

GLOBAL CLIMATE LEADERSHIP
MEMORANDUM OF UNDERSTANDING (MOU)

I. Statement of Purpose

A. Climate change presents worldwide challenges and risks to environment and economies, impacting human health, increasing extreme weather events, threatening natural resources and triggering forced migration of populations. Impacts from climate change are already inevitable due to the greenhouse gas emissions (GHG) already resident in the atmosphere. At the same time, climate change responses and solutions create economic opportunities and benefits through sustainable energy and development. International efforts are necessary to ensure protection of humankind and our planet, and to limit the increase in global average temperature to below 2°C. To achieve this will require substantial emissions reductions over the next few decades and near zero emissions of CO₂ and other long-lived GHGs by the end of the century.

[(Intergovernmental Panel on Climate Change – Fifth assessment report (AR5))]

B. Governments at all levels need act **now** to reduce GHG emissions in order to achieve long-term climate balance. Entities need to harness new technologies, policies, financing mechanisms, and economic incentives to reduce emissions while developing common metrics to measure their progress. Governments must also increase the resilience of infrastructure and natural systems to growing climate impacts.

C. While the signatories to this MOU (hereinafter referred to as “the Parties”) acknowledge and affirm support of international activities and declarations to respond to climate change (including the Rio Declaration on Environment and Development (1992), the Montreal Declaration (2009), the Cancun Statement (2011), and the Lyon Declaration (2011)), international efforts on climate change to date have been inadequate to address the scale of the challenge we face. Despite limited progress in cooperation among nations, sub-national jurisdictions—including provinces, states, and cities—have led the world in setting ambitious climate targets and taking actions to reduce GHG emissions and protect against climate impacts.

D. By working together and building on agreements such as the Declaration of Rio de Janeiro 2012 (Federated States and Regional Governments Committed to a New Paradigm for Sustainable Development and Poverty Eradication), subnational governments, together with interested nations, can help to accelerate the world’s response to climate change and provide a model for broader international cooperation among nations.

II. Reducing greenhouse gas emissions

A. The guiding principle for reduction of GHG emissions by 2050 must be to limit global warming to less than 2°C. For Parties to this MOU this means pursuing emission reductions consistent with a trajectory of 80 to 95 percent below 1990 levels

by 2050 and/or achieving a per capita annual emission goal of less than 2 metric tons by 2050.

- B. In order to achieve this ambitious 2050 target, measurable progress must be made in the near-term to establish the trajectory of reductions needed. Midterm targets, including commitments for 2030 or earlier are critical. Recognizing that each party has unique challenges and opportunities, this agreement does not prescribe a specific path for 2030. Rather, Parties agree to undertake their own unique set of actions and plans in Appendix A to reach 2030 reduction goals and related targets.
- C. Parties aim at broadly increasing energy efficiency and a comprehensive development of renewable energy to achieve the GHG emission goals. Parties set forth their 2030 goals and targets for these and other critical areas in Appendix A.
- D. Specific areas of action, coordination, and cooperation:

The Parties agree that for actions related to this MOU, coordination and cooperation will be beneficial and will strengthen the efforts of participating states. The Parties agree to work together on solutions that provide near- and long-term environmental and economic co-benefits, including joint efforts where possible. The Parties may expand the list of specific areas of action set forth in this sub-section from time to time. The following is a non-exhaustive list of issues of interest for cooperation and coordination among the Parties:

1. Energy:

The Parties agree to share information and experience on redesign of the power supply and grid, technical solutions and advances in promoting large-scale switch to renewable energy and the integration of renewable energy sources, actions needed to ensure security of supply, and strategies to promote energy efficiency.

2. Traffic and Transport:

The Parties agree to take steps to reduce greenhouse gas emissions from passenger and freight vehicles, with the goal of broad adoption of "zero emission vehicles" and development of related zero emission infrastructure. The Parties agree to encourage land use planning and development that supports alternate modes of transit, especially public transit, biking, and walking.

3. Natural Resource Protection and Waste Reduction:

The Parties agree to collaborate on methods to reduce emissions from the natural resources and waste sectors, which exist at the nexus of climate mitigation and adaptation activity. Parties will share information about management techniques to sequester carbon and protect natural infrastructure. Parties will share technologies to reduce waste or convert waste to secondary raw materials or to energy.

4. Science and Technology:

The Parties agree to collaborate and coordinate on scientific assessment efforts, and share information and experience in technology development and deployment. Parties seek to help others learn from experience to maximize success of technological transitions and avoid potential obstacles.

5. Communication and Public Participation:

The Parties agree to collaborate and coordinate on messaging, transparency, public outreach around climate change, mitigation of GHG emissions, adaptation, and the subject matter of this MOU.

6. Short-lived Climate Pollutants:

The Parties agree to collaborate on the reduction of short-lived climate pollutants such as black carbon and methane, which will provide near-term air quality benefits, while also reducing potent climate forcing pollutants.

7. Inventory, Monitoring, Accounting, Transparency:

The Parties agree to work towards consistent monitoring, reporting, and verification across jurisdictions, and will work through mechanisms such as the Compact of States and Regions and the Compact of Mayors to that end.

III. Adaptation and Resilience

- A. The Parties agree to collaborate on actions to promote adaptation and resilience, with an eye toward maximizing benefits for both GHG emission reduction and climate adaptation.
- B. Parties will share best practices in modeling and assessment to understand projected climate impacts, especially at the regional and local scale. Entities will share best practices in integrating these findings into planning and investment.
- C. Parties will work together to build metrics and indicators that can help to track progress in reducing the risk of climate change to people, natural systems, and infrastructure.
- D. In working to reduce climate risk, Parties will look to natural or “green” infrastructure solutions that maximize ecological benefits while providing protection. Parties will share best practices in designing and deploying these solutions.
- E. Parties to this MOU will work to share innovative models for financing and supporting climate adaptation, including public-private partnerships, resilience funds, and competitive approaches.

IV. Means of Implementation

The Parties each have their own strategies to implement and achieve their goals and targets. While some strategies will be unique to particular Parties, others can be shared and/or modified by other Parties.

- Parties agree to collaborate and coordinate to advance respective interim targets consistent with 2050 goals and climate actions at the annual Conference of Parties and other international climate events.
- Parties agree to share and promote effective financing mechanisms domestically and internationally to the extent feasible.

- Parties agree to share technology to the extent feasible, such as through open source information.
- Parties agree to help build capacity for action and technology adaptation through technology transfer and expertise to the extent feasible.

This MOU is neither a contract nor a treaty.

[Signatures on following pages]

This Memorandum of Understanding on Subnational Global Climate Leadership signed as of the 19th day of May 2015.

THE STATE OF CALIFORNIA

By: _____

Edmund G. Brown Jr.

Governor

This Memorandum of Understanding on Subnational Global Climate Leadership signed as of the 19th day of May 2015.

THE STATE OF BADEN-WÜRTTEMBERG

By: _____

Winfried Kretschmann

Minister-President

This Memorandum of Understanding on Subnational Global Climate Leadership signed as of the 19th day of May 2015.

THE STATE OF ACRE

By: _____

Magaly Medeiros

Director-President, The Institute on Climate Change

This Memorandum of Understanding on Subnational Global Climate Leadership signed as of the 19th day of May 2015.

THE STATE OF BAJA CALIFORNIA

By: _____

Francisco Vega de Lamadrid

Governor

This Memorandum of Understanding on Subnational Global Climate Leadership signed as of the 19th day of May 2015.

THE PROVINCE OF BRITISH COLUMBIA

By: _____

Christina Joan Clark

Premier

This Memorandum of Understanding on Subnational Global Climate Leadership signed as of the 19th day of May 2015.

THE STATE OF CATALONIA

By: _____

Santi Vila Vicente

Minister of Territory and Sustainability

This Memorandum of Understanding on Subnational Global Climate Leadership signed as of the 19th day of May 2015.

THE STATE OF JALISCO

By: _____

Jorge Aristóteles Sandoval Díaz

Governor

This Memorandum of Understanding on Subnational Global Climate Leadership signed as of the 19th day of May 2015.

