



## Climate Change and Energy

20 20 20 by 2020

*"The EU cannot win the battle against climate change on its own. Our emissions are only 14 percent of worldwide emissions and will account for less than 10 percent by 2030."*

*"Energy policy was at the heart of the original idea of European integration... through the creation of a Coal and Steel Community in 1952 and the Euratom Treaty of 1957. But it was forgotten for 50 years. Energy is now reclaiming its rightful place at the top of the European agenda."*

European Commission President  
José Manuel Barroso

Glaciers are melting. Sea levels are rising. The world is getting warmer, and the impact of climate change is no longer in dispute. According to the Intergovernmental Panel on Climate Change (IPCC), global greenhouse gas (GHG) emissions resulting from human activities increased 70 percent between 1970 and 2004.

The findings of the authoritative IPCC—widely recognized as the most credible existing source of information on climate change—indicate that "most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic GHG concentrations."

Additionally, the panel's Fourth Assessment Report (AR4), released in 2007, demonstrates that even if global GHG emissions were reduced to 50 percent of 1990 levels by 2050, a temperature rise of up to 2°C above pre-industrial levels would be difficult to avoid. Climate change beyond 2°C could lead to unprecedented meteorological changes and damage, conflict over resources, loss of territory and border disputes, environmentally-induced migration, tension over energy supply, and pressure on international governance.

The report predicts that Europe could face an increased risk of inland and coastal flooding, glacier retreat, reduced snow cover, and extensive species losses if our climate is not stabilized. In North America, climate change will exacerbate competition for over-allocated water resources, increase the number, intensity and duration of heat waves, and pose significant risks for coastal communities.

The IPCC findings, along with Al Gore's film, "An Inconvenient Truth," its subsequent Oscar win, and the recognition of both Gore and the IPCC with the 2007 Nobel Peace Prize, have now raised the issue of climate change in America's consciousness. The EU, however, has been focused on the issue for many years, establishing the European Climate Change Program in 2000 and initiating the first global carbon market in 2005 with its EU Emissions Trading System.



Norwegian Prime Minister Jens Stoltenberg and European Commission President José Manuel Barroso discuss energy security and climate change during a February 2008 visit to Norway.

As predictions of global warming's impact have grown more alarming, the EU has accelerated its own policies through a comprehensive climate and renewable energy package designed to reduce carbon dioxide emissions by 20 percent by 2020, increase to 20 percent by 2020 the renewable energy share of the energy mix, and improve energy efficiency by 20 percent by 2020.

The EU is on target to meet its Kyoto Protocol commitment to reduce carbon dioxide emissions by 8 percent of 1990 levels by 2020, and in the process it has succeeded in breaking the link between economic growth and GHG emissions. The economy grew by more than 35 percent between 1990 and 2005, but overall emissions from the 27 EU Member States fell by 7.9 percent.

A new energy package launched in early 2008 aims to help maintain this trend through continuing development of renewable energy sources and further reductions in transport emissions. Increased energy efficiency and carbon capture and storage are also integral to the EU's plan for a low-carbon future.

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# The EU: Leading the Fight Against Climate Change



*"Putting a price on carbon is the vital 'pull factor' needed to ensure a healthy market for clean technologies. It's a major driver for innovation, for the creation of markets, and for future economic activity. Emissions trading is the key tool for achieving emission reductions at least cost. A cap-and-trade scheme gives companies policy certainty at the same time as the flexibility and freedom to find the most cost-effective ways of cutting their emissions themselves."*

EU Environment Commissioner  
Stavros Dimas

The economic costs of tackling climate change are significant but manageable if strong, disciplined action is taken earlier rather than later.

The 2006 Stern Review, commissioned by the UK government to examine the economic cost of climate change, concluded that stabilizing greenhouse gas (GHG) emissions at a level that would prevent climate

change from reaching dangerous proportions would cost around just one percent of GDP if undertaken swiftly.

