCS)

5.3.1 United States

Carbon Capture and Storage (CCS) is a set of technologies that captures the carbon dioxide emitted from industrial plants based on fossil fuels, transports it to a suitable storage site and stores it in underground geological formations with the aim of removing it from the atmosphere for good. According to the UN Intergovernmental Panel on Climate Change, CCS could remove 80-90% of CO₂ emissions.

President Obama, in February 2010, created the **Interagency Task Force** on Carbon Capture and Storage, charging it with proposing "a plan to overcome the barriers to the widespread, cost-effective deployment of carbon capture and storage within 10 years, with a goal of bringing 5 to 10 commercial demonstration projects online by 2016."⁴³

EPA has finalised requirements for geologic sequestration, including the development of a new class of wells (Class VI) under the authority of the Safe Drinking Water Act's Underground Injection Control (UIC) Program. These requirements are designed to protect underground sources of drinking water.

The so-called Class VI rule builds on existing UIC Program requirements, with extensive tailored requirements that address carbon dioxide injection for long-term storage to ensure that wells used for geologic sequestration are appropriately sited, constructed, tested, monitored, funded, and closed.

In a separate, yet complimentary, rulemaking under authority of the Clean Air Act, EPA has finalised reporting requirements under the **Greenhouse Gas Reporting Program** for facilities that inject CO₂ underground for geologic sequestration and all other facilities that

⁴⁰ European Parliament resolution of 21 November 2012 on the environmental impacts of shale gas and shale oil extraction activities ([2011/2308\(INI\)](#)); European Parliament resolution of 21 November 2012 on industrial, energy and other aspects of shale gas and oil ([2011/2309\(INI\)](#))

⁴¹ 2014/70/EU

⁴² COM/2014/023 final/2 on the exploration and production of hydrocarbons (such as shale gas) using high volume hydraulic fracturing in the EU of 17.3.2014 (correcting and replacing the document of 22.1.14)

⁴³ Presidential Memorandum (2010); A Comprehensive Federal Strategy on Carbon Capture and Storage: www.whitehouse.gov/the-press-office/presidential-memorandum-a-comprehensive-federal-strategy-carbon-capture-and-storage

inject CO₂ underground. Information obtained under the Greenhouse Gas Reporting Program will enable EPA to track the amount of carbon dioxide received by these facilities. There are several commercial CCS projects underway in the United States that have received grants from the Department of Energy (DOE).

5.3.2 European Union

As regards the EU, end 2004, it set up a Technology Platform on Zero Emission Fossil Fuel Power Plants and proposed a regulatory framework to commercialise and subsidise carbon storage and capture technology. [Directive 2009/31/EC](#) (of 23 April 2009) on the geological storage of carbon dioxide sets out a regulatory regime to permit the exploration and storage of CO₂, among other establishing criteria for the selection of storage sites. To encourage the use of carbon capture and storage technology, the directive earmarked up to EUR 300 million in allowances to stimulate the construction and operation of up to 12 commercial demonstration projects.

Yet, the implementation of the envisaged demonstration projects in Europe has proven more difficult than initially foreseen. The cost of capture and storage remains an important barrier to the uptake of CCS, as does the lack of a long term business case. At current carbon prices which are very low, and without any other legal constraint or incentive, there is no rationale for economic operators to invest in CCS. Some projects (those that envisage onshore storage) have faced strong public opposition. While sufficient storage capacity probably exists in Europe, not all capacity is accessible or located close to CO₂ emitters. Some Member States have decided to ban or restrict CO₂ storage from their national territories. In addition, an adequate transport infrastructure is necessary to efficiently connect CO₂ sources to sinks.

In 2013, March the European Commission issued a [Communication on the Future of Carbon Capture and Storage in Europe](#)⁴⁴ to overcome problems and find ways to encourage CCS demonstration and deployment. In its [proposal for a 2030 climate and energy policy framework](#)⁴⁵, the Commission came to the conclusion that "CCS may be the only option available to reduce direct emission from industrial processes at the large scale needed in the longer term" and encouraged "Member States with fossil reserves and/or high shares of fossil-fuels in their energy mix" to "support CCS through the pre-commercialisation stage in order to bring down costs and enable commercial deployment by the middle of the next decade."

The European Parliament,⁴⁶ in a non-legislative resolution on the implementation of the Directive on the geological storage of carbon dioxide acknowledged that carbon capture and storage (CCS) projects have the potential to allow the EU to meet its low-carbon goals, in particular for decarbonizing high CO₂-emitting industries and agreed that they should receive more support from Member States and the EU. MEPs affirmed "the urgent need" to develop a range of full-chain CCS flagship projects so as to identify the best and economically most advantageous solutions. With regard to the investments needed, they underlined that instruments in addition to the EU ETS would be needed to stimulate research and application of CCS.