THE PROVINCE OF ONTARIO

By: _____

Glen Murray

Minister of the Environment and Climate Change

This Memorandum of Understanding on Subnational Global Climate Leadership signed as of the 19th day of May 2015.

THE STATE OF OREGON

By: _____
Katherine Brown
Governor

This Memorandum of Understanding on Subnational Global Climate Leadership signed as of the 19th day of May 2015.

THE STATE OF VERMONT

By: _____

Peter Shumlin

Governor

This Memorandum of Understanding on Subnational Global Climate Leadership signed as of the 19th day of May 2015.

THE GOVERNMENT OF WALES

By: _____

Carl Sargeant

Minister for Natural Resources

This Memorandum of Understanding on Subnational Global Climate Leadership signed as of the 19th day of May 2015.

THE STATE OF WASHINGTON

By: _____

Jay Inslee

Governor

APPENDIX A.1

CALIFORNIA

Overview

California is a leader in climate change action. The California Global Warming Solutions Act of 2006 (AB 32) established California as a global leader in reducing GHG emissions. To meet the goals of AB 32, the state adopted a three-pronged approach to reducing emissions, including adopting standards and regulations, providing emission reduction incentives via grant programs, and establishing a market-based compliance mechanism known as cap and trade. As of May 2014, 23 percent of California's electricity produced derives from renewable sources. California's economy-wide, legally binding emissions trading system, the cap and trade program, is the only such program in the United States. By 2020, California will reduce greenhouse gas (GHG) emissions by 17 percent to 1990 levels to 431 million metric tons of CO₂e, and will generate at least 33 percent of its electricity from renewable sources. California is the world's leading market for electric vehicles and for stationary storage, including a requirement of 1300 MW of storage by 2020. These programs have become part of the dynamic economic engine that is California. Over the past five years, the State's gross domestic product has grown by five percent while the amount of carbon pollution has fallen. California solar companies employ more than 44,000 people. Over four decades, the state's appliance and building efficiency policies have saved consumers over \$65 billion and created 1.5 million jobs. California's 2030 GHG emission reduction target is 40 percent below 1990 emission levels, which is consistent with its 80 percent reduction target for 2050.

Specific Actions and Commitments

Understanding California's role in reducing GHG emissions to mitigate climate change and protect the state's residents and economy from a changing climate, Governor Jerry Brown issued Executive Order B-30-15 to establish a GHG emission reduction target of 40 percent below 1990 levels by 2030. Along with this target, the most ambitious in North America, the Governor also required state agencies to incorporate climate resiliency into planning and funding decisions to ensure that the State's resources withstand California's changing climate. To meet the GHG emission reduction target specified in the Executive Order, the Administration will pursue the following policies:

By 2030,

- Increase electricity derived from renewable resources to 50 percent.
- Reduce petroleum use in cars and trucks by up to 50 percent.
- Double energy efficiency achieved in existing buildings and make heating fuels cleaner.
- Reduce the release of short-lived climate pollutants, such as methane and black carbon.
- Increase carbon sequestration on farms and rangelands and in forests and wetlands.

Low Carbon Electricity

California will build on its 2020 target of a 33%-plus renewable portfolio with a goal of 50 percent by 2030. California will focus more specifically on GHG emission reductions from the power sector, through an increased renewable portfolio, demand reduction and response, increased storage paired with renewables, increased penetration of distributed renewables and storage, and actions at the grid level.

Decarbonization of Transportation

The transportation sector in California accounts for nearly 40 percent of its greenhouse gas emissions. Strategies for reducing carbon pollution must include transformation of the transportation fleet from older higher pollution vehicles and fuels to newer, near zero and zero emission vehicles and cleaner, less carbon intense fuels. California has set a goal of 1.5 million zero emission vehicles by 2025, adopted a Zero Emission Vehicle mandate, provided incentives for purchasers of ZEVs, established grants to accelerate charging infrastructure for battery electric vehicles and hydrogen fueling infrastructure for fuel cell electric vehicles, and developed programs to support near zero and zero emission vehicles and fuels in a wide variety of fleets from transit buses to port equipment. California's low carbon fuel standard requires a 10 percent reduction in the carbon intensity of transportation fuels in California by 2020. California is providing more zero emission transit options, changing land use and zoning to reduce vehicle miles traveled, and building a high speed rail network that will be the backbone of an integrated transit system. California has also adopted aggressive carbon pollution reduction requirements for all vehicles through 2026 and beyond. By 2030, California's transportation emissions will be significantly reduced, in line with the 2050 reduction goals. The State has set a goal of reducing the use of oil by up to 50% by 2030.

Energy Efficiency

California requires that all new residential construction be Zero Net Energy by 2020, and all non-residential be so by 2030. California's goal is to double energy efficiency in buildings by 2030. The State is developing additional cost-effective minimum efficiency standards for a variety of lighting, electronics and other common products. California is also instituting requirements for energy benchmarking of all non-residential buildings above 30,000 square feet. The State is also using standardized reporting and analysis tools for statewide assessment and trending of existing building energy performance patterns, which will call for evaluation of current and future actions. California's annual energy ratepayer investment of \$1.2 billion in end-use energy efficiency is likely to increase. California is promoting a number of financing tools for home energy retrofits and will increase efforts to ensure a higher percentage of energy retrofits for existing homes and buildings.

Climate Policies and Emissions Trading

California's cap and trade program sets statewide limits on sources of 85 percent of greenhouse gas emissions, and helps establish a price for emissions and drive investments

towards cleaner energy, infrastructure, and fuels. The emission cap declines 2 to 3 percent through 2020. Sending the market a signal that the cap-and-trade program will continue in the long-term is critical to fully realizing the benefits of the program. Extending the cap-and-trade program beyond 2020 will also reduce the costs of the program as California industry and households make long-term capital and investment decisions. The level of the cap decline beyond 2020 will be commensurate with the emission reductions needed to meet the 2030 goal.

Natural Resources, Waste and Green Infrastructure

California's 100 million acres are critical to meeting all of the State's climate goals. The land base includes one of the world's biodiversity hotspots, provides more than 65 percent of the potable water used in state, produces food for millions of people, and sequesters carbon in trees, wetlands, grasslands, rangelands and soils, among other land types. California's 2014-15 investment in urban greening nearly exceeds the budget set by the US Forest Service for the entire country. The State's Desert Renewable Energy Conservation Plan couples renewable energy development with conservation in a 23 million acre area. California will target landscape health through broader investments in natural lands to ensure their ability to withstand climate change while increasing sequestration and provisioning of ecosystem services such as clean water, air and erosion control. These efforts will be complemented by organic waste diversion to produce rich compost for California's healthy soils and support reduced fertilizer use in California's agricultural fields. Further, by increasing forest health management efforts, California's residents will experience cleaner air through reduced severity of wildfires and increased access to electricity and heat derived from biomass.

Funding

California has multiple funding mechanisms to drive emissions reductions and is evaluating others. Cap and trade auction revenue, bonds, ratepayer funds, Property Assessed Clean Energy funding, and on-bill financing are among the mechanisms currently being used.

APPENDIX A.2

BADEN-WÜRTTEMBERG

The State of Baden-Württemberg, located in South West Germany, is one of the most prosperous regions in Europe. Baden-Württemberg is a pioneer in Germany and the EU. Though the state is embedded in the national German and the European climate policy, Baden-Württemberg undertakes its own contributions to achieve the political goal of acting as a pacemaker, particularly in Germany and the EU. For example, Baden-Württemberg, along with North Rhine-Westphalia, passed its own ‘Climate Protection Act’ as the first state in Germany. On this basis and with a broad public participation process an ‘Integrated Energy and Climate Protection Action Plan (IEKK)’ was developed. The IEKK includes over 100 measures to reduce greenhouse gas emissions in line with the German energy transition “Energiewende” and the decision to phase out nuclear energy production.

