# BIMSTEC Countries and Climate Change: Imperatives for Action

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**ABSTRACT** This brief discusses the climate-change challenges facing the member states of the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) and the initiatives taken by them to mitigate the effects. The South Asian countries within BIMSTEC are particularly vulnerable to global warming-induced weather variations that cause economic damage and loss of lives. At the same time, BIMSTEC economies have achieved impressive growth, fuelled by activities that have in turn led to higher emissions of greenhouse gases. This brief outlines the achievements of these countries in fulfilling their climate action commitments such as the 2015 Paris Conference of Parties of the United Nations Framework Convention on Climate Change (UNFCCC) and the Sustainable Development Goals (SDGs). It offers recommendations, including trans-boundary action and collaboration.

## INTRODUCTION

Over the last 150 years, the global average surface temperature has increased by 0.76 degree Celsius, a direct impact of climate change.[1] Climate change is one of the most significant challenges for the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) member states.[#] With a population of about 1.9 billion[2] and large coastal settlements dependent on natural resources for their livelihood, the BIMSTEC bloc is particularly vulnerable to the impacts of climate change.[3] Phenomena such as global warming, which causes elevated air and water temperatures and alters patterns of rainfalls, floods, droughts, sea level rise and salinity intrusion—adversely impact human settlements, infrastructure, agricultural production, food security, water quality and human health.

Within the BIMSTEC, the South Asian region is even more vulnerable to climate change. In the last five decades, the region has experienced an average per-decade rise of 0.1–0.3 degree Celsius in temperature. It is expected to increase on average by 1.5 to two degree Celsius by 2065[4] and by 2.4–4.5 degree Celsius by the end of the century.[5] While the precipitation in South Asia has always been highly variable, the annual rainfall has steadily declined in some regions, triggering droughts; and increased in others, causing flash floods. There is evidence that anthropogenic climate change is responsible for the increase in the frequency, intensity and amount of heavy rainfall globally.[6] Another threat is the rise in sea levels: the Geophysical Fluid Dynamic Laboratory model predicts a rise of 0.05–0.25

m by 2050 and 0.18–0.80 m by the end of the 21st century.[7]

Weather variations and climate change due to global warming have caused severe economic damage and loss of lives. In the last two centuries, 20 out of 23 major cyclone disasters in the world have occurred around the Bay of Bengal, particularly in Bangladesh and India. In 2007, Cyclone Sidr destroyed over 647,000 hectares of cropland, 40,000 hectares of forest resources, livestock worth US$18 million, and contributed to a loss of US$415 million worth of crop production. In India alone, there are 300,000 deaths every year due to diarrhoea caused by water contamination. A 2015 heat wave and a 2013 flood killed 2,300 and 5,500 people, respectively. In Nepal, forest fires destroyed 12,000 community forests in 2016, and landslides claim 200 lives each year. Sri Lanka faces huge crop losses due to groundwater salinity and coastal erosion. The GDP in South Asian economies is expected to decrease by 11 percent by 2100 under the Business-As-Usual (BAU) Emissions Scenario.[8]

This brief discusses the challenges faced by the BIMSTEC countries due to climate change and their initiatives to mitigate the effects. It offers recommendations to hurdle the challenges and achieve the global agenda as laid out in both the Sustainable Development Goals (SDGs) and the Paris Agreement on Climate Change.

## SOCIOECONOMIC SITUATION OF BIMSTEC STATES: AN OVERVIEW

Over the years, the BIMSTEC member states have experienced structural transformation in

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\#      Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, Thailand

their economies, with a decrease in the share of agriculture and an increase in that of industry and services sectors (see Table 1).