However, inaction, according to the same report, would eventually reduce global GDP by an estimated five to 20 percent annually—the cost of managing the consequences of climate change—and lead to average global temperature increases of between 2° C and 5° C over time. The costs and risks of doing nothing would rise proportionately to the length of time that action is delayed. The Stern Review also warns that without action to curb climate change, the concentration of GHGs in the atmosphere could double from the pre-industrial level by as early as 2035, and would be accompanied by catastrophic environmental changes.

The EU is adamant that global warming must be limited to no more than 2° C above the pre-industrial temperature. To remain below the threshold, global emissions must be reduced by at least 50 percent of 1990 levels by 2050, and that requires global action.

Through its *20 20 20 by 2020* package, the EU is committed to reducing its emissions to 20 percent below 1990 levels by 2020, and to 30 percent in case of an international agreement.

## The Kyoto Protocol: An International Approach to Slowing Climate Change

Consistent with its longstanding support for multilateral solutions to global problems, the EU is a strong proponent of the process introduced in 1992 by the **United Nations Framework Convention on Climate Change (UNFCCC)** and its **Kyoto Protocol**.

The UNFCCC—which has been ratified by 192 nations—"encouraged" developed countries to stabilize GHG emissions. Under the Convention, governments also agreed to gather and share information on GHG emissions; to launch national strategies for addressing GHG emissions; and to cooperate in preparing for adaptation to the impacts of climate change.

In 1997, the Kyoto Protocol introduced more potent *mandatory* emissions reduction targets and timetables for industrialized countries. The 15 countries that were EU Member States when Kyoto was ratified committed themselves to reduce overall EU GHG emissions by eight percent below 1990 levels by the end of 2012.

The Kyoto Protocol provides several mechanisms for countries to use to reach their emission targets, allowing them flexibility to offset emissions at home by investing in emissions reduction abroad. **The Clean Development Mechanism (CDM)** enables industrialized nations to partially meet their binding emissions targets through "credits" earned by sponsoring GHG-reducing projects in developing countries. **The Joint Implementation (JI)** mechanism awards "emissions reductions units" to industrialized countries that finance projects that reduce net GHG emissions in another developed country—most likely in recipient states, such as those in Eastern Europe and the Baltic region, that have "economies in transition."

As of January 2008, 177 countries and the EU had ratified the Kyoto Protocol. The United States, although a party to the UNFCCC, is one of very few countries that have not ratified the Kyoto Protocol, and appears unlikely to do so.

# EU ETS: The EU's Innovative Emissions Trading Scheme

Climate change is a serious global threat demanding an urgent global response. The EU has been in the vanguard of international efforts to address climate change effectively, leading by example through initiatives such as the EU Emissions Trading Scheme (EU ETS).

## EU ETS—How It Works, New Adaptations

The cornerstone of the EU's strategy to fight climate change is the EU ETS, the world's first and largest international trading system for CO<sub>2</sub> emissions and the main driver behind the rapid expansion in carbon trading around the world.

Inspired by a U.S. model introduced in the 1990s to curb acid rain, the EU ETS uses a cap-and-trade market mechanism to put a price on carbon, allowing companies to cut CO<sub>2</sub> emissions cost-effectively.

In a cap-and-trade system, emissions are limited (or "capped") at a specified level. Companies with emissions exceeding their amount of credits or allowances must then purchase allowances ("trade") from other companies who emit less. When technology can achieve emissions reduction goals more cost-effectively than paying the price for additional allowances, new carbon-reduction solutions will be implemented. These solutions are likely to become even more affordable as emission allowances fall over time and the market increases their costs accordingly. Companies may also offset emissions with credits from investments in emissions-savings projects abroad, using the Clean Development Mechanism and Joint Implementation—Kyoto Protocol mechanisms.

As a result of the EU ETS, companies throughout Europe are setting up CO<sub>2</sub> management systems; new roles and services—carbon traders, auditors, and verifiers—have emerged in response to these new opportunities created by the EU ETS. The EU ETS is helping to change the mindset of European business already by facilitating the move toward the low-carbon economy of the future, referred to by some as the "third industrial revolution."