In the IEKK reduction targets are also defined for key sectors such as power generation, industry and the transport sector. The necessary basis was derived from an energy scenario for Baden-Württemberg; it shows possible paths to reach the GHG emission targets. The future energy needs were identified in different sectors and the level of potential coverage by renewable energy sources was identified. The greenhouse gas (GHG) emissions are split between three main sectors: electricity and heat production with around 23%, transport with slightly above 28% and energy consumers in household and small business with about 23%. About a third of the greenhouse gas emissions of Baden-Württemberg are covered by the EU emission trading system (ETS). The first ETS worldwide was installed in a pilot phase 2005–2007. In 2021 the fourth phase will start with an annual reduction of the emission-allowances in the EU climbing from 1,74% to 2,2%.

Baden-Württemberg aims to reduce greenhouse gas emissions by 2020 compared to 1990 by at least 25% and by 2050 by 90%. European heads of state have decided a greenhouse emissions reduction target for the year 2030 of 40% compared to 1990 to which a reasonable contribution of Baden-Württemberg is intended. Furthermore, the EU has decided to increase the share of renewable energy to 27% of primary energy in 2030 and to reduce energy consumption by 27%.

The starting position:

Population: 10.8 million (2013)

GDP: 37,472 EUR per capita (2013)

Country: Germany

GHG emissions (year): 76 million tons (2012)

Specific Actions and Commitments:

I. Greenhouse Gas Emissions

By 2020 Baden-Württemberg will reduce GHG emissions by 25% and by 2050 by 90% compared to 1990. The targets are laid down in the “Climate Protection Act Baden-Württemberg” which was enacted by the state parliament on 17th of July 2013. Against

this background an ‘Integrated Energy and Climate Protection Action Plan (IEKK)’ was developed. A periodical monitoring program will be established for the further development of the IEKK.

With regards to the EU 2030-targets of 40% THG reduction a reasonable contribution of Baden-Württemberg is intended.

II. Renewable Energy:

The amount of renewable energies in final energy consumption by 2020 will be increased up to 25%. The Baden-Württemberg objective for 2030 will be updated depending on the implementation of the EU 2030 target of 27%. Since 2011 Baden-Württemberg has improved the legal planning conditions for wind farms. In 2013 renewable energy covered about 23% of electric power production. In Germany the national Renewable Energy Law (EEG) promotes the generation of renewable energy.

At the national level there is a Statute on the Use of Renewable Heat Energy for new buildings. Additionally there are further funds in Baden-Württemberg for existing buildings. For example, in the case of a change of the radiator the owner must use regenerative heating energies or alternatively the energy efficiency of the house can be improved by better insulation of the roof or the front of the house.

III. Energy Efficiency:

By 2020 the final energy demand compared to 2010 will decrease by 16%. The EU 2030 target aims to increase the energy efficiency by 27%. Baden-Württemberg promotes energy efficiency through a wide range of measures, including a widespread network of regional energy agencies, which provide advice for households and businesses, campaigns for energetically retrofitting residential buildings, grant schemes on the latter for households, and grant schemes for energy efficiency in small and medium sized businesses. Baden-Württemberg emphasizes the combined generation of power and heat, ideally by use of renewable energies. Municipalities and electricity producers are encouraged to develop further local heat networks.

IV. Sustainable Mobility:

Baden-Württemberg has become a pioneering region for sustainable mobility. In the ‘transport and mobility’ sector Baden-Württemberg aims to reducing GHG emissions by 20 percent by 2020, compared to 1990. By 2050 the GHG emissions in this sector should be reduced by 70%. Therefore several actions are to be taken, like strengthening bicycle traffic, public transport and electro-mobility. To ensure constant progress towards these objectives numerous sub-goals have been agreed upon. For example, Baden-Württemberg intends to increase the share of bicycle traffic from 8% in 2008 to 16% by 2020 and increase the number of electric vehicles to 200.000 until 2020.

V. Role model of the state:

The state administration of Baden-Württemberg is pursuing the objective of near climate neutrality by 2040. Therefore Baden-Württemberg is pursuing a comprehensive retrofitting of its state-owned buildings in order to reduce its own energy consumption and is increasing the number of e-mobile vehicles in its car pools. Part of the scheme is to raise the share of renewable energies for state purposes.

VI. Emission Trading:

Baden-Württemberg industries are taking part in the EU emission trading system (ETS). Baden-Württemberg advocates for ensuring the ETS is an efficient instrument for reducing greenhouse gas emissions and climate protection.

APPENDIX A.3

ACRE

Appendix forthcoming.

APPENDIX A.4

BAJA CALIFORNIA

Baja California is a leading federal entity in the field of climate change and has an institutional framework for the prevention, mitigation and adaptation to the phenomenon, allowing it to make timely decisions, based on:

- (a) Preventative State law, mitigation and adaptation of climate change for the State of Baja California (the first law in the country).
- (b) State program on climate change for the State of Baja California
- (c) Council on climate change for Baja California (where the government levels and the powers of the State are represented, as well as higher education institutions and civil society organizations).

Similarly, we have the results of a study called “Second phase of the State Program on climate change for Baja California”, which identifies twenty-five (25) mitigation policies that have the best cost-benefit ratio to be implemented and which will allow us to reduce greenhouse gas emissions between 20% and 25% by the year 2030.

In this sense, the State Development Plan defines as a general objective of sustainable economic development section: managing regional development with representative population participation, with high levels of competitiveness, with the efficient allocation of functions and financial resources in departments of public administration, as well as urban, economic, and environmental institutional coordination for the promotion of investment , research and development of local productive options, the linking of regional vocations and border economy, the use of clean energy and environmental protection and the following commitments for the period 2014-2019 are established:

3.8.2. Environmental policies and climate change

3.8.2.1 Implement sustainable environmental public policies that mitigate the effects of climate change and that can adapt to rationally take advantage of natural resources.

3.8.2.2 Integrate the conservation of natural capital of the entity with the social and economic development. Develop and implement the environmental fund in such a way to ensure resources for the implementation of environmental policies.

3.8.2.3 Develop the environmental geographic information system and integrate it into the general system, to develop, implement and manage the territorial and ecological system of the State.

3.8.2.4. Developing and implementing protected areas, strategies and management plans for the conservation of biodiversity and the sustainable use of natural resources emblematic of Baja California.

Specific Actions and Commitments

CROSS-BORDER LINKAGE

- I. 3.8.3. Intergovernmental and international coordination
 - 3.8.3.1 Improve channels for intergovernmental and international coordination to address environmental problems with a regional, cross-border and long term vision.

CLEAN ENERGY

- II. 3.9.3 Promote energy efficiency of industrial and commercial usage
 - 3.9.3.2 Adapting current regulations applicable in the construction of state and municipal housing.
 - 3.9.3.3 Promote and disseminate a saving and efficiency culture through institutional strengthening programs and awareness events.
- III. 3.9.4. New sources of supplying energy
 - 3.9.4.1. Encourage public and private investment in projects that generate, manage and commercialize alternative clean energy
 - 3.9.4.2. Encourage public and private investment in programs that promote the creation of companies, training courses and professional development in the field of clean energy.

WATER MANAGEMENT

- IV. 5.5.3 Use of treated wastewater
 - 5.5.3.1 Promote and implement local and intercity projects of treated wastewater for irrigation of green urban areas, as well as agricultural, industrial, and ecological and recharge of aquifers.
- V. 5.5.1. Drinking water
 - 5.5.1.1 Ensure water supply sources and define alternatives for new sources, such as desalination of seawater.

URBAN MOBILITY AND VEHICLE EMISSIONS

- VI. Systems of rapid transport (BRT) for the cities of Mexicali and Tijuana.
- VII. Planning of bike paths, pedestrian walkways and green corridors – Diversify transportation in cities through the promotion of the use of bicycles, significantly improve the quality of urban routes, improvements in commute times, equity, health, road and personal safety, the environment and the tourist attractions of cities.
- VIII. Environmental vehicle verification program. This is intended to verify that the motor vehicles in the State, comply with the emission limits allowed by the Mexican official standards.
- IX. Paving programs for the cities of the State.