Bangladesh is currently in the process of graduating to a developing country by improving in the three areas used to identify the Least Developed Countries (LDCs);[9] Thailand is set to graduate to a developed country by avoiding the so-called "middle-income trap";[10] Bhutan will graduate in December 2023, after a five-year preparatory period;[11] Nepal was found eligible for graduation from the LDC category for the second consecutive time at the 2018 triennial review by the Committee for Development Policy;[12] and Myanmar was found eligible for graduation for the first time in 2018.[13] India is transitioning from being a lower middle-income country to an upper middle-income country.[14]

Such impressive growth, however, does not readily guarantee sustainable development. First, if the growth is not accompanied by the internalisation of GHG emissions and the adaptive capacity to deal with the impact of climate change, the economic development will not be sustainable. Adaptive capacity has been defined by the IPCC as "the strengths, attributes, and resources available to an individual, community, society, or organization that can be used to prepare for and undertake actions to reduce adverse impacts, moderate harm, or exploit beneficial opportunities."[15] Second, the ever-increasing global GHG emission is a threat to all economies in the world, including those in the

### Table 1: Key Socioeconomic Indicators of the BIMSTEC Nations

|  | Bangladesh | Bhutan | India | Myanmar | Nepal | Sri Lanka | Thailand |
|---|---|---|---|---|---|---|---|
| Population (in million) | 166.37 | 0.817 | 1354.05 | 53.86 | 29.62 | 20.95 | 69.18 |
| Population density (per sq. km) | 1 278.1 | 21.4 | 455.4 | 82.4 | 206.7 | 334.1 | 135.4 |
| GDP in constant US dollars (billion USD) | 180 | 2.4 | 2629.5 | 79.2 | 21.3 | 82.4 | 422.9 |
| GDP per capita (in constant USD) | 1093.05 | 2955.81 | 1963.55 | 1484.2 | 849 | 3842.3 | 6125.66 |
| GNI per capita (current USD) | 4040 | 8850 | 7060 | 5830 | 2710 | 12479 | 17090 |
| GDP growth (%) | 7.28 | 4.63 | 6.68 | 6.76 | 7.91 | 3.31 | 3.91 |
| Share (%) of agri-culture in GDP | 14.8 | 17.3 | 17.4 | 25.3 | 31.6 | 8.2 | 8.3 |
| Share (%) of industry in GDP | 28.8 | 43.5 | 28.8 | 34.9 | 14.2 | 29.6 | 35.8 |
| Share (%) of services in GDP | 56.5 | 39.2 | 58.8 | 39.8 | 54.2 | 62.2 | 55.8 |
| Happiness Index | 4.61 | 5.01 | 4.32 | 4.55 | 4.88 | 4.44 | 6.42 |
| Human Development Index (HDI) | 0.608 | 0.612 | 0.64 | 0.578 | 0.574 | 0.77 | 0.755 |

Note: Population and population density data: valid for 2018; all other data: valid for 2017.

*Source: World Bank, United Nations and The Global Economy.[16]*

BIMSTEC. It is predicted that the region will experience a sea-level rise of 30–45 cm by 2050,[17] leading to a loss of more than one-tenth of its land surface and the internal migration of 10–30 million people.[18]

The impacts of increased GHG emissions include extreme weather events, declining crop yields, loss of forests, the damage of coastal resources and associated economic losses. Since the BIMSTEC region is dependent on agriculture, fisheries and natural resources, it is highly vulnerable to droughts, floods and tropical cyclones. Further, climate change causes extreme weather events and forest fires, which in turn jeopardise the valuable export industries of the region.

## CLIMATE-RELATED RISKS

Climate-related risks encompass health, livelihoods, food security, water supply, human security, and economic growth. These risks are projected to increase with global warming of 1.5 degree Celsius and even further with two degree Celsius.[19] Climate-related risks vary across regions, depending on the magnitude and rate of global warming, geographical location and levels of development, as well as a country's adaptation and mitigation measures and their implementation.[20]

The BIMSTEC region experiences huge economic losses due to disasters resulting from changes in climatic conditions, such as strong winds, storm surges, tsunamis and floods. Figure 4 shows the so-called "unfortunate events" due to climate-change-related calamities, as well as deaths and financial losses. The highest number of "unfortunate events" have occurred in India, the highest deaths in Myanmar and the largest economic losses in India and Thailand. The lowest economic losses were in Nepal and Bhutan. These figures indicate that a lower level of industrialisation, i.e. low emissions and more greenery, ensures a lower risk of being affected by natural calamities. Between the two groups of extremes—India and Thailand on the high end and Bhutan and Nepal on the low end—lie Bangladesh, Sri Lanka and Myanmar, with moderate occurrences of extreme events, deaths and economic losses.

