



بسم الله الرحمن الرحيم

## SUBMISSION BY BAHRAIN

As a member of the Small Island Developing States (SIDS) the Kingdom of Bahrain hereby communicates with good faith its intended nationally determined contribution, recalling paragraph 11 of Decision 1/CP.20 which provides that *“small island developing States may communicate information on strategies, plans and actions for low greenhouse gas emission development reflecting its special circumstances in the context of intended nationally determined contributions.”*

### Special National Circumstances

The Kingdom of Bahrain is an archipelago of low-lying islands, islets, shoals and patches of reefs situated off the central southern coast of the Arabian Gulf. Bahrain has limitations in its size, population and economy which give rise to constraints in financing, technical capacities and options for emission-reduction technology. Bahrain makes relatively minor contributions to global greenhouse gas emissions and mitigation potential will largely depend on national circumstances, capacity and support. Being particularly vulnerable to the impacts of climate change, adaptation is a key priority. Bahrain has no natural surface freshwater resources, scarce and irregular rainfall, minor and dwindling hydrocarbon resources, limited scope in the near term in terms of developing significant alternatives to hydrocarbons-based energy, and an increasingly high population density. As such, a delicate balance must be struck in order for Bahrain to be able to develop sustainably. In addressing economic matters, and as a small island, minimizing the negative impacts of the implementation of response measures with respect to the energy, transport and tourism sectors are of strategic concern.

### Intended Nationally Determined Contribution

#### Action with **mitigation** co-benefits

The Kingdom of Bahrain's Economic Vision 2030<sup>1</sup> provides the long-term vision for a policy to **diversify the economy**. The aim is to *inter alia* reduce Bahrain's dependence on oil & gas, focusing on the financial, manufacturing and tourism sectors. In line with Decision 24/CP.18, and putting forward current actions and plans in pursuit of economic diversification that have co-benefits in the form of emission reductions, Bahrain's Vision 2030 maintains that *“protecting our natural*

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<sup>1</sup> [http://issuu.com/economicdevelopmentboard/docs/bahrain\\_vision\\_2030](http://issuu.com/economicdevelopmentboard/docs/bahrain_vision_2030)

*environment will include conserving our natural spaces for future generations to enjoy; implementing energy-efficiency regulations; directing investments to technologies that reduce carbon emissions, minimize pollution and promote the sourcing of more sustainable energy.”*

The following are strategies, plans and actions the Kingdom is undertaking which may contribute to low greenhouse gas emission development:

<p><b>Energy</b> Efficiency</p>	<p><b>Kingdom of Bahrain Energy Efficiency Programme (KEEP)</b> targets public, residential and commercial buildings and the industrial sector. It aims to improve energy efficiency to reduce cumulative electricity consumption by 2030.</p> <p><b>Bahrain Petroleum Company (BAPCO) Energy Conservation Policy</b> promotes the efficient use of natural resources, focusing on four key improvement areas: the improvement of heater efficiency; maximize condensate recovery; reduce mass loss; reactivate on-line energy intensity index.</p> <p><b>Bahrain National Gas Company (Banagas)</b> has completed a <b>retrofit project of gas turbines</b> which involves replacement of existing high NOx combustion liners resulting in an average reduction of 44% NOx emissions from the power generation station.</p> <p><b>Tatweer Petroleum efficiency projects</b> include manifold flare projects, associated gas compression projects, oilfield electrification projects and rental compressor stations projects have contributed to the reduction of CO<sub>2</sub> emissions.</p> <p><b>The Motor Vehicles Standards and technical regulations</b> are adopted to reduce the emissions from gasoline and diesel engine vehicles.</p> <p><b>The Energy Efficient Lighting Initiative</b> project supports replacing energy inefficient ILs with efficient CFLs in the short term and with more efficient technologies such as LED based lamps in the medium term.</p> <p><b>Civil Aviation Authority - Emission Management Plan for Sustainable Aviation Growth</b> includes an aviation efficiency program. This is developed in response to the International Civil Aviation Organization (ICAO) 2010 Assembly Resolution A37-19.</p> <p><b>Bahrain Airport Company</b> has recently achieved the Airport Carbon Accreditation ‘Level 1 Mapping’ from the Airports Council International (ACI).</p> <p><b>Ministry of Transportation and Communications</b> continues to find ways and means to mitigate emissions from land transportation.</p>
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	The Kingdom of Bahrain established a unit for Sustainable Energy under the <b>Minister of Energy</b> that focuses on energy conservation and renewable energy Policies.
<b>Carbon Capture and Storage</b>	<p><b>BAPCO Carbon Recovery Plan</b> utilizes Waste CO<sub>2</sub> rich off gas stream which is to be used for industrial applications.</p> <p><b>Gulf Petrochemical Industries Company (GPIC) Carbon Recovery Project</b> is able to capture CO<sub>2</sub> in the flue gases of the GPIC Methanol Plant.</p>
<b>Renewable Energy</b>	<p><b>BAPCO 5MW PV grid-connected plant</b> aims at demonstrating PV solar technology under local conditions to support up scaling of renewable energy. The project consists of the installation of 21,000 smart solar panels to generate a substantial number of Kwhs of electricity annually.</p> <p><b>The Electricity and Water Authority 5MW grid-connected pilot power plant from solar/wind sources</b> is underway.</p>

### **Adaptation**

Climate change impacts have already been observed in Bahrain and are further elaborated in its Second National Communication Report<sup>2</sup>. The Kingdom of Bahrain has undertaken climate change vulnerability and impact assessments that have addressed four key areas: coastal zones, water resources, human health, and biodiversity.