⁴⁴ COM(2013)180 final of 27.03.13, also see the Commission's report on the implementation of Directive 2009/31/EC on the geological storage of carbon dioxide, [COM\(2014\)099 final](#) of 25.02.2014

⁴⁵ COM(2014)015 final of 22.01.2014

⁴⁶ European Parliament resolution of 14 January 2014 on ENVI's implementation report 2013: developing and applying carbon capture and storage technology in Europe ([2013/2079\(INI\)](#))

6. OUTLOOK

U.S. greenhouse gas emissions have fallen over the last few years, however, not so much as a result of genuine climate policy but thanks to other factors, such as a declining oil consumption (due to energy efficiency improvements and economic recession) and a switch from coal to natural gas in the electricity sector (because of the low price of natural gas following the shale gas boom).

The economic crisis and the struggle for jobs, among other, have - at least temporarily - knocked climate policy off the top spot when it comes to policy priorities. Majorities in Congress and Senate as they stand do not seem likely to play in favour of any climate change legislation, even if some members of Congress continue to support an economy-wide cap-and-trade system or a carbon tax. Alternatively, the President needs to rely on his executive power and use EPA regulation to get through what did not pass Congress.

However sidestepping Congress by using executive action is no guarantee for Obama either to get his plans through. On the contrary, any further regulatory efforts on climate change action will most likely be challenged either in Congress or before the Courts.

On the other hand, no matter what EPA proposes, it cannot act unilaterally but has to develop standards together with the states. In other words, while the federal government sets the guidelines, the Clean Air Act is implemented through the states with their different interests and backgrounds. Therefore, a coordinated, nationwide market mechanism like a cap-and-trade system is unlikely to emerge under the Clean Air Act.

Regional interests prevent the U.S. as a whole from benefitting from its rich renewable energy resources which are unevenly spread across the nation. On the other hand, some states use their strong role to actually pioneer future federal action like California, trendsetter in ambitious and path-breaking vehicle emission standards that has launched a cap-and-trade program that will cover 85 percent of the state's emissions and also has a target to produce 33 percent of its electricity from renewable sources by 2020.⁴⁷

Despite all this, the U.S. is on track to reach President Obama's pledge made at the UN Climate Conference in Copenhagen in 2009. His national climate action strategy outlines concrete proposals how to continue the path of emission reductions.

It will be interesting to see how the U.S. will perform at the upcoming international climate change negotiations in Paris. Can it further impress the world by demonstrating willingness to fight climate change thereby tagging along other big emitters that so far made their own action dependant on the U.S. willingness to act?

⁴⁷ World Resources Institute and Franz T. Litz a.o. (2013): Can The U.S. Get There From Here? Using Existing Federal Laws and State Action to Reduce Greenhouse Gas Emissions

REFERENCES

- Climate Policy Initiative (2013). The Policy Climate. Available at <http://climatepolicyinitiative.org/wp-content/uploads/2013/04/The-Policy-Climate.pdf>
- Greenspan Bell, R., Duggan, J., Fuhs, G. World Resources Institute (2009). US Climate Change Policy, European Parliament study
- Herold, A., Siemons, A., Cames, M., Scheffler, M., Öko-Institut (2014). The Development of Climate Negotiations in View of Lima (COP 20), European Parliament study
- Litz, Franz T. and Bianco, Nicholas, World Resources Institute (2010). WRI Fact Sheet: What Are Limits on EPA? Clean Air Act Holds Answers
- Litz, Franz T. and others, World Resources Institute (2013): Can The U.S. Get There From Here? Using Existing Federal Laws and State Action to Reduce Greenhouse Gas Emissions
- McCarthy, James E., Congressional Research Service (2013). Clean Air Issues in the 113th Congress: An Overview
- McCarthy, James E. and Parker, Larry, Congressional Research Service (2010). EPA Regulation of Greenhouse Gases: Congressional Responses and Options
- Ramseur, Jonathan L., Congressional Research Service (2013). The Regional Greenhouse Gas initiative: Lessons Learned and Issues for Policymakers
- Robinson, David, Oxford Institute for Energy Studies (2013). US Energy and Climate Change Policies - Obama's Second Term
- The White House: <http://www.whitehouse.gov>
- United States Environmental Protection Agency: <http://www.epa.gov>
- United States Energy Information Administration: <http://www.eia.gov>

NOTES

DIRECTORATE-GENERAL FOR INTERNAL POLICIES

POLICY DEPARTMENT ECONOMIC AND SCIENTIFIC POLICY **A**

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Policy departments are research units that provide specialised advice to committees, inter-parliamentary delegations and other parliamentary bodies.

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- Economic and Monetary Affairs
- Employment and Social Affairs
- Environment, Public Health and Food Safety
- Industry, Research and Energy
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