**Figure 1: The Economic Cost of Natural Disasters (10-Year Moving Average 2005–14)**
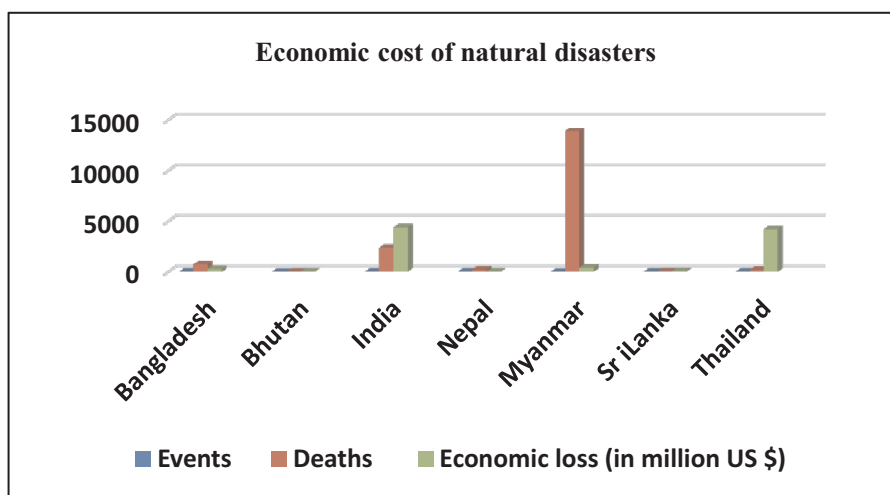


*Source: EM-DAT, 2014[21]*

The BIMSTEC economies rely on industrialisation for steady growth and development. However, while their carbon dioxide ($CO_2$) and greenhouse gases (GHG) emissions have been on a steady rise in recent years (see Figure 4), the levels are still insignificant compared to those of the developed countries (see figures 2 and 3). India is an outlier in the bloc, with high carbon and GHG emissions.