Bahrain has no choice but to implement urgent measures to build resilience, improve disaster risk preparedness and response, and adapt to the increasingly adverse impacts of climate change in future. Indeed, there are substantially higher costs associated with adaptation to future impacts of climate change in Bahrain, if actions are initially delayed or ignored. At present, the action being taken to address the issue of adaptation is executed with limited capacities and resources, with a need for a more comprehensive and articulated adaptation package with support from the international community.

The Kingdom of Bahrain is undertaking the following actions that contributes to its adaptation to climate change:

Sea-level Rise	<b>Coastal Resilience to Sea-Level Rise has been included in the Ministry of Works Dredging and Land Reclamation Technical Manual</b> published in 2008. Using inter alia information found in Bahrain's Initial National Communication
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<sup>2</sup> <http://unfccc.int/resource/docs/natc/bhrnc2.pdf>

	Report to the UNFCCC, the recommended reclamation levels considers the clearance for expected sea-level rise due global warming of 0.4 meters.
Water Scarcity	It is expected that climate change impacts in terms of temperature increase, rainfall variability, and sea level rise would further aggravate the water situation and it is imperative to formulate a climate-resilient and integrated water resources strategy in order to sustainably manage its water resources. <b>The National Water Resources Council</b> was established in 2009 to address these challenges and its work is ongoing.
Food Security	<b>The Artificial Reef Project</b> aims to assist in the recovery of local fish stocks by landing artificial reefs in key zones. To build capacities and raise awareness, programs related to conservation, eco-system services and the sustainable use of biodiversity have been integrated into the national education curricula.

#### Adaptation action with mitigation co-benefits

Bahrain considers that adaptation action will have mitigation co-benefits that will increase climate change resilience, enhance carbon sinks, assist with protection of water resources and, more generally, the health of the people of Bahrain.

The Kingdom of Bahrain is planning to undertake the following actions to adapt to future environmental and social issues, which can also contribute to reduction in emissions:

<b>Water Conservation</b>	<b>Ministry of Electricity and Water - Water Conservation Initiative</b> project involves the upgrading of the water distribution networks in order to minimize water leakages. The increased efficiency results in a reduction of water consumption and thus power generation required for desalinization, which in turn leads to a reduction of emissions.
<b>Sustainable Urban Planning</b>	<p><b>Ministry of Works, Municipalities Affairs and Urban Planning Sustainable and Green Building Construction</b> projects will apply to the construction of new government buildings which will save energy and water.</p> <p>Given the projected future increase in vehicles and traffic, the <b>Ministry of Works, Municipalities and Urban Planning</b> have succeeded in and will continue to <b>reduce traffic time</b> for each vehicle by improving the transportation network. In collaboration with the <b>Ministry of Transportation and Communications</b>, bus routes were created across the country to increase public transport efficiency and attractiveness. Future projects include the <b>GCC Railway Project, and the</b></p>

	<b>Bahrain Light Rail Project</b> which may contribute to the reduction of personal vehicle use and emissions.
<b>Blue Carbon</b>	<p>A <b>Mangrove Transplantation Project</b> for the cultivation of plants and planting mangrove seedlings in order to rehabilitate degraded coastal areas began in 2013. The project succeeded in the cultivation of mangroves in Tubli Bay and Doha Arad. There is increasingly strong recognition that there is a need to properly manage particular habitats that act as critical natural carbon sinks. The Black Mangrove is found naturally in Bahrain and is able to sequester carbon and provide an efficient buffer for coastal protection. At present, the Kingdom of Bahrain does not have a full understanding of its mangroves as a carbon sink and is planning to engage with the International Union for Conservation of Nature to do so.</p> <p><b>Seagrass beds</b>, which constitute an important carbon sink, are distributed along the southeast coast, and along the west coast of Bahrain. At present the Kingdom of Bahrain does not have a full understanding of its seagrass areas as a carbon sink and is planning to further engage with the International Union for Conservation of Nature to do so.</p>

#### Means of implementation for support contributions

The elaboration of this INDC includes a public participatory process through a series of multi-sectorial meetings, and has been reviewed by the National Climate Change Committee. This intended contribution is communicated under the assumption of the adoption of a universal, legally binding instrument that fully respects the principles and provisions of the UNFCCC, in particular the principle of common but differentiated responsibilities and respective capabilities. The domestic actions communicated in this INDC are voluntary and will be implemented in accordance with the principles and provisions of the Convention, in particular Article 4 paragraph 1, 7 and 8.



The Kingdom of Bahrain recognizes that the extent to which it will meet its obligations under the UNFCCC will depend highly on the level of international support in means of implementation. Therefore, mitigation and adaptation stipulations are meant to inform and will be undertaken in the context of support on finance, technology-transfer and capacity building.