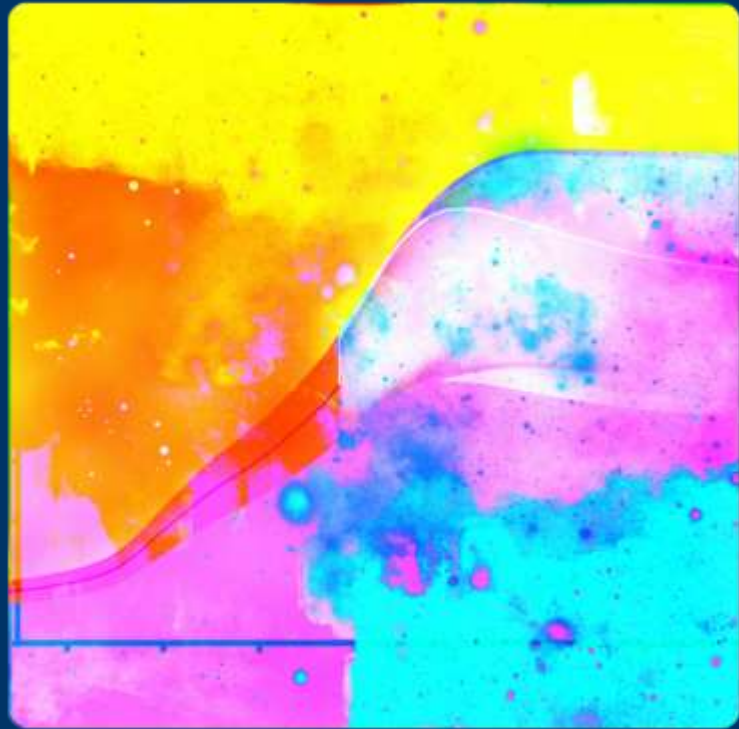


IPCC Special Report on 1.5°C regional perspectives - Asia



Pathways with 1.5°C Global Warming in Asia

Mikiko Kainuma
Institute for Global Environmental Strategies (IGES)

5th Dec. 2018
at COP24 WMO/IPCC Pavilion

Where are we now?


- Already seeing consequences for people, nature and livelihoods
- At current rate, would reach 1.5°C between 2030 and 2052
- Past emissions alone do not commit the world to 1.5°C

Ashley Cooper / Aurora Photos

ipcc

INTERGOVERNMENTAL PANEL ON climate change





Greenhouse gas emissions pathways

- Limiting warming to 1.5°C would require changes on an unprecedented scale
 - Deep emissions cuts in all sectors
 - A range of technologies
 - Behavioural changes
 - Increased investment in low carbon options