**Figure 2: Carbon Emission by Countries (in Megatons), 2017**
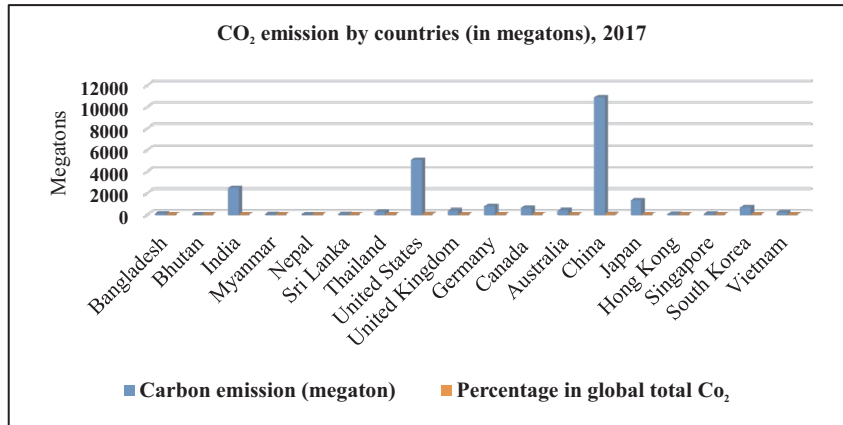


*Source: EDGAR/IEA Database[22]*
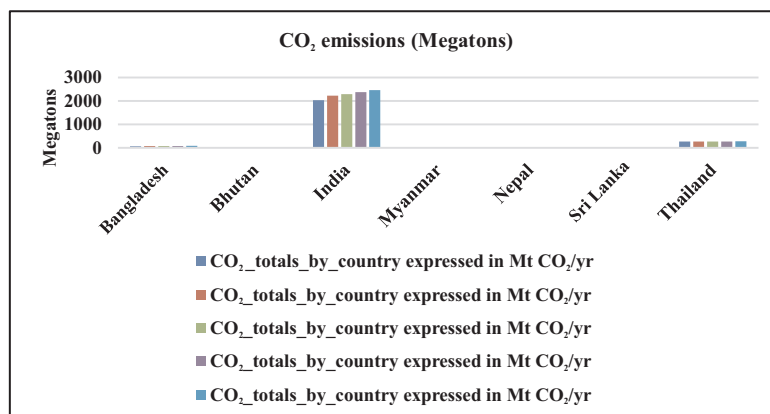
**Figure 3: Total GHG Emissions by the BMSTEC Members (in Megatons), 2017**
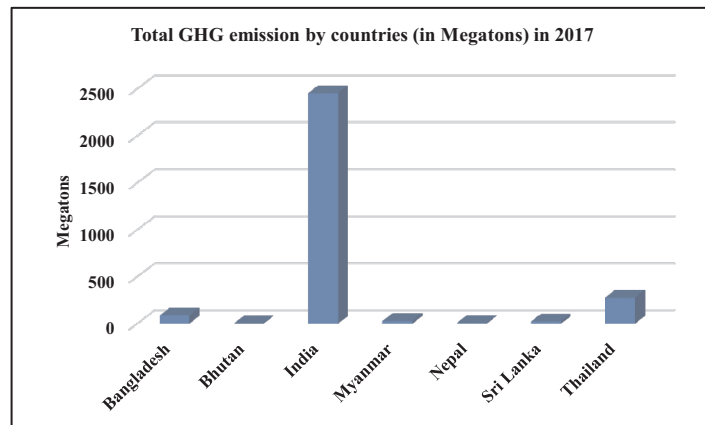


*Source: EDGAR/IEA database[23]*

**Figure 4: Total $CO_2$ Emission by the BIMSTEC Members (in Megatons), 2013–17**



*Source: EDGAR/IEA database[24]*

The BIMSTEC region's contribution to GHG emissions is on the rise. For example, GHG emissions increased by 23.6 percent, 44.9 percent, 44.8 percent, 11.5 percent, 18 percent, 9.2 percent and 18.2 percent during 2005–12 for Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka and Thailand, respectively.[25]

## Bangladesh

Bangladesh is one of the fastest-growing countries in the BIMSTEC region, with an 8.1 percent growth in its Gross Domestic Product (GDP)[26] in 2018-19. The country is densely populated, with more than 166 million people living in an area of 147,570 sq. km. While Bangladesh's carbon emission was insignificant in 2017—only 0.23 percent of the global emissions—it has been steadily increasing, from 68.59 megatons in 2013 to 84.55 megatons in 2017, a 23-percent increase within five years.[27]

The power sector was the top emitter of $CO_2$ in 2017. With increasing GHG emissions, over 80 percent of Bangladesh's population is potentially exposed to floods, earthquakes and droughts, and about 70 percent to cyclones.[28] The south and south-eastern parts of the country are frequently affected by tropical cyclones, and the entire coastal belt faces salinity problems. The north and north-western parts, meanwhile, suffer from extreme high temperatures. Salinity intrusion adversely affects fisheries, and irregular weather conditions damage agricultural production, both affecting food and water security.

## Bhutan

With the lowest population size (0.81 million), lowest GDP size (2.4 million) and highest happiness index (5.01) in the region (see Table 1), Bhutan emitted only 1.45 megatons of $CO_2$ in 2017.[29] The highest emissions were by the agriculture sector, which contributed 60 percent of all emissions, followed by the power sector at 11 percent. The transport and construction sectors contributed the least, at nine percent and one percent, respectively.