APPENDIX A.5

BRITISH COLUMBIA

British Columbia was the first jurisdiction in North America to introduce a carbon tax and require greenhouse gas emissions reduction targets by legislation – 33% below 2007 levels for 2020 and 80% below 2007 levels for 2050. The carbon tax was launched together with a suite of ambitious measures outlined in B.C.’s 2008 Climate Action Plan. The carbon tax and complementary policies allowed British Columbians to reach their 2012 interim emissions reduction target of 6% below 2007 levels. In the same period, the province’s population and GDP increased, keeping pace with the Canadian average. This was a major milestone for the province and represented the first step in a longer journey toward achieving 2020 and 2050 targets. British Columbia will continue the internationally recognized leadership it began with the Climate Action Plan in 2008 and is currently developing a Climate Leadership Plan to keep British Columbia on track to achieve the 2020 and 2050 legislated greenhouse gas reduction targets, and support a growing economy.

The starting position:

Population: 4, 582, 600 (2013)

GDP: \$50, 121.00 CAD per capita (2013)

Country: Canada

GHG emissions: 61.5 million tonnes CO₂e (2012)

Specific Actions and Commitments

Carbon Tax

British Columbia’s revenue-neutral carbon tax remains the most comprehensive and ambitious of its kind in North America, establishing a model for other jurisdictions around the world. British Columbia’s carbon tax applies to virtually all fossil fuels, including: gasoline, diesel, natural gas, coal, propane and home heating fuel. The carbon tax started at a rate based on \$10 per tonne of carbon-dioxide equivalent emissions, and rose \$5 each year over four years, reaching \$30 per tonne in 2012. The revenue generated by this tax is returned to individuals and businesses through reductions in other taxes. Since the introduction of the tax, independent research has shown that fuel use per capita has fallen 17.4% between 2008 and 2012. British Columbia remains committed to a strong price on carbon, and works to encourage other jurisdictions to adopt similar measures.

Clean Power

The Province has legislation requiring 93% or more clean and renewable electricity generation. In November 2013, the Province approved BC Hydro’s Integrated Resource Plan that shows that BC Hydro, the largest electricity utility in the province, is at 96% renewable electricity generation. There is currently no coal power generation in British Columbia. British Columbia’s *Energy Plan: A Vision for Clean Energy Leadership*, set out a policy objective to require zero greenhouse gas emissions from any coal thermal electricity facilities in British Columbia. In December 2014, the Province made a final investment decision to develop Site C, a 1,100 MW hydro-electric facility on the Peace River—the third facility on the Peace River, demonstrating British Columbia’s commitment to clean power. Energy utilities are required to pursue demand-

side measures (DSM) up to the cost of new clean generation resources before purchasing new generation. BC Hydro is required to meet 66% of new demand through DSM by 2020, and BC Hydro's Integrated Resource Plan shows BC Hydro plans to meet 78% of new demand through DSM.

Energy Efficiency

British Columbia sets energy performance standards to meet targets for market transformation of 66% displacement of electricity demand growth and 20% reduction in energy in houses by 2020. British Columbia recently adopted energy efficiency standards aligned with national and regional leaders for small battery charging systems (e.g., cordless phones, cell phones, power tools, laptops and golf carts), clothes washers, dishwashers and residential gas-fired furnaces. Net present-value energy savings at the provincial level are estimated to be \$157 million CAD. Twenty-nine per cent of LEED Gold building projects registered in Canada since 2007 are located in British Columbia, and all new public sector buildings must be built to LEED-gold standard or better. British Columbia was the first jurisdiction in Canada to adopt both the new National Building Code energy-efficiency requirements for housing and small buildings and the National Energy Code for Buildings, which applies to large buildings (2013).

Transportation

By building the key infrastructure, increasing the adoption of cleaner fuels and encouraging the transition to clean energy vehicles, British Columbia is moving toward building a transportation system that reduces distances driven and is powered by clean energy.

Clean Energy Vehicles

Actions in every sector have helped people, communities and businesses reduce their emissions and their costs. For example, in 2011, the British Columbia government launched its \$14.3 million CAD Clean Energy Vehicle (CEV) Program to provide incentives for eligible clean energy vehicles and deployment of charging-point infrastructure for these vehicles. The CEV Program has provided British Columbians with more affordable clean energy transportation solutions, and British Columbia leads Canada in clean energy vehicle sales per capita and has the largest electric vehicle charging and hydrogen fueling networks in Canada. In 2015, British Columbia renewed the CEV Program to continue to encourage adoption of clean energy vehicles.

Low-Carbon Fuel Standards

Adopted in 2008, British Columbia's Renewable and Low Carbon Fuel Requirements Regulation has helped reduce the province's reliance on non-renewable fuels and the environmental impact of transportation fuels. This regulation enables the Province to set benchmarks for the amount of renewable fuel in British Columbia's transportation fuel blends, reduce the carbon intensity of transportation fuels and meet its commitment to adopt a low-carbon fuel standard. Currently, the regulation targets a 10% decrease in carbon intensity of transport fuels sold in British Columbia by 2020, and 5% renewable content in gasoline (4% in diesel).

Alternative Fuels

The Province implemented the Greenhouse Gas Reduction (Clean Energy) Regulation in 2012 which permits utilities to offer incentives for the purchase of natural gas vehicles and to make investments in liquefied natural gas and compressed natural gas fuelling

infrastructure in sectors such as medium and heavy duty on-road transportation, marine, mining and locomotive support.

Cleanest LNG Facilities in the World

The British Columbia government had committed to having the cleanest LNG facilities in the world, while maintaining its leadership in clean energy and climate action. The Province has implemented a benchmark approach with the use of offsets and technology fund contributions as flexible means to achieve compliance. Facilities must reduce the intensity of their emissions against a standard that outperforms the cleanest LNG facilities in the world today.

Commitment to Leadership in Government Operations

Each year since 2010, British Columbia's public sector has achieved carbon neutrality, a first for any province or state in North America. Through the Carbon Neutral Government program, the development of British Columbia-based offsets has meant this achievement places British Columbia on the leading edge of growth in the clean-energy and clean-technology sectors. Provincially owned or leased buildings must be LEED gold or equivalent. The Carbon Neutral Capital Program helps public schools, universities, colleges and hospitals reduce energy costs and use innovative clean technologies. Government buildings are able to showcase examples of clean-energy solutions for hundreds of thousands of British Columbians when they access government services, go to work or attend school.

Local Communities

British Columbia can only meet its greenhouse gas reduction commitments with the help of its cities and communities. 95% of local governments have signed a voluntary agreement with the provincial government through the Climate Action Charter. By signing the Climate Action Charter, local governments commit to: working toward carbon neutrality in their corporate operations; measure their community energy and emissions; and create complete, compact, more energy efficient rural and urban communities. To support their commitments, local government signatories that report on their progress each year are granted the same amount paid in carbon taxes on their corporate operations.

APPENDIX A.6

CATALONIA

Catalonia is a historical nationality within the Spanish state, as well as one of its 17 Autonomous Communities. It is the second most populous one, has the highest GDP and its main economic sectors include chemicals, food, energy, metal, transportation and the rapidly increasing tourism sector. It has a strong tradition of research and innovation and seeks to foster a transition to a more sustainable and low carbon economy. This is demonstrated, among other initiatives, by its leadership in smart cities development and implementation, its long tradition of climate and environmental research and its commitment to preserve the unique environment of the region.

Catalonia is fully committed to taking action against climate change, proved by its engagement in international networks and the UNFCCC process, as well as its leadership at a regional level, with the Energy and Climate Change Plan 2012-2020 or the Catalan Strategy for Adapting to Climate Change 2013-2020.

Catalonia accomplished its objectives under the Kyoto Protocol during the 2008-2012 period. Currently, it has a target of increasing energy efficiency by 20%, generate 20% of the gross final energy consumption from renewable sources and reduce energy-related greenhouse gas emissions 25% below 2005 levels by 2020.

Catalonia also acknowledges the importance of adaptation when tackling climate change. The Catalan Strategy for Adapting to Climate Change 2013-2020 identifies the main impacts for this century and aims to incorporate adaptation into public policies, identify arising opportunities and promote research, innovation and knowledge transfer.