The EU ETS, established through binding legislation, was launched in 2005 for an initial trading period of three years. The current, second, trading period runs from 2008 through 2012 and coincides with the first commitment period of the Kyoto Protocol, during which the EU and other industrialized countries must meet their targets to limit or reduce GHG emissions. To help ensure that the EU and individual Member

States deliver on their Kyoto commitments, the EU has capped emissions from EU ETS sectors at an average 6.5 percent below 2005 levels.

Based on the experience of the first trading period, the EU has proposed ways to better achieve the EU target for reducing GHG emissions by at least 20 percent by 2020 compared with 1990 levels.

Principal changes include:

- One EU-wide cap, rather than 27 national caps, on the number of emissions allowances. The annual cap will decrease along a linear trend line that will continue past the end of the third trading period (2013-2020), and allow for emissions covered by the ETS to be reduced by 21 percent from 2005 levels by 2020.
- Allocation of allowances will be primarily through auctions, eliminating windfall profits, promoting transparency, and helping to create incentives for investments in a low-carbon economy. Remaining free allocations will be governed by harmonized rules. The power industry will face full auctioning in 2013, with other sectors and aviation gradually subject to full auctioning.
- Auctions and revenue will be managed by Member States. Although left to the discretion of each Member State, the EU urges that at least 20 percent of this revenue (around €50 billion a year by 2020) be used to help the EU adapt to a low-carbon economy and to assist developing countries as they adjust to climate change.
- Some rights to auction allowances will be redistributed from those Member States with high per capita income to those with low per capita income, in order to strengthen the latter's capacity to invest in climate-friendly technologies.
- EU ETS will expand to include additional industries and gases, including aluminum and ammonia producers, and nitrous oxide and perfluorocarbon gases.
- Member States will be permitted to exclude small installations from EU ETS, provided they are subject to equivalent emission reduction measures.
- The ability of the ETS to link with other industrialized countries will be extended to any country or administrative entity that has established a cap-and-trade system that will not undermine the integrity of the EU ETS.

The EU has also proposed sharing efforts in sectors not subject to the EU ETS—including buildings, transport, agriculture and waste—with the aim of reducing emissions in these areas to 10 percent below 2005 levels by 2020.

## Key Features of the EU ETS

- EU ETS covers around 10,500 installations in the energy and industrial sectors ("large emitters"), which are collectively responsible for close to half the EU's emissions of CO<sub>2</sub>, and 40 percent of total GHG emissions.
- National governments assign companies allocations specifying how much CO<sub>2</sub> each large industrial emitter may release into the atmosphere annually; emitters may sell "surplus" allowances or credits to EU-based companies needing help to meet their targets. Emitters exceeding their allowance may also invest in alternative ways to curb their emissions.
- The cap-and-trade "currency" is constituted by emissions allowances; one allowance gives the holder the right to emit one metric ton of CO<sub>2</sub>. The cap on the total number of allowances is what creates scarcity.
- Implementation occurs in phases, allowing for periodic reviews and expansion to other gases and sectors.
- Beginning in 2008, EU ETS applies not only to the EU27, but also to Norway, Iceland and Liechtenstein.
- The aviation sector will be subject to EU ETS from 2011 or 2012 pending a successful adoption by the EU co-legislators.

# Energizing the Drive Toward a Low Carbon Economy

## Ushering in the Third Industrial Revolution

*"In transport... [the EU] needs to diversify toward sustainable biofuels to reduce dependence on oil. Oil, around 80 percent of it imported, still accounts for some 98 percent of road transport fuel. This is why the EU stands by the 10 percent biofuels target."*

EU Energy Commissioner  
Andris Piebalgs



The European Union is the largest importer and second largest consumer of energy in the world. To complement its emissions reduction efforts, the EU has proposed a new energy package to support the development of more "home-grown" energy, particularly through renewable, lower-carbon sources.