In Bhutan, the main source of water is glacial lakes and melting snow. An increase in carbon emission leads to increased temperature, making the glaciers melt faster. This poses a danger to downstream agriculture and leads to food insecurity, public infrastructure damage, and poverty.

## India

India is the largest country in the region in terms of both population and GDP. The country grew by 6.86 percent in 2017 (see Table 1). Its total $CO_2$ emission in 2017 was 2454.77 megatons, the highest in the BIMSTEC region, of which 47 percent came from the power and energy sector, followed by agriculture, transport and construction sectors.[30] India is the world's fourth-largest emitter of $CO_2$.[31] The high GHG emissions contribute to climate change, exacerbating issues such as extreme heat, reduced rainfall, a decline in groundwater levels, long droughts, the melting of the Himalayan glaciers, coastal flooding and internal migration. These, in turn, affect crop yields, agricultural production, and the availability of water, energy security and health.

## Myanmar

Myanmar is the fourth-largest county in the region in terms of population size and fifth-largest in terms of GDP (see Table 1). Its total carbon emission in 2017 was 28.46 megatons,[32] which was only 0.98 percent of total emissions from BIMSTEC countries. Myanmar's transport sector was the highest contributor with 39 percent of total emissions, followed by power and energy which contributed 18 percent of all emissions and construction industries which contributed 12 percent of all emissions. Climate change due to increase emissions causes irregular rainfall and extreme weather conditions in Myanmar. This has resulted in flooding as well as droughts and forest fires, causing a marked decline in the country's major cash crops and livestock population. Cyclones lead to loss of shrimping rafts and fishing vessels, while droughts cause disease outbreaks. There is also the problem of salinity intrusion, which contaminates water.

## Nepal

Nepal has the lowest per-capita GDP and second-lowest total GDP in the region, at US$849 and US$21.3 billion in 2017, respectively (see Table 1). The country's GHG emissions per capita are amongst the lowest in the world. In 2017, its total carbon emission was 8.22 megatons,[33] with the transport sector contributing the most, at 35 percent, and the power sector the least, at one percent. The major impact of climate change in the country is floods: the glacial lake outburst flood and the *'bishyari'* that occurs in the mid-hills after cloudbursts. Both these types of floods are lethal because they are random and cannot be predicted precisely.[34] Nepal also experiences droughts, which are slow and widespread and affect farming, leading to food deficits. Further, the increased frequency of droughts, coupled with the extended forest cover, triggers forest fires, affecting livestock rearing and glacial melting. Erratic rainfalls also affect the drinking water supply system and hill agriculture.

## Sri Lanka

Despite its relatively lower GDP size (fourth in the region), Sri Lanka's low population (sixth in the region) makes it the second-richest country in the BIMSTEC, with a per-capita income of US$3,842.3 in 2017 (see Table 1). The country's total GHG emission constitutes less than 0.1 percent of global emissions.[35] In 2017, Sri Lanka emitted 23.98 megatons of $CO_2$,[36] with the transport sector being the largest emitter, accounting for 40 percent of its total emission, and the power and energy sector contributing 32 percent. Sri Lanka's economy depends on climate-sensitive sectors such as agriculture and forestry. As such, the country faces serious threats due to deforestation, e.g. reduced oil fertility, productivity and natural-water supply.

## Thailand

Within the BIMSTEC region, Thailand has the highest per-capita income, the highest HDI, second-highest total GDP size and the third-highest population size (see Table 1). Its total carbon emission was approximately 279.30 megatons in 2017, the second highest in the region. The country's GHG emissions were only 0.84 percent of the global emissions in 2012, and 0.64 percent in 2015.[37] In 2017,

about 33 percent of its total emissions originated from the power and energy sector and 24 percent from the transport sector (see Table 2). Thailand is also affected by extreme weather events such as tropical storms, floods and droughts, which have resulted in deforestation, a reduction in agricultural production and a decline in fisheries.