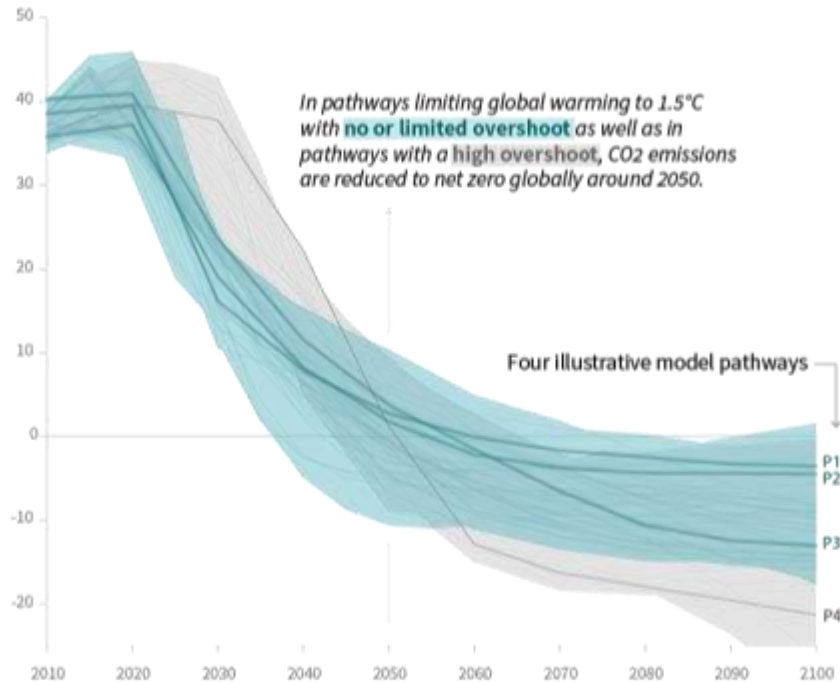
Aligning Ambition and Actions

- National pledges are not enough to limit warming to 1.5°C (D1 SPM)
- Progress in renewables would need to be mirrored in other sectors.
- The solutions required to limit warming to 1.5°C are available. What is required is to speed and scale up implementation.
- These solutions confer synergies with sustainable development

SPM3a | Global emissions pathway characteristics

Global total net CO₂ emissions

Billion tonnes of CO₂/yr



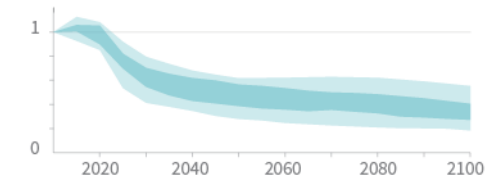
Timing of net zero CO₂
Line widths depict the 5-95th percentile and the 25-75th percentile of scenarios



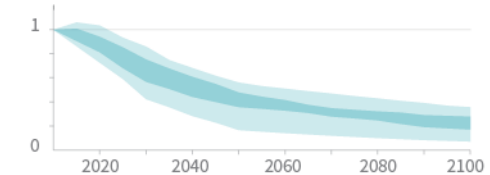
Non-CO₂ emissions relative to 2010

Emissions of non-CO₂ forcings are also reduced or limited in pathways limiting global warming to 1.5°C with **no or limited overshoot**, but they do not reach zero globally.

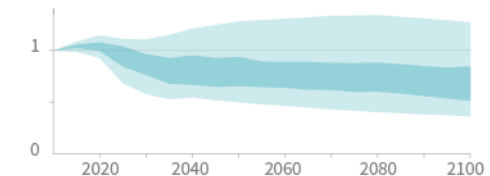
Methane emissions



Black carbon emissions



Nitrous oxide emissions



ipcc

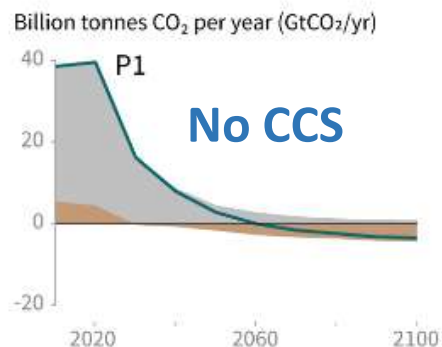
INTERGOVERNMENTAL PANEL ON climate change



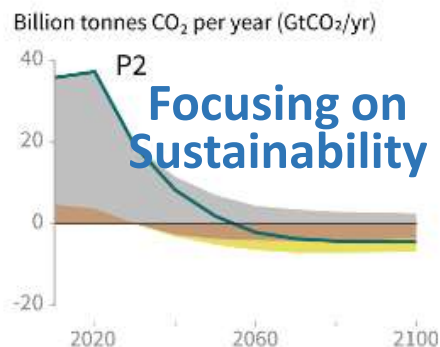
SPM3b | Characteristics of four illustrative model pathways

Breakdown of contributions to global net CO₂ emissions in four illustrative model pathways

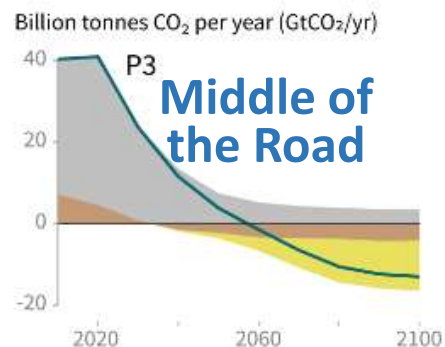
● Fossil fuel and industry ● AFOLU ● BECCS



