



**WORKING PAPER**

**ASSEMBLY — 41ST SESSION**

**EXECUTIVE COMMITTEE**

**Agenda Item 17: Environmental Protection - International Aviation and Climate Change**  
**Agenda Item 18: Environmental Protection - Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)**

**POSITIONS AND RECOMMENDATIONS ON GOALS AND MEASURES FOR INTERNATIONAL AVIATION CO<sub>2</sub> EMISSIONS REDUCTIONS**

(Presented by China)

**EXECUTIVE SUMMARY**

China's civil aviation upholds the green development philosophy and is proactive in addressing international aviation and climate change. China always supports and strives towards the building of a fair and rational international aviation and climate change governance system for win-win results, and advocates acknowledgement and implementation of the principles of equity, common but differentiated responsibilities (CBDR) and respective capabilities in international aviation emissions reductions. China firmly opposes developed countries' attempt to transfer their responsibility for emissions reductions to developing countries and to shirk the international obligations to provide assistance to developing countries. China will work together with other developing countries to resolutely maintain our justified rights and interests to develop international aviation.

**Action:** The Assembly is invited to:

- a) recognise that international aviation and climate change is part of anthropogenic response to climate change and that the principles of equity, CBDR and respective capabilities should be acknowledged and followed in the building of a fair and rational international aviation and climate change governance system for win-win results;
- b) acknowledge the important contributions made by China and other developing countries to the sustainable development of global aviation;
- c) recognise that the CNG2020, the current CORSIA implementation programmes and the long-term aspirational goals of net-zero carbon emission by 2050 would lead to discriminatory market distortions to the disadvantage of developing countries, which should be addressed immediately through the establishment of an assistance mechanism for developing countries; and
- d) recognise that international aviation and climate change should be responded to through nationally determined contributions (NDCs).

<i>Strategic Objectives:</i>	This working paper relates to the Strategic Objective– <i>Environmental Protection</i> .
<i>Financial implications:</i>	The activities referred to in this Assembly working paper will be undertaken subject to the resources available in the 2023-2025 Regular Programme Budget and/or from extra budgetary contributions.

<sup>1</sup> English and Chinese versions provided by China.

<i>References:</i>	The United Nations Framework Convention on Climate Change (UNFCCC) and its Paris Agreement Convention on International Civil Aviation Assembly Resolutions A40-18 and A40-19 A40-WP/306
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## 1. INTRODUCTION

1.1 China's civil aviation industry has been upholding the green development philosophy and taking tangible actions to effectively satisfy people's need on air travel while limiting and reducing the carbon and environmental footprints of aviation activities.

1.2 International aviation CO<sub>2</sub> emissions are anthropogenic emissions, and to address international aviation and climate change is an integral part of global climate governance. The UNFCCC is the main channel for human being's cooperation to address climate change, and the principles of equity, common but differentiated responsibilities and respective capabilities established by the UNFCCC and Paris Agreement are the basic principles that should be followed and implemented in any global climate governance.

1.3 The historical accumulative GHG emissions of developed countries in the last 200 years leads to the current climate change. The international obligations of developed countries under the UNFCCC include taking the lead in significantly reducing greenhouse gas emissions ahead of developing countries and emerging market economies, and providing developing countries with adequate support in financial resources, technology transfer and capacity-building.

1.4 To address international aviation and climate change through ICAO should ensure that the emissions reductions goals, measures and standards developed by ICAO fully follow the basic principles of global climate governance and the principle of fair opportunities to develop international aviation among ICAO Member States.

1.5 China believes that the goal of CNG2020 and the current CORSIA implementation programmes and standards based on the CNG2020 are inconsistent with the international laws and basic principles of global climate governance, and that without developed countries fulfilling their international obligations under the UNFCCC, as mentioned in para 1.3 above, through ICAO, developing countries would be deprived of fair opportunities to develop. In this regard, China has filed formal reservations and/or notification of the differences to ICAO on those Assembly resolutions and standards concerned since 2010.