Finally, the Catalan Government is currently working on a Climate Change Bill, giving a solid response to the threat of climate change, and thus showing unequivocal commitment and collective responsibility in the fight against climate change.

Starting position:

Population: **7,518,903 (2014)**

GDP: **226,328.65 (US\$, 2014)**

Country: Spain

GHG emissions: 43.14 million tons CO₂eq (2012)

Emissions per capita: 5.8 t CO₂eq (2012)

Specific Actions and Commitments

I. Energy Efficiency and Low Carbon Electricity

Catalonia has an Energy and Climate Change Plan 2012-2020, which demonstrates its focus on clean energy. Its objectives complement the 2020 EU Strategy: the Plan will achieve a 25.3% GHG emissions reduction from 2005 levels; it is also committed to generate 20.1% of the gross final energy consumption through renewable energy sources, and to achieve a 20.2% increase in energy efficiency by 2020. Actions are focused predominantly on energy demand, energy

efficiency and renewable energy. Energy efficiency is based on industrial, building and transportation sectors. The new Plan also promotes renewable energy, in particular wind, including marine wind, biomass and solar (thermal, photoelectric and thermoelectric).

Apart from that, Catalonia has specific legislation for issues related to mitigation actions. That is the case of the Catalan Strategy for Energy Renovation of Buildings 2014-2020, which aims to cut by 22% the CO₂ emissions of already-built residential buildings by reducing their energy use by 14,4%, while mobilising public investment, saving money and creating new job opportunities.

At present, Catalonia is drawing the Climate Change Mitigation Plan 2020, which focuses on non-energetic sectors not covered by the Energy and Climate Change Plan 2012-2020, such as waste, agriculture, fluorinated GHG emissions, carbon sinks, and non-energetic emissions from buildings, transport and industry.

Furthermore, a Catalan Climate Change Bill is being drafted and will be passed this year, which will set the path to further emission reduction targets and increased ambition in regional climate action. Targets are designed as a continuous progression from previous ones, in line with the EU objective to reduce its emissions by 80-95% by 2050 compared to 1990, within the context of necessary reductions by developed countries as a group according to the IPCC.

II. Sustainable Mobility

The Government of Catalonia is already heavily involved in initiatives to make EVs ready for the market. In 2010 Catalonia adopted the Strategy to Foster the Electric Vehicle in Catalonia (IVECAT) 2010-2015, for the introduction of electric vehicles (EVs) and, since 2010, a growing number of municipalities have introduced EV fleets thanks to regional subsidies. The strategy has a target of 76,000 electrical vehicle sales and 91,200 charging station installations (83,600 private and 7,600 public access) by 2015.

Furthermore, Catalonia's Transport Infrastructure Plan 2006-2026 (PITC) aims to increase rail freight 8.5% per year and limit private car mobility increase by up to 60% by 2026, resulting in a 10% CO₂ emissions reduction compared to business as usual scenario.

III. Natural Resource Protection and Waste Reduction

The General Program of Waste and Resources Prevention and Management 2013-2020 (PRECAT20) aims to achieve a 30% reduction in the carbon footprint of waste management and resources used in Catalonia (based on 2012 levels) and a 15% reduction in primary total waste primary generation reduction (including municipalities, industry and building sector) in 2020 and based on 2010 levels.

Furthermore, Catalonia recently approved the Strategy to Promote the Energy Use of Forest and Agriculture Biomass 2020. Due to its highly forested territory and the deficit in forest management, the strategy is considered a key to protect the environment and promote zero emissions energy.

IV. Adaptation

Catalonia is already suffering the consequences of climate change, and therefore understands the necessity to act rapidly. That is why the Government approved a Catalan Climate Change Adaptation Strategy 2013-2020. The Strategy identifies the geographic areas and activities at greater risk due to climate change, and considers adaptation options that reduce the vulnerability of socioeconomic sectors and natural systems. It also incorporates and implements measures in sectorial planning, risk management and best practice to improve climate change adaptation and resilience.

The Strategy has been complimented by the Global Indicator of Climate Change Adaptation in Catalonia, designed to measure how the region is adapting to climate change. The study has 29 key indicators that produce a global adaptation indicator quantifying Catalonia's capacity to adapt to climate change, which will be key to evaluate the extent to which policies are being effective.

V. Role Model of the State

The Government of Catalonia approved in 2011 the Program for Saving Energy and Energy Efficiency in Buildings and Facilities of the Government of Catalonia (GENERCAT) 2011-2014, which aims to reduce energy consumption, increase energy efficiency and reduce the energy bill of the Catalan Government. The program, which affects all Government and public sector facilities, expects to achieve an 11% reduction in energy consumption by 2015 and reduce the energy bill by 4.4%.

Moreover, in 2005 the Catalan Government established a program to promote the greening of public procurement in the administration of the Government and public companies and affiliated or associated entities. This means that almost all public procurement tenders incorporate environmental criteria. Some examples are: electricity requirement that 20% comes from renewable sources, vehicles with low CO₂ emissions (electric vehicle or hybrid), cleaning services, paper, office equipment, etc.

VI. Emission Trading

Catalonia industries are taking part in the EU emission trading systems (ETS). Catalonia has 131 installations under the scheme, which produced 13.216.081 t CO₂eq of verified emissions (2014), and has assigned 9.368.654 t CO₂eq (2014).

APPENDIX A.7

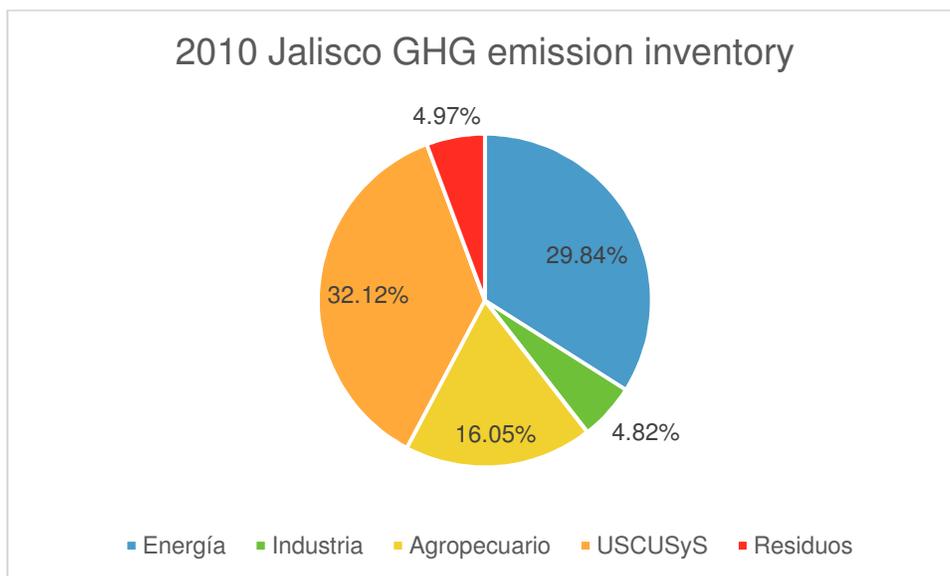
JALISCO

Jalisco, one of the most important economic actors in Mexico, is located in the western part of the country and possess a territory of 78,588 km² – a size similar to that of the Czech Republic. With over 7 million inhabitants, Jalisco is the fourth most populous state in Mexico; which about 60% of the population lives within the Greater Guadalajara Area, making it the country’s second largest city right after Mexico City.

Jalisco contributes with 6.4% (57,888 million USD) of Mexico’s GDP. Even though over 65% of Jalisco’s economic activity comes from the tertiary sector (trade, transport, real estate and other services), Jalisco’s agricultural sector leads Mexico’s national production in several produces such as corn, milk, eggs and pork meat.

When it comes to environmental actions, Jalisco has positioned itself as a local leader thanks to initiatives such as the “Voluntary Environmental Achievement Program”, the improvement of public building’s energy efficiency, and the inauguration of the Los Altos wind farm, among others projects, all which enable Jalisco to play a significant role in the Mexican environmental policy and politics development.