Boosting investment in renewable energy, energy efficiency, and new technologies contributes to sustainable development and a secure energy supply; at the same time, it helps create new jobs, foster economic growth, and enhance competitiveness.

**Renewable Energy.** The EU is a world leader in renewable energy and the sector already generates a turnover of €30 billion annually and provides 350,000 jobs.

As renewable energy technologies have matured, production has risen steadily and costs have dropped, but development has been uneven throughout the EU. Renewables still represent only 8.5 percent of the EU's final energy consumption, a share that must increase by an additional 11.5 percent for the EU to meet its goal of 20 percent renewable energy by 2020, including a 10 percent target for biofuels in transport.

To help accomplish this objective, the EU has proposed individual and legally enforceable targets that allow each Member State to establish national renewable energy goals that contribute to the 20 percent goal,

while permitting the Member State to determine the best renewable energy mix for its own circumstances.

Provided the overall target is met, Member States will have the option of achieving their goals by investing in the development of renewable energy in other Member States, thanks to the creation of a tradable "guarantee of origin" regime. Because of this flexibility, investment will tend to shift to where renewables can be produced most efficiently, potentially cutting costs by as much as €1.5 billion.

**Biofuels.** Vehicle fuel efficiency and the use of biofuels can make a significant impact on GHG emissions from transport, the area where GHG trends are the worst. Additionally, the current dependency of the transport sector on imported oil is one of the most serious challenges to energy security in the EU.

Under the EU's new proposals, each Member State must also meet the EU biofuels target of 10 percent in the transport sector. The target is identical for all countries to ensure consistency in transport fuel specifications and availability. Because biofuels cost more than other forms of renewable energy, such specific mandated targets help support their continuing development.

All biofuels sold in the EU must have demonstrated GHG savings of at least 35 percent, and cannot come from land with recognized biodiversity value or high carbon stock. Second generation biofuels, which emit less carbon dioxide and are more cost-effective, will have double value.

### Additional Measures Curbing Transport Emissions.

Cars account for approximately 12 percent of the EU's carbon emissions. In addition to the increased use of biofuels, the EU mandates improved vehicle fuel and efficiency standards. (In Europe, cars average 40 mpg, compared with less than 21 mpg in the U.S.) Revised fuel quality specifications require suppliers to reduce total GHG emissions over the fuel's lifecycle (from refinery to transport to use) by one percent a year between 2011 and 2020, resulting in a 10 percent cut by 2020.

Newly proposed standards will place the EU among world leaders of fuel-efficient cars through the reduction of average new-car CO<sub>2</sub> emissions from 160 g/km to 130 g/km by 2012. Complementary measures increasing efficiency for car components (such as tires and air-conditioning systems) will result in a further 10 g/km reduction to meet the EU objective of 120 g/km by 2012.

## Costs and Benefits of the Push for Renewable Energy

### Benefits

- By 2020, EU annual savings of 600 to 900 million metric tons of carbon dioxide emissions will be realized.
- At the same time, EU reductions in fossil fuel consumption of 200 to 300 million metric tons per year will be achieved, helping to enhance the security of the EU's energy supply.
- The pursuit of renewable energy will boost high-tech industries and create new economic opportunities and jobs.

### Costs

- The cost will be roughly €13 to €18 billion per year. This investment will drive down the price of the renewable energy technologies that will form a growing part of the EU's energy supply.
- Today, renewable energy generally costs more than energy from conventional sources. However, this cost difference is unlikely to persist. Oil prices are rising, and the cost of most renewable energy sources is declining. The cost of solar energy technology for electricity generation, for example, is expected to fall by 50 percent by 2020.

# EU-Supported Renewable Energy Projects Begin to Make an Impact

## **SOLAIR: Solar heating and cooling (2007-09)**

Electricity consumption for air conditioning has been increasing dramatically in the EU. Solar cooling is an eminently sensible technology since demand and supply of energy coincide: solar radiation is abundantly available in the summer, during peak air conditioning use.