## 2. GREEN DEVELOPMENT ACHIEVEMENTS OF CHINA CIVIL AVIATION

2.1 The fuel efficiency of China's fleet has been improved with accumulative reduction of over 400 million tonnes of CO<sub>2</sub> emissions compared to 2000. The percentage of zero emission vehicles inside airports exceeds 22%, the installation rate and utilization rate of gate-power and preconditioned air (PCA) facilities exceeds 95%, and clean energy, including solar energy and geothermal energy, accounts for more than 1% of airport energy consumption.

2.2 The green and low-carbon development roadmap of China's civil aviation provides the development of a green, low-carbon and circular civil aviation system. China's civil aviation is ready to

uphold the new development philosophy of innovation, coordination, green, openness and sharing, by enhancing the deployment of advanced and applicable technologies, infrastructure constructions, the development of sustainable aviation fuels (SAFs), the construction of MBMs to address aviation emissions, and the optimization of operational efficiency.

2.3 China will be engaged in dialogue and cooperation with other parties on the basis of mutual respect, and join hands with others to contribute to a win-win sustainable development of global aviation, with each country making contribution to the best of its ability.

3. **COMMENTS ON THE LACK OF EQUITY IN CNG2020, THE CURRENT CORSIA IMPLEMENTATION PROGRAMMES AND STANDARDS AND THE 2050 CARBON NEUTRALITY GOAL FOR INTERNATIONAL AVIATION**

3.1 A40-WP/306 submitted by China and Russia to the 40th Session of the ICAO Assembly elaborates on the lack of equity in CNG2020 and the current CORSIA implementation programmes and standards based on it. It is noted with deep regret that such issues have not been addressed by ICAO ever since.

3.2 The ICAO Committee on Aviation Environmental Protection (CAEP) papers show that the current CORSIA implementation programmes and standards would result in severe market distortions, to the disadvantage of developing countries, which would see faster growth and larger emissions increment (see CAEP/12-WG4/03-WP/11, CAEP/12-WG4/06-WP/09 for details).

3.3 It has been proved through ICAO's response to international aviation and climate change that the so-called "de minimis exemption" would not work without sacrificing or even halting the development, and that the so-called collective goal, which has been resolved not to attribute specific obligations to individual States, has been attributed to countries with the implementation of out-of-sector measures, i.e., the market-based mechanisms, in a top-down manner.

3.4 The CAEP report on the feasibility of a long-term aspirational goal for international civil aviation CO<sub>2</sub> emission reductions (the LTAG report) has not been peer-reviewed and lack of impact on growth as well as costs in all countries, especially developing countries, which sets up three scenarios of the deployment matrix of in-sector measures such as technologies, operations and jet fuels. The report concludes that none of the in-sector scenarios can achieve international aviation net-zero carbon emissions. Many countries, with China included, believe that the report falls far short of the mandate by last session of the ICAO Assembly to conduct a detailed LTAG feasibility analysis.

3.5 The ICAO High-Level Meeting on the feasibility of LTAG (HLM-LTAG) ignores the fact that all parties do not agree on the feasibility analysis report, and proposes the 2050 net-zero carbon emission long-term goal for global international aviation advocated by developed countries. China is in shock and opposition to this lack of procedural justice, and expresses full reservations to the outcome of the meeting, which has resulted from a lack of fair process.

3.6 The HLM-LTAG ignored the fact that there were outstanding differences among the parties on the feasibility analysis, and imposed the 2050 net-zero carbon emission goal for international aviation advocated by developed countries without adequate consultations among States. China's

delegation to the HLM-LTAG was shocked and opposed to such arrangements lack of procedural justice and was left no choice but to make reservations on the conclusion of the meeting.

3.7 The developed countries' failure to fully and effectively fulfil their international obligations under the UNFCCC through ICAO, leaves developing countries and emerging market economies, in achieving the so-called collective global goal of net-zero carbon for international aviation by 2050, no choice but to either abandon the development of international aviation and accept that their civil aviation industry is locked in at a very low level, or be burdened with more than unfair responsibilities to reduce international aviation emissions, a preliminary research conclusion in Appendix A shows that the accumulative amount of emission reductions for developing countries and emerging market economies accounts for 1.7 or 2.8 times of that for developed countries.