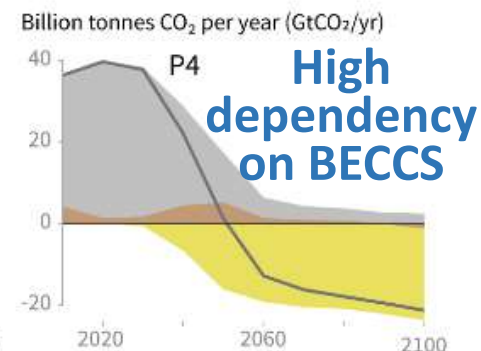
P1: A scenario in which social, business, and technological innovations result in lower energy demand up to 2050 while living standards rise, especially in the global South. A down-sized energy system enables rapid decarbonisation of energy supply. Afforestation is the only CDR option considered; neither fossil fuels with CCS nor BECCS are used.



P2: A scenario with a broad focus on sustainability including energy intensity, human development, economic convergence and international cooperation, as well as shifts towards sustainable and healthy consumption patterns, low-carbon technology innovation, and well-managed land systems with limited societal acceptability for BECCS.



P3: A middle-of-the-road scenario in which societal as well as technological development follows historical patterns. Emissions reductions are mainly achieved by changing the way in which energy and products are produced, and to a lesser degree by reductions in demand.

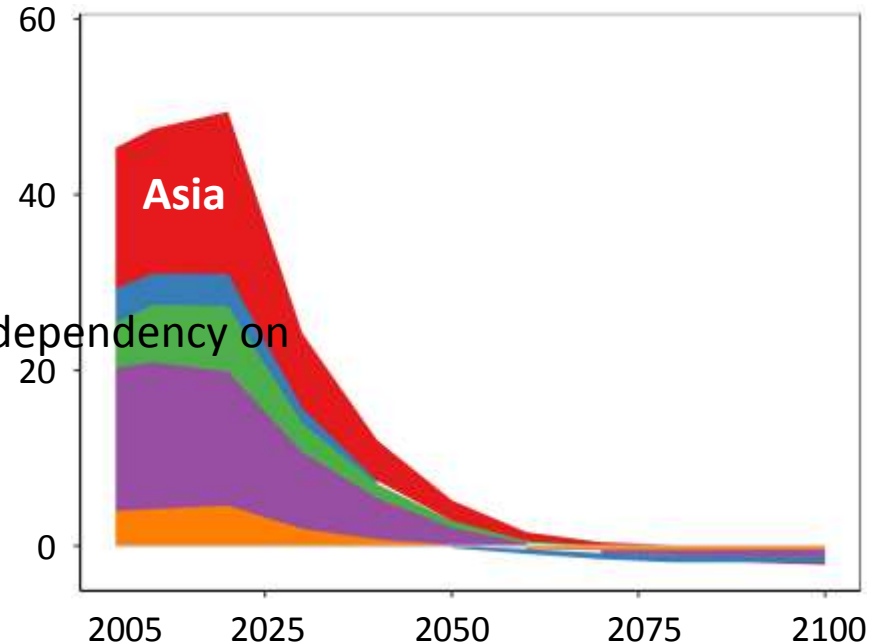
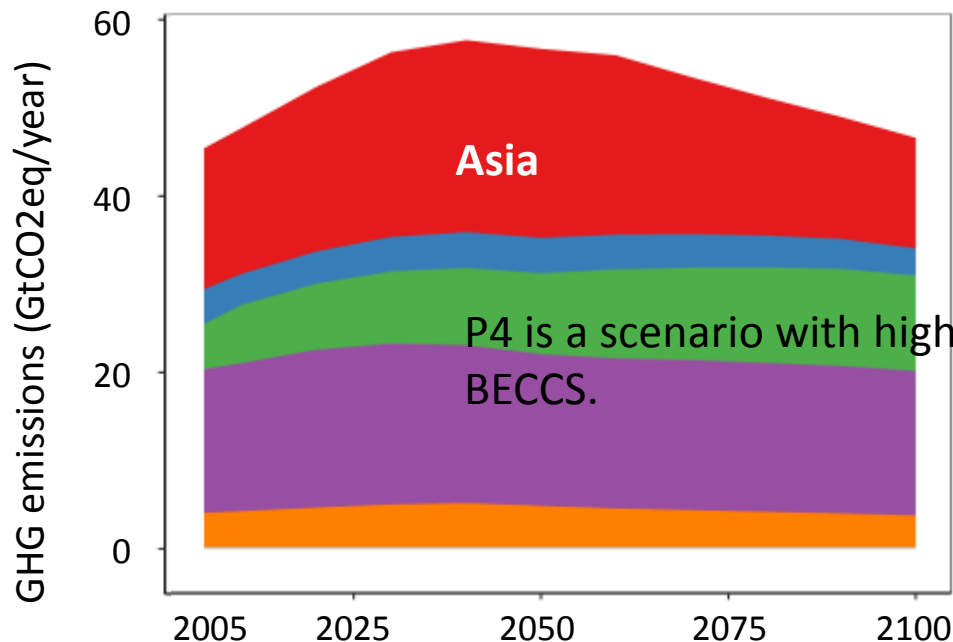