Based on the inventory of greenhouse gas emissions, in the year 2010 Jalisco generated 42,001.22 Gg of CO₂, which results in a per capita emission of 5.16 tons. The sectors that emit the most are land use, changing land use, and energy consumption, followed by the agriculture sector, industrial and waste management.



The state of Jalisco aligned to the National Climate Change Strategy, has set the following goals for reducing emissions based on 2010 emissions:

- 30% by 2030.
- 50% by 2050.

The inventory results allows the state to guide mitigation strategies prioritizing those that have a direct influence on the emitting sectors including:

- **Energy:** transition to energy independence by using renewable energy; which implies the exploitation of the potential of the territory in generating solar power and wind power. Boosting the implementation of energy efficiency programs in both, the public and private sectors through the investment in the construction of infrastructure and new operations.
- **Urban Planning:** increase territory efficiency by reducing urban sprawl, as well as promoting a transition towards public transportation systems that are safe, clean, low-emission alternatives, accessible, comfortable, and that strengthen interconnectivity.
- **Transportation:** Promotion the use of non-motorized mobility by improving bicycle and pedestrian infrastructure, road safety education, and legal reforms to protect the cyclists and pedestrians. Modernization of the vehicle fleet with an eventual transition to electric cars. Increased public transport lines. Modernization of public transport units that can be more accessible, comfortable and with better fuel efficiency. Boosting foreign and inter rail passenger transport.
- **Biodiversity and Forests:** Develop a strategy for reducing emissions from deforestation and land degradation, as well as consider sustainable forest management, increasing carbon stocks and forest conservation schemes by increasing payments for environmental services.
- **Agricultural Sector:** Promoting schemes of agricultural and forest production with potential mitigation through carbon sequestration practices, livestock waste management activities, and reducing emissions from the inappropriate use of fire.
- **Waste:** To promote integrated waste management through enhancement projects, use of organic waste, methane capture at landfills and wastewater treatment.
- **Financial instruments:** Install regional carbon trading schemes, green taxes and environmental funds to finance projects to move towards a low carbon development.

The fourth part of the state territory is very sensitive to global warming; 47% of this area is dedicated to predominantly agricultural activities, 4% to livestock activities and only 3% are human settlements. Climate disruption has various effects such as reduced rainfall and soil moisture or extreme temperatures increase and intensity of rainfall, crop failures, increased pollution, increased presence of natural disasters (such as hurricanes), among others.

Based on opinion surveys for adaptation to climate change made to the population of Jalisco, it is shown that there is a partial ignorance in terms of the causes, consequences, and effects of climate change, as well as a remarkable misinformation about how to tackle climate change, and how to reduce vulnerability and adaptation measures.

To reduce vulnerability and increase resilience of its systems, the state of Jalisco should promote the following initiatives:

- Educate, inform, and raise awareness about climate change, its consequences, and responsibility of the whole society.
- Promote the analysis of vulnerability to climate change areas, economic activities and population groups.

APPENDIX A.8

ONTARIO

****NOTE****

This page will be updated in October, following the release of a new, comprehensive climate change strategy and action plan.

ONTARIO PROFILE

Population: 13.5 million (2013)

GDP: C\$674.5 billion (2012) or C\$692.4 billion (2013)

Total GHG emissions (year): 166.9 Mt CO₂eq (2012)

GHG emissions/capita/year: 12.3 t/capita (2012)

Country: Canada

OVERVIEW

Ontario recognizes climate change as one of the most urgent issues facing humanity today.

Climate change is already damaging our environment, causing extreme weather like floods and droughts, and hurting our ability to grow food in some regions. Over the near term, it will increase the cost of food and insurance, harm wildlife and nature, and eventually make the world inhospitable for our children and grandchildren.

The province has demonstrated its leadership and commitment to fight climate change through several actions, most notably, ending coal-fired power – one of the largest greenhouse gas reduction initiatives in North America, equivalent to taking seven million vehicles off the road. Ontario recently established a new mid-term 2030 greenhouse gas emission reduction target of 37% below 1990 levels and is establishing a cap on carbon pollution through a program that could link to carbon markets in Quebec and California.

Ontario recently made an unprecedented multi-billion-dollar commitment to transform its commuter rail network. As part of this plan, the current fleet of fossil-fuel powered commuter trains is being replaced with a fully electric Regional Express Rail system that will operate trains in both directions every 15 minutes on over 450 kilometres of track. This transformation is expected to have a significant positive impact on mode-splits and will support intensification and efficient land use patterns in suburban areas leading to significant GHG reductions.

The province is developing a long-term climate change strategy that will build on these achievements and look forward to 2030 and 2050. It will contain actions to achieve our 2020 target, as well as actions that will support achieving our longer term objectives.

This new comprehensive strategy will include a suite of objectives and actions designed to reduce emissions in all major emitting sectors, including transportation, buildings and industry. While Ontario has been a leader in the fight against climate change, it is committed to doing much more. In addition to cap and trade, complementary measures being considered will:

- create a new model of economic growth that is based on both prosperity and sustainability.
- continue with unprecedented investments in public transit
- make targeted investments in industry that reduce emissions and make Ontario's manufacturing sectors more globally competitive
- reduce emissions from buildings and homes by investing in energy conservation retrofits and by adopting leading energy efficiency standards
- further promote existing trends of conservation and efficiency in our electricity system by increasing renewable energy and supporting energy storage
- further improve our award-winning land use planning and greenbelt frameworks to encourage the building of transit-friendly communities to reduce transportation emissions
- create a zero emission vehicle strategy to promote and demonstrate the viability, affordability and convenience of these vehicles
- incorporate climate change considerations into land use and natural resource management decisions
- invest in leading energy research, including energy storage and solar fuels
- ensure government procurement processes are designed such that the government continues to reduce its own carbon footprint.

APPENDIX A.9

OREGON

Oregon has long been a leader in establishing strong policies that help build a more resilient economy while reducing greenhouse gas emissions. Oregon's private sector has been able to leverage this policy environment to make significant investments in maximizing energy efficiency and conservation, building out a renewable energy portfolio and growing the alternative fuel industry. This is good for consumers, good for the environment and good for the state's economy.

Oregon has been recognized nationally and internationally as an innovative leader in working with the clean technology industry to strengthen our economy and environment. The state focuses on how we can continue to transition to new energy systems that save consumers money, create consumer choice, provide for system reliability, remove market barriers for development, and attract significant private capital investment. For example, the Energy Trust of Oregon was created to maximize energy efficiency and conservation. Since the organization's inception, ETO has helped save rate-payers \$1.7 billion on their energy bills. Their work keeps energy costs as low as possible, builds a sustainable energy future, creates jobs that cannot be outsourced and protects the environment. The state also has implemented strong building codes, energy efficient appliance standards, residential energy disclosure mechanisms, renewable energy and conservation incentives, alternative transportation options, mass transit alternatives, and the renewable portfolio and carbon dioxide standards, to name a few.

Specific actions and commitments:

I. Greenhouse Gas Emissions Goals

In 2007, the Oregon State Legislature established greenhouse gas emissions reduction goals. The goals call for Oregon to arrest the growth of greenhouse gas emissions and begin to reduce emissions by 2010, achieve greenhouse gas levels that are 10% below 1990 levels by 2020, and to achieve greenhouse gas levels that are 75% below 1990 levels by 2050. Oregon has put in place a number of policies and programs that are moving the state forward to meet these greenhouse gas emissions reduction goals.

II. Clean Electricity

Oregon is one of the largest producers of renewable electricity in the country. The Bonneville Power Administration's hydro system is the backbone of Oregon's renewable energy portfolio. Approximately 44% of the state's energy is hydroelectric. In addition, 2.8% is derived from nuclear, 5.2% from wind and 10% from other renewable resources, such as solar, landfill gas, geothermal, waste and biomass.

