Backgrounder:

Regional impacts + the 1.5°C climate target – Asia

India

India's NDC is rated by Climate Action Tracker as "2°C compatible" - If all government targets were within this range, warming could be held below 2°C, but temperatures will still be too high for the 1.5°C limit set in Paris.

- India has ratified the Paris Agreement, and pledged to reduce domestic emissions by 33%–35% below 2005 levels by 2030, increase the share of non-fossil based energy resources to 40% of installed electric power capacity by 2030, and to create an additional carbon sink of 2.5–3 GtCO2e through additional forest and tree cover by 2030.
- India has a long-term goal of keeping per capita emissions below those of the developed world.

Projected impacts across India

With more than 1.5°C of global warming:

- Under a 2°C temperature rise, Kolkata in India could experience temperature conditions equivalent to its deadly 2015 heatwaves every year.
- Under 2°C of temperature rise, annual runoff in the Ganges river basin is expected to decrease by about 20%.[1]
- Up to 30% of humid tropical forests in central Sumatra, Sulawesi, India, and the Philippines could be threatened by climate induced loss under 4°C of warming.[2]

Projected impacts across South Asia

With more than 1.5°C of global warming:

- Rising temperatures, drought, and unstable weather patterns have serious implications for global food production. Every degree of global temperature rise reduces global yields of wheat by 6.0%, rice by 3.2%, maize by 7.4%, and soybean by 3.1%.

- Globally, agricultural yields fall rapidly between 1°C -3°C of warming. Once local temperatures reach 3°C above pre-industrial levels, all crops are negatively affected,

[1] Turn down the heat: why a 4°C warmer world must Be avoided (2012), The World Bank, p.xvi.

[2] Turn down the heat: why a 4°C warmer world must Be avoided (2012), The World Bank, p.51.

wherever they are in the world - including in temperate regions.[3] Fish species go locally extinct, with serious impacts on fisheries.[4]

- Glaciers in the high mountains of Asia play an important role in supplying water to millions of people living downstream. 800 million people are at least partly dependent on meltwater from glaciers. Around a third of the ice stored in these glaciers will be lost by the end of the century under 2°C temperature rise.

- Under a high emissions scenario (RCP8.5) where temperatures rise 4°C-6°C by the end of the century, Bangladesh could see about 6.7 million climate migrants by 2050. This is about 3.4% of the current population.[5]

- Under a high emissions scenario (RCP8.5) where temperatures rise 4°C-6°C by the end of the century, and unequal development practices[6], South Asia could see about 35.7 million climate migrants by 2050. By the middle of the century, climate migrants are predicted to make up about 23% of all internal migrants in South Asia.[7]

- A 4°C temperature rise is estimated to lead to sea level rise of nearly nine metres over several hundred years as it triggers melting of the Antarctic and Greenland ice sheets. This level of sea level rise would inundate all the world's coastal cities. 470 to 760 million people currently live in at-risk areas, including 145 million people in China. India, Bangladesh, Vietnam, Indonesia, Japan, the Philippines, Thailand, and Myanmar all have more than 10 million people living in areas at risk.

Benefits of limiting temperatures to 1.5°C:

- 4.5% of the population in Asian river basins will have better water availability and greater food security, compared to higher levels of temperature rise.

- By 2100, 90% of the world's population,[8] particularly poor countries in Africa, Asia, and Latin America, would be likely to experience reduced economic damages compared to those at warming at 2°C.

China

China's NDC is rated by Climate Action Tracker as "highly insufficient" and "not at all consistent" with holding temperatures to 2°C by the end of the century as promised by the Paris Agreement, let alone the 1.5°C limit. China's current pledges are consistent with the world warming by up to 4°Cby 2100.

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[3] IPCC, AR5, WGII, Chapter 7, p.497.

[4] IPCC, AR5, WGII, Chapter 7, p.508.

[5] Groundswell: Preparing for Internal Climate Migration (2018), World Bank Group, p.148.

[6] Unequal development: "inequality remains high, leaving developing regions highly vulnerable to climate change and with limited adaptive capacity. Urbanisation rates are also high across low and middle income countries." - Groundswell: Preparing for Internal Climate Migration (2018), World Bank Group, p.9.

[7] Under the pessimistic reference scenario - Groundswell: Preparing for Internal Climate Migration (2018), World Bank Group, p.89.

[8] Large potential reduction in economic damages under UN mitigation targets (208), Nature, p.552.

- China has ratified the Paris Agreement, and has an unconditional target to peak its carbon emissions by 2030, as well as reduce the carbon intensity of GDP to 60-65% below 2005 levels by 2030.

- With current policies, China is on track to meet its 2020 pledge and its NDC targets, but this will still be slightly higher current emissions levels.

Projected impacts across China

With 1.5°C of global warming:

- Coastal areas in China - home to 12 million people - are at risk of permanent inundation as a result of sea level rise.

- The average annual runoff from the Yiluo River catchment in northern China will decrease by about a fifth, impacting the 7.7 million people that rely on the water source.

With more than 1.5°C of global warming:

- Under 4°C of warming, maize and wheat production in China is expected to decrease by 8% and 3% respectively for every degree rise in global temperature.

- More than 20 million people in Shanghai currently live in areas that are likely to be flooded as a result of sea level rise under a 4°C temperature rise.