## INITIATIVES BY THE BIMSTEC COUNTRIES

At the 2015 Conference of Parties (COP 21) in Paris, the UNFCCC adopted the Paris Agreement on climate change. Prior to the conference, developed and developing countries made their national post-2020 climate-action commitments, called the Intended Nationally Determined Contributions (INDCs). Under the UNFCCC's Paris Agreement, the BIMSTEC members made commitments in their INDCs (see Table 3).

## CLIMATE CHANGE AND THE SDGs

Climate change has traditionally been handled within the UNFCCC. However, since addressing climate change is crucial to the sustainable development of all countries, global leaders have devised and included a specific goal on climate change in the SDGs. SDG-13 on climate action calls for taking urgent steps to combat climate change and its impacts.[38] Additionally, there are a number of other SDGs that are relevant to climate change (see Table 4).

Climate change has the potential to hamper progress towards SDGs, such as poverty eradication, zero hunger, health, water, clean energy, infrastructure, economic growth, sustainable cities and the overall well-being of human society. Climate change is also likely to increase the cost of implementing SDGs. Since the BIMSTEC members are committed to implementing the SDGs by 2030, they must prioritise climate-change challenges.

**Table 2: Sources of $CO_2$ Emission by Country and Sector (in Megatons), 2017**

| | SECTOR-WISE CARBON EMISSION (MT), 2017 | | | | | |
|---|---|---|---|---|---|---|
| | Power and Energy Sector | Construction sector | Transport sector | Agriculture and other sectors | Other industries | Total |
| Bangladesh | 35.50 | 11.47 | 9.82 | 9.79 | 17.96 | 84.55 |
| Bhutan | 0.15 | 0.02 | 0.14 | 0.87 | 0.28 | 1.45 |
| India | 1160.23 | 188.61 | 276.84 | 207.37 | 621.72 | 2455 |
| Myanmar | 5.28 | 3.50 | 11.14 | 1.96 | 6.57 | 28.46 |
| Nepal | N/A | 1.41 | 2.90 | 1.05 | 2.86 | 8.22 |
| Sri Lanka | 7.60 | 1.17 | 9.75 | 2.11 | 3.36 | 23.98 |
| Thailand | 93.30 | 18.78 | 66.46 | 24.84 | 75.91 | 279.30 |

*Source: EDGAR/ IEA Database*[39].

### Table 3: BIMSTEC Commitments and Progress Made

| Economy | Commitment | Progress on commitment |
| --- | --- | --- |
| **Bangladesh** | Plans to cut greenhouse gas emissions by 5 percent by 2030 compared with business as usual levels in the power, transport and energy sectors, rising to 15 percent on international support. | Bangladesh has already developed considerable infrastructure and capability to address these climate change-induced vulnerabilities through disaster risk management and climate change adaptation. In order to accelerate the present domestic initiatives to adapt to climate change and secure lives and livelihoods of people, the Government has allocated nearly USD 400 million to Bangladesh Climate Change Trust Fund (BCCTF). As of June 2015 BCCTF has funded over 236 projects of which 41 have already been implemented. Furthermore, Bangladesh has prepared a roadmap towards formulating a comprehensive National Adaptation plan (NAP) with a view to reducing vulnerability to the impacts of climate change by building adaptive capacity and resilience. |
| **Bhutan** | Plans to remain carbon neutral as set out in 2009. Repeats commitment to keep 60 percent of territory forested. | The forest monitoring and inventory system is developed in conjunction with a national forest monitoring system for REDD+ that monitors and assesses forest cover. Mitigation and adaptation actions within this INDC is considered and integrated in the preparation of the 12th Five Year Development Plan (2018-2023). |
| **India** | Aims to cut greenhouse gas emissions for each unit of GDP by 33 percent to 35 percent from 2005 levels by 2030. Targets 40 percent of electricity from non-fossil fuel sources by that date. Estimated cost USD 2.5 trillion. | The emission intensity of GDP has decreased by 12 percent between 2005 and 2010. The energy intensity of the economy has decreased from 18.16 goe (grams of oil equivalent) per Rupee of GDP in 2005 to 15.02 goe per Rupee GDP in 2012. Between 2002 and 2015, the share of renewable grid capacity has increased over 6 times, from 2% (3.9 GW) to around 13 percent (36GW). Electricity generation capacity addition of about 10,000 MW between 2005 and 2012. |

