

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 K. 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 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 K. 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 Efficiency:

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.

V. Signatories

IN WITNESS WHEREOF, the duly authorized representatives of the Parties affix their signatures below.

For the Government of
California:

For the Government of
Baden-Württemberg:

Jerry Brown
Governor of California

Winfried Kretschmann
Minister-President of Baden-
Württemberg

Date

Date

VI. Parties to the MOU

1. Government of California, signed in Sacramento 19th May 2015
2. Government of Baden-Württemberg, signed in Sacramento 19th May 2015
3. ..., signed in ...
4., signed in...
5.

APPENDIX A.1

CALIFORNIA

California is a leader in climate change action. As of May 2014, 23% of California's electricity produced is from renewable sources. California is the only U.S. state with an economy-wide, legally binding emissions trading system. By 2020, California will reduce greenhouse gas 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 greenhouse gas emission reduction target will be consistent with an 80% reduction target for 2050.

Specific Actions and Commitments

I. Energy Efficiency

California requires that all new residential construction be Zero Net Energy by 2020, and all non-residential be so by 2030. California 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.

II. Low Carbon Electricity

California will build on its 2020 target of a 33%-plus renewable portfolio with an increasing percentage of renewables to 2030 and beyond; Governor Brown has proposed a goal of 50% renewables by 2050. California's focus will be 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.

III. Decarbonization of Transportation

The transportation sector in California accounts for nearly 40% 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% 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.

IV. Emissions Trading

California's emissions trading 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.

V. 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.

Jerry Brown
Governor of California

Date

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.

Winfried Kretschmann
Minister-President of Baden-
Württemberg

Date