South Korea

South Korea's NDC is rated by Climate Action Tracker as "highly insufficient" - well below what is needed to reach the 1.5°Ctemperature target contained in the Paris Agreement. Current South Korean climate pledges are consistent with the world warming by 3°C- 4°C

- South Korea has ratified the Paris Agreement, and pledged to reduce domestic emissions by 37% below BAU by 2030.

Japan

Japan's NDC is rated by Climate Action Tracker as "highly insufficient" - well below what is needed to reach the 1.5°Ctemperature target contained in the Paris Agreement. Current Japanese climate pledges are consistent with the world warming by 3°C- 4°C.

- Japan has ratified the Paris Agreement, and pledged to reduce domestic emissions by 26% below 2013 levels by 2030, which translates to a 18% reduction from 1990 levels.

- Japan has a long-term goal to reduce emissions, 80% by 2050 (base year not specified).

Projected impacts across Asia

With 1.5°C of global warming:

- 46 million people[9] currently live in areas that are at risk of permanent inundation from sea level rise if temperatures rise by 1.5°C, equivalent to about 70% of the number[10] of people currently displaced from their homes globally by war, instability or human rights violations. About half of this at-risk population is in China, Vietnam or Japan.

- Glaciers in the high mountains of Asia play an important role in supplying water to millions of people living downstream. 800 million people are at least partly dependent on meltwater from glaciers. Around a third of the ice stored in these glaciers will be lost by the end of the century under 2°C temperature rise.

- Rising temperatures, drought, and unstable weather patterns have serious implications for global food production. Every degree of global temperature rise reduces global yields of wheat by 6.0%, rice by 3.2%, maize by 7.4%, and soybean by 3.1%.

With more than 1.5°C of global warming:

- Globally, agricultural yields fall rapidly between 1°C -3°C of warming. Once local temperatures reach 3°C above pre-industrial levels, all crops are negatively affected, wherever they are in the world - including in temperate regions.[11] Fish species go locally extinct, with serious impacts on fisheries.[12]

- By the end of the century, 29% of the global population face 'beyond tolerable' risk in at least two out of the three main sectors - water, energy and food, and environment. More than nine out of ten people that are exposed and vulnerable are in Africa and Asia, with about half in south Asia alone.

- A 4°C temperature rise is estimated to lead to sea level rise of nearly nine metres over several hundred years as it triggers melting of the Antarctic and Greenland ice sheets. This level of sea level rise would inundate all the world's coastal cities. 470 to 760 million people currently live in at-risk areas, including 145 million people in China. India, Bangladesh, Vietnam, Indonesia, Japan, the Philippines, Thailand, and Myanmar all have more than 10 million people living in areas at risk.

Indonesia

Indonesia's NDC is rated by Climate Action Tracker as "highly insufficient" - well below what is needed to reach the 1.5°Ctemperature target contained in the Paris Agreement. Current Indonesian climate pledges are consistent with the world warming by 3°C- 4°C

- Indonesia has ratified the Paris Agreement, and it includes a unilateral reduction target of 29% below BAU emissions by 2030, plus a conditional target of up to 41% reductions below BAU with sufficient international support.

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[9] These are median estimates. The ranges are 31.87–68.83 for 1.5°C and 31.99–78.38 for 2C. The estimates are based on the 2010 population.

[10] By the end of 2016, 65.6 million people had been displaced from their homes as a result of persecution, conflict, violence, or human rights violations. http://www.unhcr.org/5943e8a34.pdf

[11] IPCC, AR5, WGII, Chapter 7, p.497.

[12] IPCC, AR5, WGII, Chapter 7, p.508.

Projected impacts across South-East Asia

With 1.5°C of global warming:

- Even with 1.5°C of warming, the intensity of heavy rainfall in urban areas in South-East Asia could increase 7% by 2100.

- Rising temperatures, drought, and unstable weather patterns have serious implications for global food production. Every degree of global temperature rise reduces global yields of wheat by 6.0%, rice by 3.2%, maize by 7.4%, and soybean by 3.1%.

- By the end of the century, nine out of ten of coral reefs are at risk from severe degradation from 2050 onwards. If warming is limited to 1.5°C, this declines to 70% by 2100 - meaning that some coral reefs have a chance of survival. At the moment, coral reefs provide about US$30 billion annually to the world economy, in coastal protection, building materials, fisheries and tourism.

With more than 1.5°C of global warming:

- Globally, agricultural yields fall rapidly between 1°C -3°C of warming. Once local temperatures reach 3°C above pre-industrial levels, all crops are negatively affected, wherever they are in the world - including in temperate regions.[13] Fish species go locally extinct, with serious impacts on fisheries.[14]

- By 2040, per capita crop production in South-East Asia could fall by one third under 2°C of warming.

- Under 2°C of warming, the intensity of heavy rainfall in urban areas of South-East Asia could reach 10% over the 21st century.

- If temperatures rise to 2°C, virtually all the world's tropical coral reefs are at risk of severe degradation and collapse. Coral reefs account for 10 to 12% of the fish caught in tropical countries, and 20 to 25% of the fish caught by developing nations.[15] They provide food, income and protection from storms for millions of people along coastal areas.

- Up to 30% of humid tropical forests in central Sumatra, Sulawesi, India, and the Philippines could be threatened by climate induced loss under 4°C of warming.[16]

[13] IPCC, AR5, WGII, Chapter 7, p.497.

[14] IPCC, AR5, WGII, Chapter 7, p.508.

[15] IPCC, AR5, WGII, CC Boxes, p.99.

[16] Turn down the heat: why a 4°C warmer world must Be avoided (2012), The World Bank, p.51.

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