P4: A resource and energy-intensive scenario in which economic growth and globalization lead to widespread adoption of greenhouse-gas intensive lifestyles, including high demand for transportation fuels and livestock products. Emissions reductions are mainly achieved through technological means, making strong use of CDR through the deployment of BECCS.

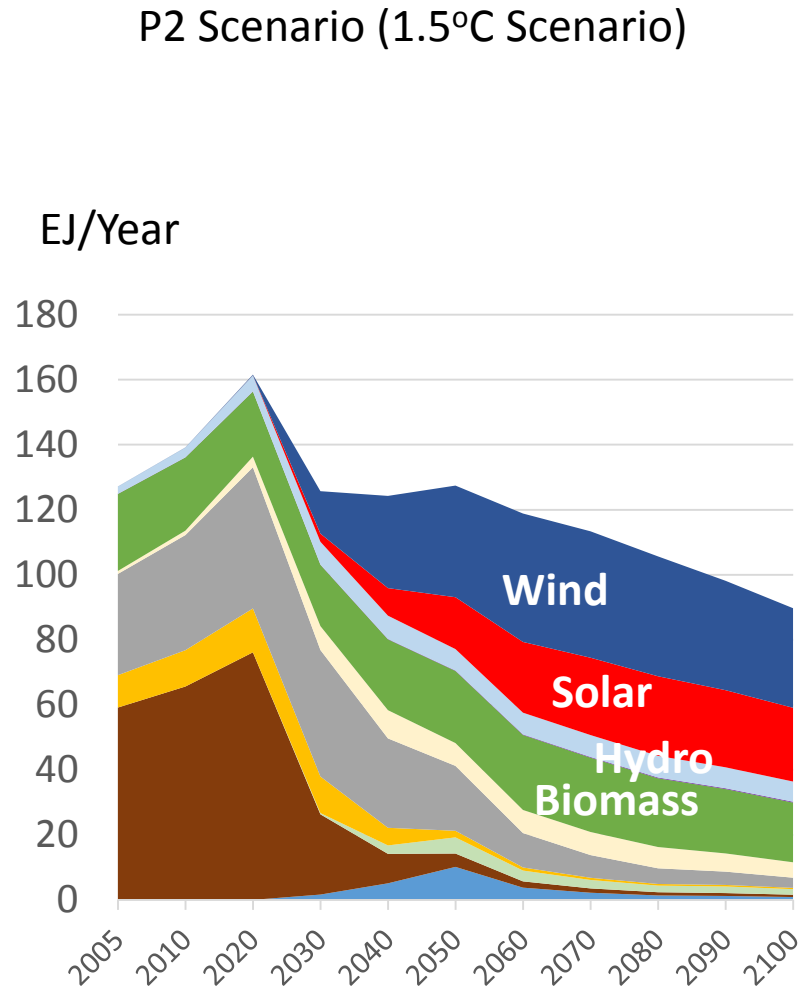
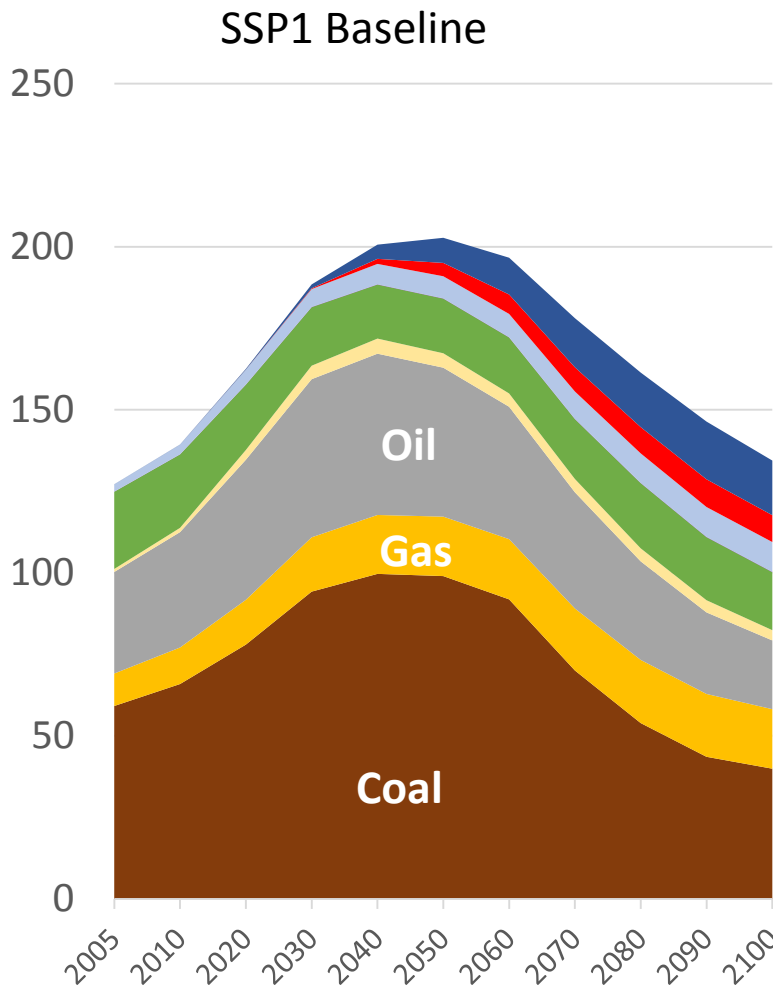
Global Greenhouse Gas Emissions in SSP1 and P2 Scenarios by Region