3.8 With that said, the CNG2020 goal, the current CORSIA implementation programmes and standards and the goal of net-zero carbon emissions by 2050 for international aviation are in conflict with the basic principles of the 2030 Agenda for Sustainable Development of United Nations and the UNFCCC, and are inconsistent with the object and purpose of the Convention on International Civil Aviation, and lack legality and legitimacy.

#### 4. CONCLUSION

4.1 The Assembly is invited to:

- a) recognise that international aviation and climate change is part of anthropogenic response to climate change and that the principles of equity, CBDR and respective capabilities should be acknowledged and followed in the building of a fair and rational international aviation and climate change governance system for win-win results;
- b) acknowledge the important contributions made by China and other developing countries to the sustainable development of global aviation;
- c) recognise the issues raised in paragraph 3 of this paper, which should be addressed immediately through the establishment of an assistance mechanism for developing countries; and
- d) recognise that international aviation and climate change should be responded to through nationally determined contributions (NDCs).

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## APPENDIX

### ANALYSIS ON INEQUITY OF THE 2050 NET-ZERO CARBON EMISSIONS GOAL FOR INTERNATIONAL AVIATION

#### I. EMISSIONS PROJECTIONS

##### (i) Scenario Assumptions

This paper presents estimates based on IEA international aviation emissions data<sup>2</sup>, and the classification of developed and developing countries based on the Annex to *World Economic Situation and Prospects*<sup>3</sup> published by the United Nations. The growth rates of international aviation emissions are shown in Table 1.

Table 1: Average annual growth rates of international aviation emissions in developed and developing countries

Year	Country classification	Average annual growth
2000-2010	Developed countries	0.9%
	Developing countries	4.7%
2010-2018	Developed countries	2.6%
	Developing countries	4.4%

**1. 2019 emissions:** According to IEA (2018) and ICAO (2019), global international aviation emissions are approximately 600 million tonnes.

##### 2. Growth scenario assumptions

Scenario 1: Assuming that international aviation carbon emissions return to 2019 levels in 2025, the growth rate of international aviation emissions in 2026-2030 is the average annual growth rate of 2000-2010, and the average annual growth rate of international aviation emissions in 2031-2035 is 0.5% lower than in 2026-2030, and 0.5% lower than in the previous cycle every five years thereafter.

Scenario 2: Assuming that international aviation carbon emissions return to 2019 levels in 2025, international aviation emissions grow at the 2010-2018 average annual rate in 2026-2030, and international aviation emissions grow at an average annual rate of 0.5% lower in 2031-2035 than in 2026-2030, and 0.5% lower every five years thereafter than in the previous cycle.

The changes in the average annual growth rate of international aviation carbon emissions under the two scenarios are shown in Table 2.

<sup>2</sup> IEA (2020), *CO2 Emissions from Fuel Combustion 2020 Edition*, [https://iea.blob.core.windows.net/assets/474cf91a-636b-4fde-b416-56064e0c7042/WorldCO2\\_Documentation.pdf](https://iea.blob.core.windows.net/assets/474cf91a-636b-4fde-b416-56064e0c7042/WorldCO2_Documentation.pdf)

<sup>3</sup> United Nations (2020), *World Economic Situation and Prospects*, <https://www.un.org/development/desa/dpad/publication/world-economic-situation-and-prospects-2020/>

Table 2: Average annual growth scenarios for international aviation emissions in developed and developing countries

Scenario	Country classification	2019 (Baseline, Mt)	Average annual growth rate				
			2026-2030	2031-2035	2036-2040	2041-2045	2046-2050
Scenario 1	Developed countries	283	0.9%	0.4%	-0.1%	-0.6%	-1.1%
	Developing countries	320	4.7%	4.2%	3.7%	3.2%	2.7%
Scenario 2	Developed countries	283	2.6%	2.1%	1.6%	1.1%	0.6%
	Developing countries	320	4.4%	3.9%	3.4%	2.9%	2.4%