| | | |
|---|---|---|
| **Myanmar** | By 2030, Myanmar's permanent forest estate (PFE) target is to increase 40 percent national land area as forest land; and to realize a 20 percent electricity saving potential by 2030. | Ministries are streamlining adaptation to climate change in their planning. The agriculture sector is implementing climate smart agriculture approaches through implementation actions such as legume crops diversification, measures in the agro-forestry sector and systematic control of soil quality and irrigation water. |
| **Nepal** | Aims to reduce dependency on fossil fuels by 50 percent by 2050 and achieve 80 percent electrification through renewable energy sources with appropriate energy mix. Plans to maintain 40 percent of the total area of the country under forest cover. | Nepal's adaptation needs for future is envisioned through the National Adaptation Plans (NAPs). Nepal has also made significant progress in implementing adaptation actions as prioritized in its NAPA to help adapt and build resilience to climate change impacts. The LAPA Framework ensures the process of integrating climate change adaptation and resilience from local-to-national level planning processes that are bottom-up, inclusive, responsive and flexible. |
| **Sri Lanka** | Aims to reduce the GHG emissions against Business-As-Usual (BAU) scenario by 20 percent in energy sector (4 percent unconditionally and 16 percent conditionally) and by 10 percent in other sectors (transport, industry, forests and waste) by 3 percent unconditionally and 7 percent conditionally by 2030. Sri Lanka intends to reduce its GHG emissions from the sectors of Transport, Waste, Industries and Forest in total 10 percent as 3 percent unconditional and 7 percent conditional against BAU scenarios. | Sri Lanka has already taken initiatives of integrated planning through the NAP and Energy Planning processes which should be extended to other sectors vertically and horizontally. |

| Thailand | Thailand intends to reduce its greenhouse gas emissions by 20 percent from the projected business-as-usual level by 2030. The level of contribution could increase up to 25 percent, subject to adequate and enhanced access to technology development. To achieve a 20 percent share of power generation from renewable sources, to achieve a 30% share of renewable energy in the total final energy consumption and to reduce the country's energy intensity by 30 percent below the 2010 level by 2036. | Thailand has already achieved 4 percent of GHG emission reduction from the projected 2020 BAU and is well on track to achieving the 7 percent target pledged as voluntary domestic efforts by 2020. A vehicle tax scheme based on $CO_2$ emission was approved and is active from 2016. |

*Source: Based on INDC submissions to UNFCCC[40].*

## Table 4: SDGs Relevant to Climate Change

| SDG | SDG Target |
|---|---|
| **SDG1: No Poverty** | *1.5* Build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters |
| **SDG 2: Zero Hunger** | *2.4* Ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality |
| **SDG 3: Good Health and Wellbeing** | *3.9* Substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination |
| **SDG 6: Clean Water and Sanitation** | *6.1* Achieve universal and equitable access to safe and affordable drinking water for all<br><br>*6.2* Achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations<br><br>*6.3* Improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally<br><br>*6.5* Implement integrated water resources management at all levels, including through trans boundary cooperation as appropriate<br><br>*6.6* Protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes |

| | |
|---|---|
| **SDG 7: Affordable and clean energy** | *7.1* Ensure universal access to affordable, reliable and modern energy services |
| | *7.2* Increase substantially the share of renewable energy in the global energy mix |
| | *7.3* Double the global rate of improvement in energy efficiency |
| | *7.a* By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology |
| **SDG 8: Decent work and Economic Growth** | 8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavor to decouple economic growth from environmental degradation, in accordance with the 10-Year Framework of Programmes on Sustainable Consumption and Production, with developed countries taking the lead |
| **SDG 9: Industry, Innovation and Infrastructure** | 9.4 Upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities |
| **SDG 11: Sustainable Cities and Communities** | *11.5* By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations |
| | 11.6 Reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management |