SSP1 Baseline

P2 Scenario (1.5°C Scenario)



Primary Energy Consumption in SSP1 and P2 Scenarios in Asia



- Coal w/CCS
- Coal w/o CCS
- Gas w/ccs
- Gas w/o ccs
- Oil
- Nuclear
- Biomass
- Geothermal
- Hydro
- Solar
- Wind

Feasibility Indicators for '1.5°C' Consistent Pathways

Characteristics	Indicators to Assess Feasibility of Mitigation Options
Economic	Cost-effectiveness; Absence of distributional effects; Employment & productivity, enhancement potential
Technological	Technical scalability; Maturity; Simplicity; Absence of risk
Institutional	Political acceptability; Legal & administrative feasibility Institutional capacity; Transparency & accountability potential
Socio-cultural	Social co-benefits (health, education); Public acceptance Social & regional inclusiveness; Intergenerational equity Human capabilities
Environmental/ Ecological	Reduction of air pollution; Reduction of toxic waste Reduction of water use; Improved biodiversity
Geophysical	Physical feasibility (physical potentials); Limited use of land; Limited use of scarce (geo)physical resources; Global spread

Source: Table 4.10



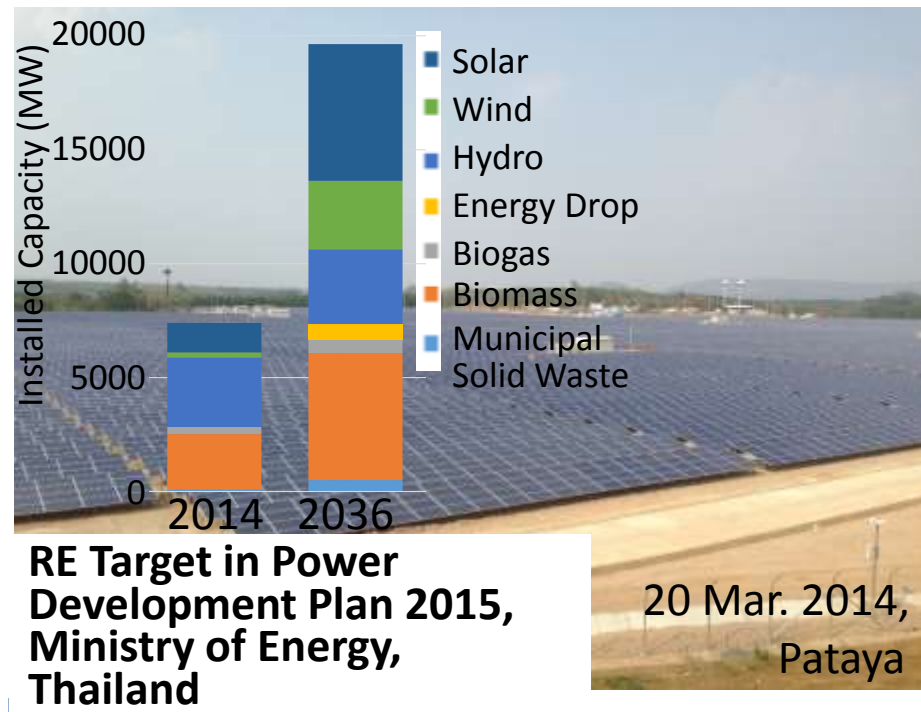
Characteristics of Asia

- **Growing economy**
- **Rapid urbanization and industrialization**
- **Rich in natural resources**
- **Diversity: Economy, Natural resources, Culture, Ways of living, etc.**
- **Living in harmony; co-existence with nature**



Challenges in Asia

- **Avoiding lock-in carbon-based assets**
- **Managing land-use**
- **Enhancing technology development and deployment**
- **Mobilizing finance towards the 1.5°C world**
- **Getting advantage of synergies with sustainable development**



Objective of the 12th FYP (2018-2023) of Bhutan

'Just, Harmonious and Sustainable Society Through Enhanced Decentralisation'