**(ii) Target Assumptions**

Net carbon emissions from international aviation for 2021-2035 are fixed at the baseline of 2019 emissions; the emissions baseline declines linearly from 2036 to 2050 to achieve the net-zero emissions goal in 2050. Due to the impact of the COVID-19 pandemic, reductions in international aviation emissions above the baseline in 2021-2026 are negligible, and this paper focuses on the analysis after 2027. At the same time, considering that the IEA's international aviation emissions data are calculated based on fuel consumption and already include changes in fuel efficiency due to aircraft technology updates and operational improvements, the emission reductions in this paper refer to the total reduction amount to be realised by purchasing SAF and eligible emission reduction units.

**(iii) Projections Results**

According to the estimate of Scenario 1 in Table 2 above, the total global international aviation emissions in 2050 would be about 1070 Mt, of which about 280 Mt would be emitted by developed countries and about 790 Mt by developing countries; according to the estimate of Scenario 2, the total global international aviation emissions in 2050 would be about 1160 Mt, of which about 420 Mt would be emitted by developed countries and about 740 Mt by developing countries. The estimated total international aviation emissions under both scenarios are close to those projected in CAEP's IS3 scenario (low air transport growth) in the Report on the feasibility of a long-term aspirational goal (LTAG) for international civil aviation CO2 emission reductions<sup>4</sup>. The emission projections for developed and developing countries for 2027-2050 are shown in Figure 1.

<sup>4</sup>CEAP (2019), *Report on the feasibility of a long-term aspirational goal (LTAG) for international civil aviation CO2 emission reductions*, <https://www.icao.int/environmental-protection/LTAG/Pages/LTAGreport.aspx>