| | |
|---|---|
| | **11.b** By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels |
| **SDG 12: Responsible Consumption and Production** | 12.2 Achieve the sustainable management and efficient use of natural resources<br><br>12.3 Halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses<br><br>12.4 Achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment<br><br>12.5 Substantially reduce waste generation through prevention, reduction, recycling and reuse<br><br>12.8 By 2030 ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature |
| **SDG 13: Climate Action** | **13.1** Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries<br><br>**13.2** Integrate climate change measures into national policies, strategies and planning<br><br>**13.3** Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning |

| | |
|---|---|
| | **13.a** Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly $100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible<br><br>**13.b** Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities |
| **SDG 14: Life below water** | **14.1** By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution |
| **SDG 15: Life on Land** | **15.1** By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and dry lands, in line with obligations under international agreements<br><br>15.2 Promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally<br><br>15.3 Combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world<br><br>**15.4** By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development |

| | **15.5** Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened specie |
| --- | --- |
| | **15.9** By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts |
| | **15.a** Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems |

*Source: United Nations, 2015.*

## RECOMMENDATIONS

Given the nature of climate-induced problems faced by countries in the region, policymakers should undertake both adaptation and mitigation measures. Most countries in the region are severely affected by climate change despite being insignificant emitters of GHG, and adaptation is the most feasible approach for them in dealing with climate change. However, India, whose emission level is higher than the rest of the countries in the region, must focus on mitigation.

Climate change is cross-border in nature and solutions also must be. To combat the impact of climate change and achieve the SGDs, all countries must formulate far-reaching and action-oriented policies. The following paragraphs outline suggested measures for the BIMSTEC states.

*First,* adaptation measures in the region must be scaled up to enhance adaptive capacity, strengthen resilience and reduce vulnerability to climate change, as laid out in the Global Goal on Adaptation (GGA) in the Paris Agreement. NAPs should be implemented through participatory measures, and adaptation-related institutional arrangements should be strengthened—at the global, regional and national levels—to achieve the GGA.

*Second,* the higher polluting countries in the region must work towards reducing their GHG emissions, to help achieve a key objective of the Paris Agreement, i.e. keeping the average increase in global temperature well below 1.5 to two degree Celsius. Green technology and clean energy are crucial in meeting mitigation goals. Thus, substantial investments must be made in renewable energy to make agriculture and manufacturing greener.

*Third,* the implementation of mitigation and adaptation measures require significant financial support from developed countries. Such support should be based on the scientific analysis of requirements, with funds being provided based on the scale and extent of damage due to global warming under various scenarios.

*Fourth,* the BIMSTEC members must consider trans-boundary action and collaboration on mitigation and adaptation by setting up a separate fund amongst themselves to address the impacts of climate change on the lives and livelihoods of people. This fund should be spent only for emission reduction, scaling up economic loss reduction, and in the aftermath of climate-related disasters. A cross-governmental approach to adaptation and mitigation planning can ensure that such a fund yields climate-resilient development. An expert group of the relevant ministries, agencies and departments can be brought together to create an appropriate plan of action and ensure proper monitoring. The group can further involve public and private stakeholders to share their respective experiences and make climate financing more useful.

*Finally,* countries within the Bay of Bengal region that are most vulnerable to climate change must incorporate the broader 2030 Agenda for Sustainable Development in their development plans, to achieve climate-related objectives in a more systematic way. Such an exercise can help demonstrate how various SDGs are interconnected and how national goals are aligned with the SDGs. This process can provide clarity on the responsibilities of various stakeholders, such as policymakers, the private sector, non-government organisations, rights-based organisation, development partners, and the media. Further, it can ensure better allocation of resources for specific climate-related goals and targets. ⊕RF

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## ENDNOTES

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