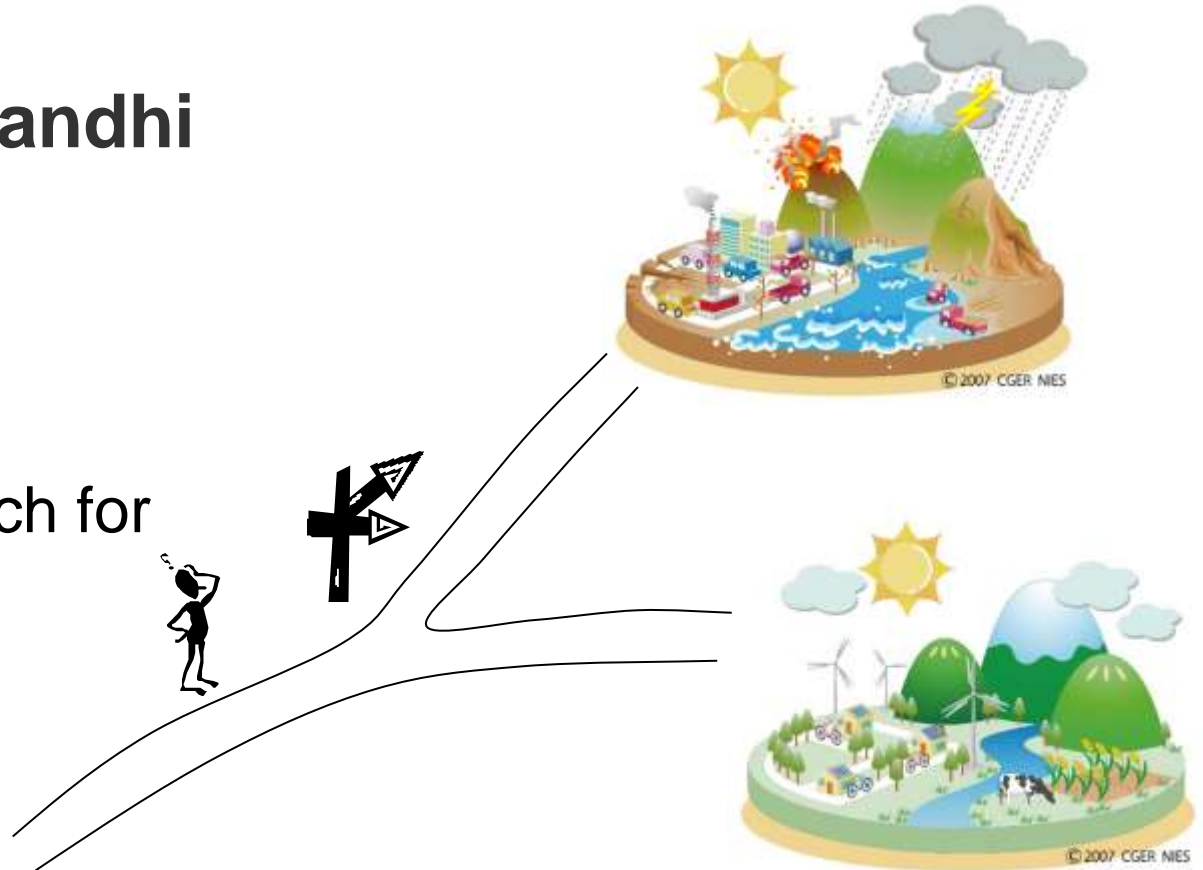
Royal Government of Bhutan, 2018

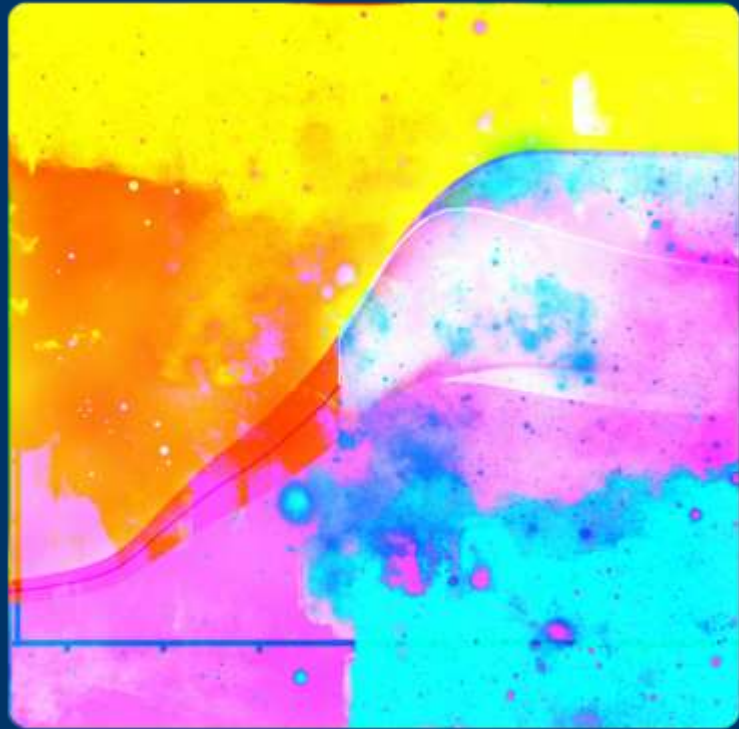
Jan. 2018

“Live simply so that others
may simply live.”


— Mahatma Gandhi

Thank you very much for
your kind attention!





Discussions



Greenhouse gas emissions pathways

- To limit warming to 1.5°C, CO₂ emissions fall by about 45% by 2030 (from 2010 levels)
 - ↳ Compared to 20% for 2°C
- To limit warming to 1.5°C, CO₂ emissions would need to reach 'net zero' around 2050
 - ↳ Compared to around 2075 for 2°C
- Reducing non-CO₂ emissions would have direct and immediate health benefits