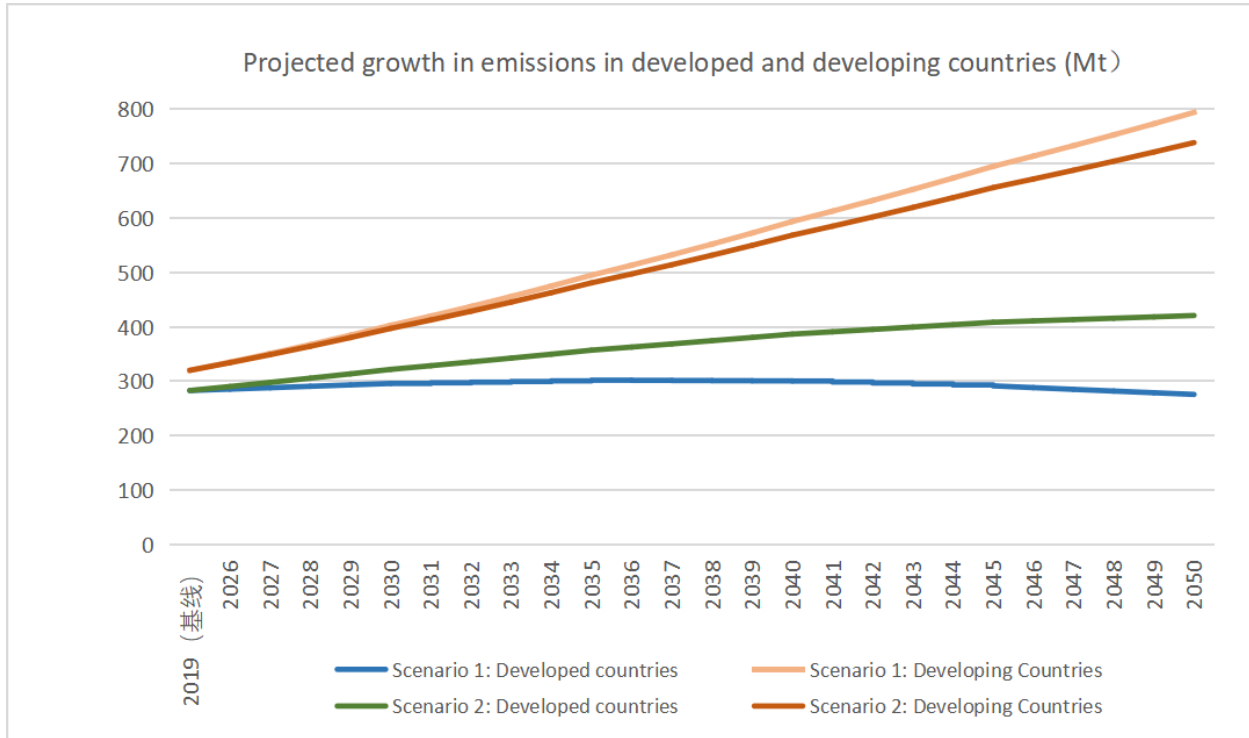


Figure 1: Emissions projections for developed and developing countries for 2027-2050

**(iv) Gaps between Emissions and Goals**

The gaps between emissions and the 2050 net-zero carbon emissions goal in developed and developing countries is shown respectively in Figures 2 and 3.

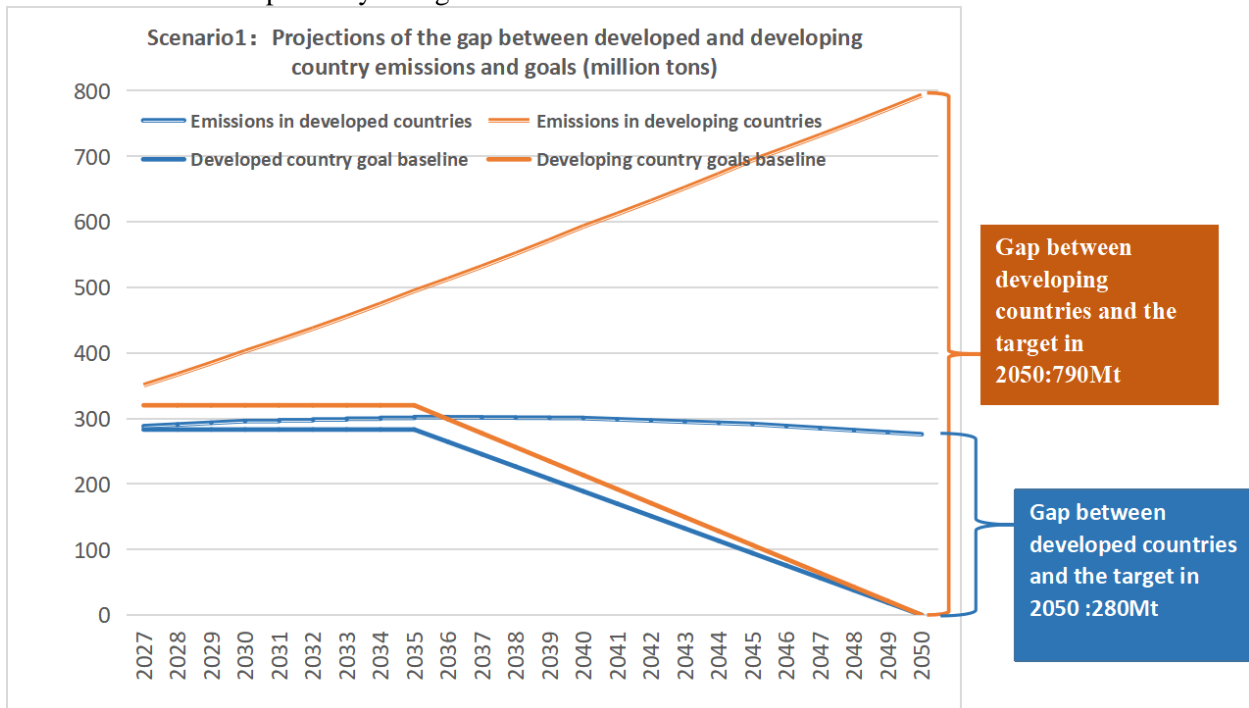


Figure 2: Gaps between international aviation emissions and the 2050 net-zero carbon emission goal for 2027-2050 for developed and developing countries under Scenario 1 (in Mt)