In 2007, the legislature passed the renewable portfolio standard which requires large utilities to serve 25% of their retail load from new renewable resources by 2025. To date, this has attracted over \$10 billion investment in the state, most of which is in rural Oregon. This investment not only reduces greenhouse gas emissions, it provides much needed property tax and other revenue to hard hit counties. Through maximizing royalties from wind, counties have been able to retain public safety officers, build schools and provide rebates for their citizens. The state is on track to meet the renewable portfolio standard by 2025.

In 2009, the state established a five year solar feed-in tariff pilot program to expand distributed generation solar. In addition, the state requires all new and retrofitted state buildings use 1.5% of their construction budget to install solar on-site and is working to develop a community solar program. The state also provides incentives for renewable energy generation projects.

Oregon's only coal-fired power plant will be decommissioned in 2020.

III. Energy-neutral buildings

Oregon has long been a national leader on energy efficiency. It is the state's policy to maximize energy efficiency and conservation first, as efficiency is the least-cost resource. The region has set a target of meeting 85% of new load growth through energy efficiency and conservation, and due to the investments made by our local utilities Oregon is on track to meet the state's share of this target.

Oregon adopted a reach code to lay the groundwork for significantly reducing energy consumption in the build environment. The state coupled this with providing an incentive for building operators who meet the reach code, helping to buy down the cost of the delta between standard code and the reach code. In addition, the state is pursuing commercial building disclosure mechanisms to capture behavioral energy efficiency, adoption of efficient appliances, on-site generation, smart controls and other features. Oregon consistently ranks in the top three on the State Energy Efficiency Scorecard, published by the American Council for an Energy Efficient Economy.

IV. Clean Transportation

The largest contributing sector to Oregon's greenhouse gas emissions is the transportation sector at 33%. Oregon is taking a comprehensive approach to reducing emissions in this sector. The state prioritizes maximizing mass transit opportunities, investing a significant amount of money is providing strong mass transit opportunities for people in all corners of the state. In addition, the state has established incentive and loan programs to help private and public sector fleets convert to alternative fuels; this not only reduces greenhouse gas emissions, it saves fleet operators significant money that can be reinvested into growing their business or public sector organization. Coupled with work to convert fleets, the state has worked diligently to create Oregon's part of the West Coast Electric Vehicle Highway and to provide alternative fueling stations so consumers and fleet operators have access to alternative fuels. Lastly, Oregon requires its metropolitan planning organizations to develop transportation and land use plans that meet carbon reduction targets. Lastly, Oregon joined with California and other states to significantly increase the adoption of zero emission vehicles.

APPENDIX A.10
VERMONT

Appendix forthcoming.

APPENDIX A.11

WALES

Wales is one of the nations that make up the United Kingdom, located in the west of Europe and covering an area of just over 8,000 square miles (20,722 km²). Climate change action in Wales sits within the wider European and UK framework and the overarching target of at least an 80% reduction in greenhouse gases by 2050 (based on a 1990 baseline). Wales has had a dedicated climate change strategy in place since 2010, encompassing ambitious climate change targets of a 40% reduction in emissions by 2020 and a 3% per annum reduction in those areas devolved to the Welsh Government.

As one of the first nations in the world to have a duty on sustainable development at the heart of its constitution, this commitment has underpinned the approach to climate change in Wales. This has meant that action on key priorities has been taken forward in a way that delivers economically, socially and environmentally. Examples include action on energy efficiency - where the retrofitting of houses has addressed fuel poverty and supported growth in the green economy - and action to reduce waste, which has delivered a significant increase in recycling along with a significant decrease in emissions and increased economic investment. This approach has been further strengthened by the recent passing of the Well-being of Future Generations (Wales) Act 2015, containing a set of statutory sustainable development goals for Wales. The goals encompass the need to act on the causes and adapt to the consequences of climate change, as well as ensuring that Wales is globally responsible in its actions. This is being followed by the Environment (Wales) Bill, which focuses on the sustainable management of Wales' resources and includes a statutory commitment to carbon budgeting to set a clear pathway for decarbonisation. This legislation will sit within the wider EU and UK framework, which includes the EU Emissions Trading Scheme (ETS).

The current position in Wales:

Population: 3,082,412 (2013)

GDP: £53.1 billion (GVA 2013 /

GHC emissions (year): 45.83 MtCO₂e (2012)

Specific actions and commitments

Greenhouse Gas Emissions

Wales is committed to reducing its total greenhouse gas emissions by 40% from 1990 levels by 2020 within the overall goal of reducing emissions by at least 80% by 2050 as laid down in the UK Climate Change Act 2008. In addition, the Welsh Government has committed to reducing emissions within areas of devolved competence by 3% from 2010. Reporting against both the targets and delivery of key policies is undertaken annually. As of the latest annual report (December 2014), territorial emissions in Wales had reduced by 17.9% on 1990 levels and to date the 3% per annum target has been successfully delivered. On an end-user consumption basis, this equates to a 32% reduction on 1990 levels.

The legislation currently being brought forward through the Environment (Wales) Bill aims to further accelerate action, by putting in place strengthened requirements for statutory climate change targets and committing to a carbon budgeting approach in Wales.

Renewable energy

In Wales, the percentage of electricity generated from renewable sources has increased nearly three fold from 2005 to 2013 and it is estimated that in 2016 it will account for over 15% of total electricity generation which is approximately the equivalent of 30% of Wales' electricity consumption. Alongside more established technologies, innovative proposals are being developed to harness Wales' natural resources. For example, a proposal to construct a 320 MW tidal lagoon is currently under consideration in the planning system which, if consented, will be capable of powering over 155,000 homes for 120 years. In addition, in delivering on renewable energy, Wales' commitment to sustainable development has also seen an emphasis on community energy with the Welsh Government providing support to 57 community-led renewable energy schemes since 2012. The Welsh Government is also currently developing a Green Growth fund for Wales to accelerate the roll-out and encourage investment in resource efficiency, renewable energy generation and waste efficiency projects.

Energy and Resource efficiency

In taking action on energy efficiency, a key priority has been to address fuel poverty in deprived areas. Schemes in Wales have improved 7900 homes in Wales in some of the most deprived areas. The energy and environmental sector has also grown in sales turnover from £1.24 billion to £2.36 billion - an increase of 90% from 2006 - with employment increasing from 22,160 to 30,100 over the same period.

This action has also been complemented by work to improve the standards of energy efficiency through investment in social housing and the increasing of standards in the Building Regulations in Wales. The funding and regulatory framework in Wales is also supported by Welsh Government funded independent advice and support for people and organisations to invest in improvements that save on energy, water and waste. This Resource Efficient Wales (REW) service provides a range of advice and fully funded energy efficiency improvements targeted in particular at individual low income households and deprived communities across Wales. Going forward, a new Energy Efficiency Strategy for Wales will be published in 2015.

Action to improve resource efficiency through the implementation of the '*Towards Zero Waste*' strategy has seen Wales achieve the highest recycling rates in the UK at 58% and the 4th highest in Europe. This has been complemented by initiatives such as the charge for single use carrier bags. The overarching aim is to recycle at least 70 per cent of waste by 2025 and to be a zero waste (100 per cent recycling) nation by 2050. Importantly, the increase in recycling in the waste sector has also significantly reduced emissions – by 20.4% in the sector – whilst also delivering investment and economic growth.

Clean transportation

Action on transport in Wales includes the Active Travel (Wales) Act 2013, which requires new road schemes (including road improvement schemes) to consider the needs of pedestrians and cyclists

at design stage, to enable more people to walk and cycle. The act also requires local authorities to continuously improve facilities and routes for pedestrians and cyclists and to prepare maps identifying the routes for their use. Sustainable Travel Centres have also been put in place to encourage public transport use and effective journey planning. Going forward, the delivery of the Cardiff Capital Region Metro is a key priority. This comprises multiple modes of transport brought together within an integrated network for the region. The objective is to create a region wide alternative to the car and improve accessibility to public transport within city and town centres.

Emissions trading

Wales is a part of the EU Emission Trading Scheme (ETS), which covers 54% of its emissions reflecting both the heavy industry located in Wales and the fact that Wales is a net exporter of electricity. In addition, businesses and public sector bodies in Wales that are high energy users but not covered under the requirements of the EU ETS are part of the Carbon Reduction Commitment (CRC). This is a UK-wide scheme to improve energy efficiency and cut carbon dioxide (CO₂) emissions where those organisations covered pay for the carbon they emit. The Welsh Government itself is a participant of the CRC and has decreased emissions on its administrative estate by 27% since 2010-11.