The EU-financed SOLAIR project will help bring small and medium-sized solar air conditioning appliances for residential and commercial sectors to market, along with the combination of domestic hot water supply and space heating with air conditioning. The program aims to resolve some of the major obstacles to the widespread use of solar air-conditioning technology by improving awareness, know-how, programs and standards.

## **DOWNVInD: Distant Offshore Wind Farms with No Visual Impact in Deepwater (2004-09)**

Wind energy is one of the most promising renewable energy technologies. The global wind power industry is concentrated in Europe, which accounts for 70 percent of capacity worldwide, and cumulative wind power in the EU increased by an average 32 percent per year between 1995 and 2005.

The DOWNVInD project, which benefits from EU funding, is working to develop large-capacity offshore wind farms in deep water. A demonstration project to install and monitor two wind turbine generators in deep water off the coast of northeast Scotland could pioneer the development of deep water wind farms, improve and commercialize the technology, and share knowledge and experience across Europe.

## **BEST: Bioethanol for Sustainable Transport (2006-09)**

To help boost ethanol use in transport and pave the way for a market breakthrough for ethanol-fueled vehicles, the EU is helping to fund a demonstration project to introduce vehicles and distribution lines at ten strategically selected sites in an integrated public/private partnership of cities/regions, car manufacturers, fuel producers, gas stations, and fleet owners. Almost 9,000 vehicles and more than 150 gas stations are expected to result, making this the largest demonstration of alternative fueled vehicles supported by the EU to date.



## **PS 10 Solar Power Tower: Solar electric power generation (2006-09)**

Seville, Spain is the site of PS 10, the first commercial concentrating solar power plant in Europe, which is designed to produce enough electricity to supply a population of 10,000 (eliminating about 16,000 metric tons of CO2 emissions each year).

More than 600 moveable mirrors, or heliostats, concentrate solar radiation onto the top of a 115 meter (377 foot) high tower, where a solar receiver and a steam turbine convert solar power into electricity. PS 10 successfully demonstrates the commercial viability of the solar tower approach to feed solar electricity into the electricity grid at an annual amount higher than 21 GWh.

*"On energy efficiency, meeting our 20 percent reduction target here should save the EU some €100 billion, and cut emissions by 800 million metric tons. In virtually all areas of our lives, we can find savings – in transport, electrical goods, buildings, power generation, and transmission. A mixture of legislation and public information will be required, but once again, a major effort is needed from both public authorities and EU citizens....technology must be factored in. Wind and solar energy are becoming more commercially viable every day, and not just because of the oil price. Energy efficiency is becoming a key design factor in products ranging from the light bulb to complex production machinery."*

European Commission President  
José Manuel Barroso

## **An Energy-Efficient EU**

While the EU is working to achieve cleaner, more diversified, and more secure sources of energy, it is also intent on tempering demand through improved energy efficiency and conservation. The cleanest and least expensive source of energy is the energy never consumed. The EU's objective of increasing energy efficiency by 20 percent by 2020 focuses on cogeneration, eco-design of energy consuming products, energy labeling of domestic appliances, end-use efficiency and energy services, and ameliorating the energy performance of buildings.

The buildings sector accounts for 40 percent of the EU's energy requirements, so EU measures set minimum standards for the energy performance of public, commercial and private buildings in all Member States. EU rules also promote and facilitate the installation and operation of electrical cogeneration plants, which use a single process to produce both heat and electricity.

The EU's Energy Efficiency Action Plan, introduced in late 2006, includes more than 75 cost-effective initiatives that would make energy appliances, buildings, transport, and energy generation more efficient, to be pursued over the next five years. It also proposes stringent new efficiency standards, promotion of energy services, and specific financing mechanisms to support more energy-efficient products.