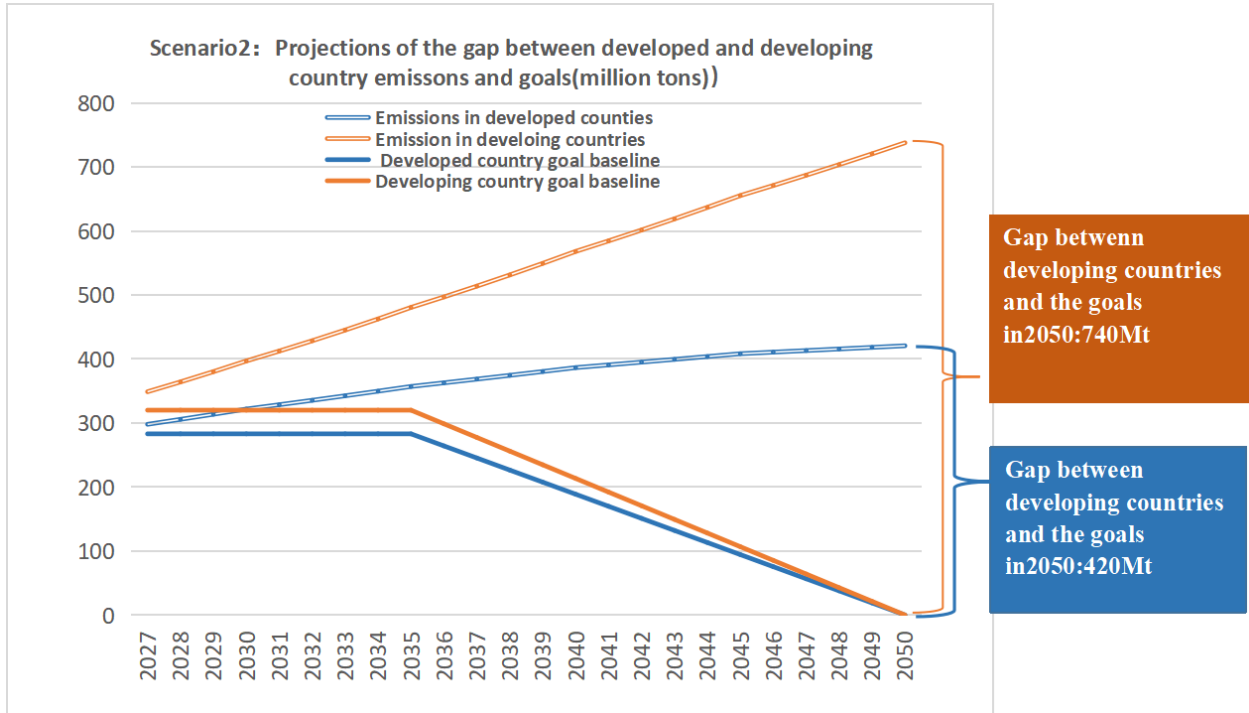


Figure 3: Gaps between international aviation emissions and the 2050 net-zero carbon emissions goal for 2027-2050 in developed and developing countries under scenario 2 (in Mt)

## II. COMPARATIVE ANALYSIS OF EMISSION REDUCTIONS OBLIGATIONS FOR DEVELOPED AND DEVELOPING COUNTRIES

If the existing CORSIA scenario (70% for individuals and 30% for sectors) moves on in 2036-2050, the 2027-2050 accumulative emissions, accumulative emission reductions, and accumulative emission reductions as a percentage of accumulative emissions for developed and developing countries will be projected as shown in Table 3. The emission reduction obligations (emission reductions amount) for developed and developing countries to contribute to the goal are shown in Figures 4 and 5.