Adaptation

As well as reducing emissions, Wales has a framework in place for building resilience to the impacts of climate change. The adaptation work has focussed on developing Sectoral Adaptation Plans, which take sectors through a risk assessment process to develop a planned response. In addition, the goals contained in the Well-being of Future Generations (Wales) Act include a goal in relation to a 'Resilient Wales' which specifically makes reference to adapting to the impacts of climate change. The Environment (Wales) Bill also includes legal requirements relating to action on adaptation at both the national and local levels, together with a framework for the sustainable management of natural resources based on the principles from the Convention for Biological Diversity.

Global responsibility

A key part of Wales' commitment to sustainable development has been its work in partnership internationally from being a founding signatory of the Gauteng Declaration in 2002 to most recently signing the global *Compact of States and Regions* in 2014. Wales' work internationally includes the Wales for Africa programme in Mbale, which won the UNFCCC Momentum for Change Lighthouse award in 2011 and which has seen the planting of more than one million trees and the launch of an ambitious next phase – 10 million trees. Through the Size of Wales project, an area of forest the Size of Wales has been safeguarded in Africa and in Wales, a tree is planted in both Wales and Africa for every child born. As an active member of The Climate Group and Network of Regional Governments for Sustainable Development (nrg4SD), Wales is committed to working in partnership to tackle climate change and more broadly the support development in all regions to be sustainable. This is underpinned by the commitment in the Well-being of Future Generations Act to a globally responsible Wales.

APPENDIX A.12

WASHINGTON

Washington State has a long history of commitment to its environment and a clean economy. Among the State's many strengths are its established policies that reduce greenhouse gas emissions; support renewable energy, green buildings and clean transportation; promote green economy jobs growth; and address economic and social goals.

In 2008, the state established statewide limits on greenhouse gas emissions for 2020, 2035 and 2050; and set goals to increase jobs in the clean energy sector by 25,000 (above 2004 levels) by 2020, reduce annual per capita vehicles miles traveled by 18 percent by 2020, 30 percent by 2035, and 50 percent by 2050 (from the baseline of 75 billion vehicles miles traveled), and reduce the state's expenditures on imported fuels.

Washington is recognized nationally for its success in implementing innovative approaches to achieving the GHG limits and the goals of a low carbon economy. Strong and well implemented building codes, a combined portfolio of renewable energy and energy efficiency standards, strict emissions performance standards for fossil-fuel generated electricity, cleaner cars and less carbon intensive fuels, and high levels of investments in renewable electricity, energy efficiency, and electric vehicle charging infrastructure are some of the strengths that are reducing Washington's emissions and make it a leader on clean economy. In addition, the State is home to companies on the cutting edge of clean energy technology – including wind, solar and advanced composites manufacturing, the development of advanced biofuels and low-impact hydropower, and energy-efficiency services.

Specific actions and commitments:

I. Greenhouse Gas Emissions Limits

By 2020 Washington State is required by law to limit emissions of greenhouse gases to the 1990 level; by 2035 emissions must be limited to 25 percent of the 1990 level; and by 2050 emissions must be limited to 50 percent below 1990 or 70 percent below the state's expected emissions that year. Since 2009, Washington has been driving down its GHG emissions, which are now relatively flat even as the state's economy grew by 2 percent. In 2008, the state committed to review its limits based on the most recent global, national and regional climate science. The review was completed in December 2014. The conclusion was that Washington State's existing limits should be adjusted to better reflect the current science, and that the limits need to be more aggressive in order for Washington to do its part to address climate risks. The state will recommend new limits after the UN climate conference negotiations are concluded in December 2015, using the results to inform how Washington's limits should be adjusted.

II. Clean Electricity

Washington leads the nation in electricity generation from renewable resources. The state generates more than 75 percent of its electricity from renewable resources, mostly hydroelectric power. Washington produces nearly one-fifth of all renewable electricity produced in the United

States. In 2006, Washington voters, seeking energy independence, required large utilities to obtain an additional 15% of their electricity from renewable resources (in addition to the existing hydroelectricity production) by 2020 and to undertake cost-effective conservation.

The state is on target to meet these required renewable energy targets. In 2013, wind energy provided 6.2% of all in-state electricity production. The state ranked 7th for installed wind capacity. Investments in wind totaled \$5.3 billion and created close to 4,000 green jobs. The state is also expanding the use of solar energy. Washington, as a forestry state, is a substantial producer of energy from carbon-neutral biomass, primarily wood and wood waste. The state is also a national leader in integration of nutrient management and energy production (waste-to-energy) through research and development of anaerobic digesters. The largest landfill renewable energy producers in the U.S. Bio Energy Washington, gas-to-energy plant, generates over 15 million kilowatt hours of electricity from the landfill gas, reducing greenhouse gas emissions by about 82,300 metric tons per year. Washington still has room to expand its abundant wave ocean, geothermal, and other renewable energy resources.

Washington's only coal-fired power units, with a capacity of about 1,200 megawatts, will be decommissioned, with the first closing in 2020, and the other closing by 2025. In addition, the state is seeking agreements with key utilities and others to reduce the use of coal-fired electricity generated in other states and consumed Washington. These two efforts will make the state's electricity virtually coal-free.

III. Energy-neutral buildings

Washington's achievement in building energy efficiency is a great clean energy success story. Washington was the first state in the country to adopt high-performance green buildings standards for state-funded buildings. Washington has a long history of implementing energy efficiency in residential, commercial and industrial buildings. The state is on course to ensure all new buildings are energy-neutral by 2030, building on the state's aggressive energy code, with advanced envelopes, efficient appliances, on-site generation, smart controls, and other features. The 2013 State Energy Efficiency Scorecard, published by the American Council for an Energy Efficient Economy, ranked Washington one of the top three states for energy codes.

The state's electric utilities are required to undertake all cost-effective energy conservation. Actions taken, which are part of a regional effort, will yield enough energy savings to meet 85 percent of projected energy demand through 2029.

Washington offers significant incentives for energy efficiency investments and to support research and deployment of new technologies. In 2013 a new Clean Energy Fund was created providing \$40 million to support building energy efficiency and renewable energy, advance renewable energy technologies and make Washington more competitive.

IV. Clean Transportation

Washington's greenhouse gas emissions are dominated by the transportation sector, contributing 45% of emissions in 2012. The state is taking concrete actions to drive down these emissions by supporting cleaner cars, clean fuels and reduction in miles travelled. With its clean and low cost electricity, Washington has emerged as one of the best places to own and drive an electric vehicle. Washington is on target to achieve its goal of 50,000 electric cars by 2020. The state is

investing in EV charging infrastructure to support the increase of sale and use of electric vehicles. Also, the state is committed to join with other states in adopting zero emission vehicles.

Washington is prepared to partner with neighboring jurisdictions on a West Coast clean fuels program, building on its state renewable fuel standard. In addition, the state is collaborating with the aerospace industry, airlines, several universities, federal partners and others to advance research and technology related to aviation biofuels being done under the Federal Aviation Administration Center of Excellence in Alternative Jet Fuels and Environment. Washington's largest airline included the use of biofuels in its 2020 sustainability goals and plans to start using biofuels in some of its flights in 2018.

The state is making meaningful investments in multimodal transportation in communities of all types and sizes across the state, and it's working with its local governments to promote transit oriented development and other low-carbon transportation solutions. Washington was the first state to formally adopt reduction goals for vehicle miles travelled, and the above actions support that commitment.

V. Emission Trading

Washington State has completed an extensive evaluation of the benefits of an emission trading system to implement the state's greenhouse gas emission limits from all major sources, and provide a price on carbon and a market program to ensure those limits are met. In January 2015, the Governor proposed legislation to create a carbon pollution market program for Washington State that, if and when enacted, would be linked to emission trading programs in other jurisdictions.