*"The Energy Policy for Europe calls for a new industrial revolution. Like all industrial revolutions, this one is going to be technology driven and it is high time to transform our political vision in to concrete actions. Decisions taken over the next 10-15 years will have profound consequences for energy security, for climate change, and for growth and jobs in Europe. If we fall behind in the intensifying global race to win low carbon technology markets, we risk meeting our targets with imported technologies."*

EU Energy Commissioner  
Andris Piebalgs

### On the Web

<http://cordis.europa.eu/fp7/environment>: European Commission-funded research promoting sustainable management of both man-made and natural environment and its resources.

<http://cordis.europa.eu/fp7/energy>: European Commission-funded research to help the current energy system become more sustainable, competitive and secure.

# Energy Technologies for a Low Carbon Future

## EU Commitment to Clean Energy

The EU's ambitious *20 20 20 by 2020* program will underpin the essential shift toward a low-carbon economy. To succeed in time to curb climate change, these objectives must also be bolstered by the development and deployment of cost-effective low-carbon technologies to meet medium-term goals, and a new generation of technologies spawned from scientific breakthroughs to address longer-term objectives.

Europe's potential to develop a new generation of lower-carbon energy technologies is enormous. However, current EU energy research is often underfunded, dispersed and lacks coordination. The EU plans to remedy this through its comprehensive Strategic Energy Technology Plan (SET-Plan), an innovative and concentrated approach to furthering energy technology. The European Commission (the EU's executive arm) has already committed to an annual investment of €1 billion in energy technology research and innovation from 2007 to 2013.

The SET-Plan proactively aims to bring researchers and industry together, and addresses the increased need for both financial and human resources. A newly established Steering Group on Strategic Energy Technologies will guide implementation of the plan and reinforce the coherence between national, European and international efforts.

Six new European Industrial Initiatives are scheduled to be launched in 2008 under the SET-Plan, focusing on sectors best managed at EU level:

- **European Wind Initiative:** Large turbines and large systems validation and demonstration for both onshore and offshore applications.
- **Solar Europe Initiative:** Large-scale demonstration of photovoltaics and concentrated solar power.
- **Bio-energy Europe Initiative:** "Next generation" biofuels within the context of an overall bio-energy use strategy.
- **European CO<sub>2</sub> Capture, Transport, and Storage Initiative:** Whole system requirements, including efficiency, safety and public acceptance, to prove the viability of zero emission fossil fuel power plants at industrial scale.
- **Sustainable Nuclear Fission Initiative:** Development of Generation-IV nuclear reactor technologies.

### ■ European Electricity Grid Initiative:

Development of a smart electricity system, including storage, and the creation of a European Center to implement a research program for the European transmission network.

### Carbon Capture and Storage (Carbon Sequestration).

To mitigate the continued use of carbon-based energy in the medium term, in early 2008 the EU issued a proposal on environmentally-safe carbon capture and geological storage (CCS). Proposed measures will facilitate CCS by providing a legal framework to manage environmental risk, removing barriers in existing legislation, and ensuring environmental integrity throughout the lifecycle of the process.

CCS is a set of technological processes which capture CO<sub>2</sub> from discarded gases, and transport and inject it into geological formations that isolate it from the atmosphere. The separate elements of capture, transport and storage of CO<sub>2</sub> have all been demonstrated, but integrating them into a complete CCS process and bringing down costs remain a challenge.

The costs of CCS are twofold: capital investment in equipment to capture, transport and store CO<sub>2</sub>; and the operating costs of the equipment. At current technology prices, initial investment costs are between 30 and 70 percent greater than for standard non-CCS coal-fired plants, and operating costs are between 25 and 75 percent higher. Costs are expected to decrease substantially as the technology is proven at a commercial scale.

CCS will not be mandatory; its deployment will be determined by the carbon price versus the cost of the technology. The EU ETS will recognize CO<sub>2</sub> captured, transported and safely stored as not having been emitted, providing a primary incentive for CCS.

The EU aims to kick-start the large-scale utilization of CCS in Europe and potentially worldwide, accelerating development across a diverse geographical and technological spread of projects. By 2015, the EU hopes to demonstrate that CCS is a viable technology that could be fully deployed by 2020. If deployed in all industry sectors, CCS could reduce CO<sub>2</sub> emissions by more than 50 percent by 2050.