Table 3: Emissions, emission reductions from developed and developing countries, 2027-2035

Scenario	Country classification	Accumulative Emissions 2027-2035 (Mt)	Accumulative Emissions 2036-2050 (Mt)	Accumulative Emission Reductions 2027-2035 (Mt)	Accumulative Emission Reductions 2036-2050 (Mt)	Accumulative Emission Reductions 2027-2050 as a proportion of Accumulative Emissions
Scenario 1	Developed countries	2666	4391	292	2581	41%
	Developing countries	3787	9786	734	7375	60%
Scenario 2	Developed countries	2952	5948	487	4050	51%
	Developing countries	3719	9276	757	6952	59%



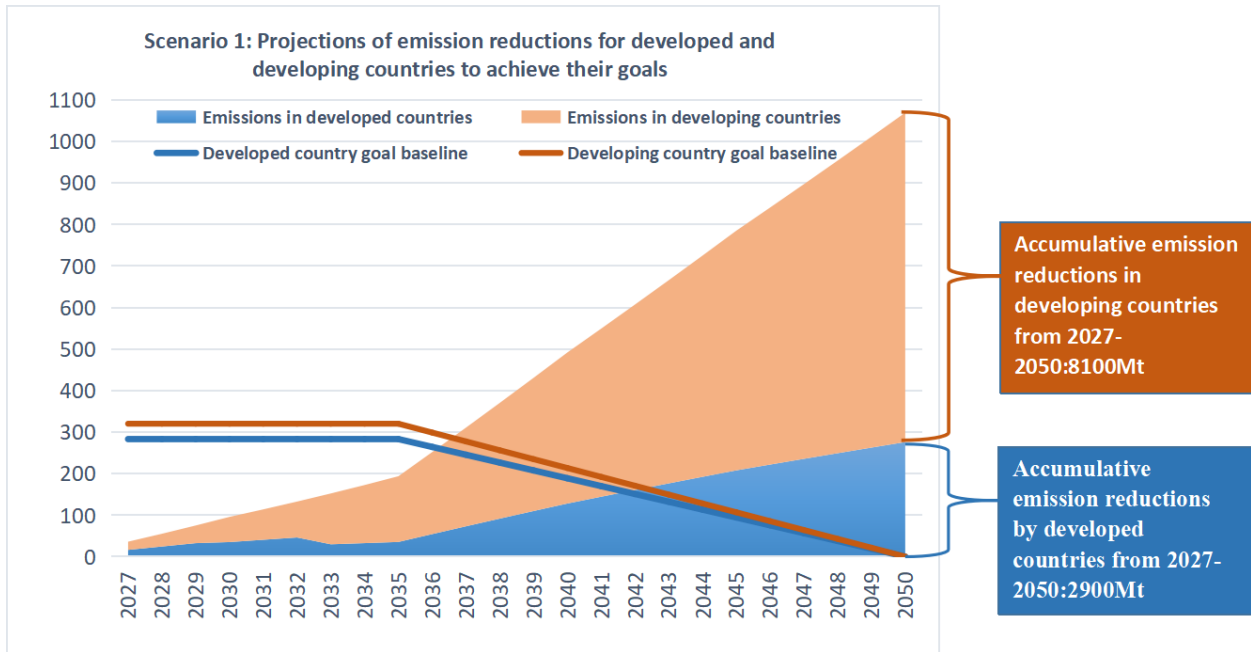


Figure 4: Emission reductions in developed and developing countries for 2027-2050 under Scenario 1 (in million tonnes)