# The EU, the U.S., and the Fight Against Climate Change

## Goals, Methods and Regional Initiatives

While headlines tend to focus on the differences between partners, the EU and the U.S. engage in substantial cooperation and dialogue as each seeks the best path to confront climate change and reduce dependency on fossil fuels. The close relationship includes extensive bilateral and multilateral collaboration to ensure secure, affordable supplies of energy and to confront climate change around the world.

Through the High-Level Dialogue on Climate Change, Clean Energy, and Sustainable Development, the EU and the U.S. strive to advance transatlantic initiatives for tackling climate change, promoting clean energy, achieving sustainable development globally, and enhancing engagement with international partners. Specific goals were spelled out at the 2007 EU-U.S. summit, including the following:

- Advance commercial deployment of clean coal and CCS technologies.
- Improve energy efficiency, particularly in transport, buildings, and appliances.
- Research, develop, deploy, and commercialize second generation biofuels.
- Identify maximum opportunities to jointly advance methane recovery and use projects.

In March 2008, the second meeting of the High-Level Dialogue reviewed progress made to date. Discussions are ongoing regarding sustainable biofuels and carbon sequestration, and both partners affirmed their commitment to developing a post-2012 agreement on climate change by 2009 under the UNFCCC.

### U.S. Regional Cap-and-Trade Initiatives: Sound Familiar?

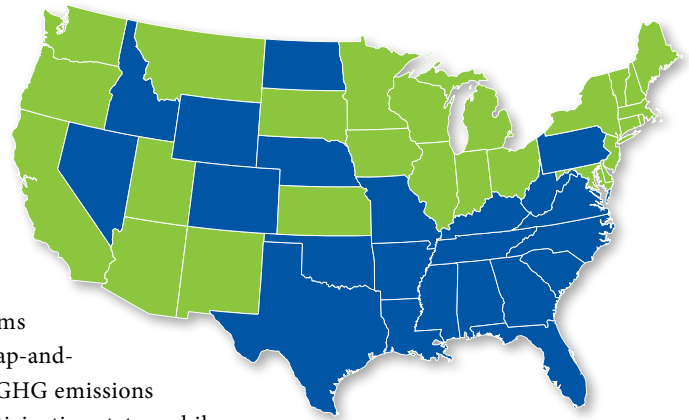
While the U.S. federal government has neither signed the Kyoto Protocol nor committed the U.S. to meeting Kyoto's GHG emissions goals, three major regional initiatives encompassing more than half of U.S. states are making major headway toward their own cap-and-trade systems. Some of the American regional initiatives have actively solicited EU expertise in setting up their system based on the EU model, and the EU is encouraged by plans to set up cap-and-trade emissions trading systems in areas of the U.S.

The **Regional Greenhouse Gas Initiative (RGGI)** comprises ten New England and Mid-Atlantic states: Maine, New Hampshire, Vermont, Rhode

Island, Massachusetts, Connecticut, New York, New Jersey, Delaware and Maryland. Washington, D.C., the Eastern Canadian Provinces and New Brunswick are observers in the process. RGGI aims to develop a multi-state cap-and-trade program covering GHG emissions from power plants in participating states, while maintaining energy affordability and reliability.

The **Western Climate Initiative (WCI)** is a collaboration by the governors of Arizona, California, Montana, New Mexico, Oregon, Utah and Washington, and the premiers of British Columbia and Manitoba, Canada, to develop regional strategies to address climate change through market based multi-sector instruments. Other U.S. and Mexican states and Canadian provinces are observers.

The **Energy Security and Climate Stewardship Platform for the Midwest and its Midwestern GHG Reduction Accord** represent collaborative efforts among Midwestern states and Manitoba, where significant GHG emissions are produced, to develop a regional strategy to combat climate change through measures including cap-and-trade systems and promoting renewable energy and energy efficiency. Participating states include Wisconsin, Minnesota, Illinois, Indiana, Iowa, Michigan, Kansas, Ohio and South Dakota.



■ U.S. States Involved in Regional Cap-and-Trade Initiatives

### Energy Star

The EU and U.S. have an Energy Star Agreement to coordinate energy labeling for office equipment that satisfies rigorous energy efficiency criteria. The current agreement runs until 2011 and is expected to yield substantial energy savings on both sides of the Atlantic.



### International Carbon Action Partnership (ICAP)

ICAP, an international forum to share best practices in cap-and-trade systems, is open to countries or regions that are actively pursuing the development of carbon markets through implementation of mandatory cap-and-trade systems. Other nations are welcome as observers. ICAP's founding members include:

- **EU:** European Commission, France, Germany, Ireland, Italy, the Netherlands, Portugal and the UK;
- **RGGI Members:** Maine, Massachusetts, New Jersey and New York;
- **WCI Members:** Arizona, British Columbia, California, Manitoba, New Mexico, Oregon and Washington;
- **Others:** New Zealand and Norway.

# The Global Dimension of the Fight Against Climate Change

*"We have agreed to start negotiations that will not only discuss commitments for developed countries, including the United States, but also actions by developing countries....It is essential that the agreement to be worked out over the next two years is ambitious enough to prevent global warming from reaching dangerous levels."*

EU Environment Commissioner  
Stavros Dimas

The EU is dedicated to the UNFCCC's inclusive, global approach to countering the impact of climate change. The agreement reached at the U.N.'s December 2007 climate change conference in Bali outlines a formal roadmap to guide participants in their negotiations over the next two years. The two-year window gives governments time to ratify and implement the future climate agreement by the end of 2012, when the Kyoto Protocol's first commitment period ends.

Formal negotiations were launched among the 192 parties to the UNFCCC, including the U.S. and emerging economies, on action up to and beyond 2012. Key building blocks for a future agreement include enhanced mitigation of climate change by limiting or reducing emissions; adaptation to climate change; technology development and transfer; and increased investment to support the first two objectives.

Emissions will be a key focus of negotiations. The Fourth Assessment Report of the Intergovernmental Panel on Climate Change notes with urgency that deep cuts in global emissions are required to reach the UNFCCC's objective of preventing dangerous levels of change. At the EU's insistence, the Bali Roadmap references a section of the report which demonstrates that emissions reductions in the range of 25 to 40 percent below 1990 levels will be required of developed countries by 2020 as a step to limit global warming to 2°C above pre-industrial levels.



UN Secretary-General Ban Ki-moon (right) and Yvo de Boer, Executive Secretary of the UN Framework Convention on Climate Change. (UN Photo/Evan Schneider)

The Bali Roadmap envisages developed countries making commitments or taking actions that include quantified objectives for limiting and reducing emissions. Developing countries will also take mitigation actions.

In parallel to the UNFCCC negotiations, the parties to its Kyoto Protocol will continue ongoing negotiations on new post-2012 emissions targets. To ensure coherent results, negotiations under both tracks will be completed at the UN climate change conference to be held at the end of 2009 in Copenhagen.

## Climate Change as a Security Issue

"Climate change is best viewed as a threat multiplier which exacerbates existing trends, tensions, and instability. The core challenge is that climate change threatens to overburden states and regions which are already fragile and conflict prone. It is important to recognize that the risks are not just of a humanitarian nature; they also include political and security risks that directly affect European interests...."

"The EU is in a unique position to respond to the impacts of climate change on international security, given its leading role in development, global climate policy and the wide array of tools and instruments at its disposal. Moreover, the security challenge plays to Europe's strengths, with its comprehensive approach to conflict prevention, crisis management, and post-conflict reconstruction, and as a key proponent of multilateralism...."

"Yet, the EU cannot act alone. In a changing international political landscape, major emitters and emerging economies will also have to be engaged and commit to an ambitious global climate agreement under the UN framework."

*"Climate Change and International Security," Paper by Javier Solana, EU High Representative for Common Foreign and Security Policy*



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