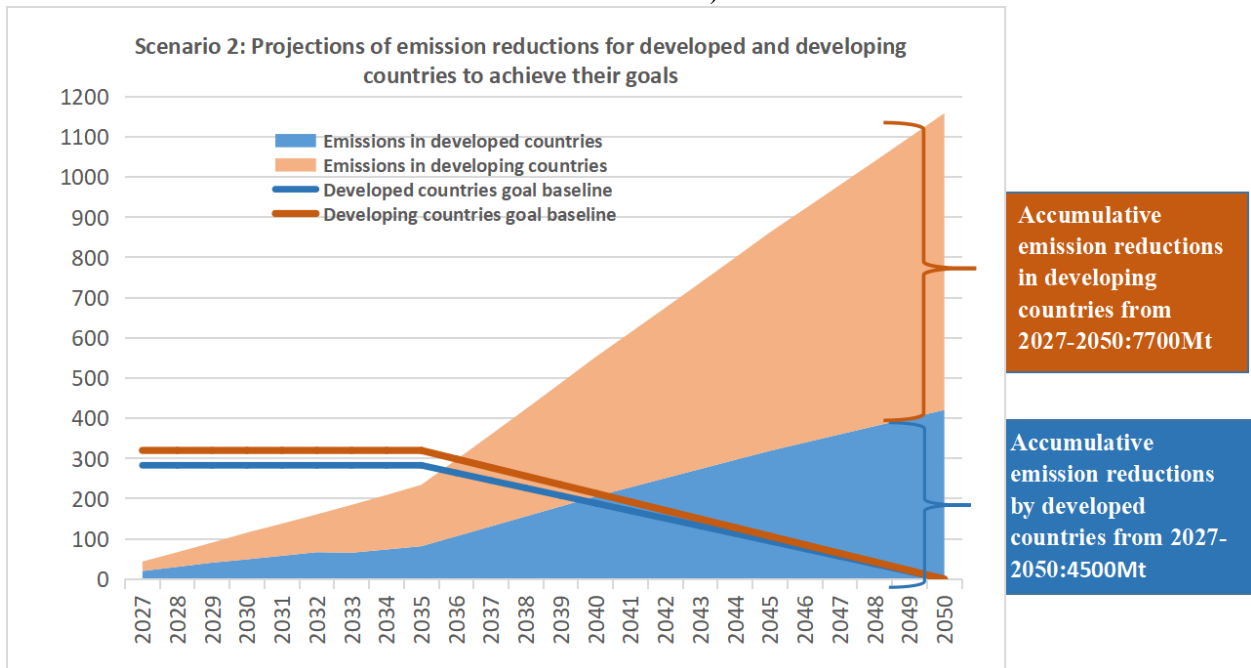


Figure 5: Emission reductions in developed and developing countries for 2027-2050 under scenario 2 (in million tonnes)

In order to achieve the goal of net-zero carbon emissions by 2050 for international aviation, in terms of absolute volumes, the accumulative emission reductions (emission reduction obligations to be undertaken) for 2027-2050 for developing countries are respectively 5.2 billion tonnes (Scenario 1) or 3.2 billion tonnes

(Scenario 2) more than for developed countries. In terms of the cost of undertaking emissions reductions, the report “*Making net-zero aviation possible: an industry-backed, 1.5°C-aligned transition strategy*”<sup>5</sup> shows that the accumulative investment from 2022 to 2050 for the global air transport industry to achieve net-zero carbon by 2050 would be \$49 trillion, with an accumulative investment of \$36 trillion (Scenario 1) or \$31 trillion (Scenario 2) for developing countries and \$13 trillion (Scenario 1) or \$18 trillion (Scenario 2) for developed countries, based on the proportion of emissions reductions against accumulative Emissions in developed and developing countries. In terms of accumulative emission reductions as a percentage of accumulative emissions, the emissions in developing countries are 19% (Scenario 1) and 8% (Scenario 2) higher than that in developed countries, which, even at a cost of \$100 -\$400 per tonne of carbon emissions, equates to developing countries spending \$19-\$76 (Scenario 1) or \$8-\$32 (Scenario 2) more per tonne of emissions than developed countries. It conflicts with the principles of CBDR and equity for developing countries to bear higher abatement cost intensity than developed countries, which would also cause competitive market distortions to the disadvantage of developing countries and hence contain the growth of the air transport in developing countries.

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<sup>5</sup> The Mission Possible Partnership (2022), *Making net-zero aviation possible: an industry-backed, 1.5°C-aligned transition strategy*, <https://missionpossiblepartnership.org/wp-content/uploads/2022/07/Making-Net-Zero-Aviation-possible.pdf>