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COP PRESIDENT
SECRETARY
No further discussion needed
The agreed global goal
is to limit temperature rise to 1.5°C.
Now countries must act to make this happen

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Intro

When they adopted the 2015 **Paris Climate Agreement**[1] our governments committed to "holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C". The Paris Agreement thus went beyond what was agreed in the 2009 **Copenhagen Accord**[2] (which called to *"hold the increase in global temperature below 2°C"* while also agreeing to consider strengthening the long-term goal to 1.5°C by 2015) by adding *"well below"* to the 2°C target and linking this with the 1.5°C target. The Paris Agreement did however lead to some ambiguity, as some decision-makers interpreted the agreement as offering an option to choose between 1.5°C or (well below) 2°C as the long-term goal that frames their climate action. Many others felt that the Paris Agreement's long-term goal should be seen as complementary, allowing temperature rise to (slightly) overshoot 1.5° but arriving at 1.5°C by 2100. This view has now been confirmed by the outcomes of **COP27**[3] (November 2022), the **G20 Leaders' Summit**[4] in Bali (Indonesia) and the **G7 Leaders' Summit**[5] in Schloss Elmau (Germany), all committing explicitly to limit temperature rise to 1.5°C. Instrumental to these decisions was a rather obscure process with a long technical name: the **Periodic Review of the long-term global goal under the Convention and of overall progress towards achieving it (PR2)**[6].

1. From Copenhagen to Sharm el-Sheikh

1.1. Copenhagen and Cancun Climate Summits

The 1992 **UN Framework Convention on Climate Change**[7] (FCCC) agreed to achieve *"stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system"* but did not define this level. It took until the 2009 Climate Summit in Copenhagen **(COP15)** for countries to agree on setting 2°C (above pre-industrial levels) as the target to avoid dangerous climate

1 https://unfccc.int/sites/default/files/english_paris_agreement.pdf

2 https://unfccc.int/resource/docs/2009/cop15/eng/11a01.pdf#page=4

3 https://unfccc.int/sites/default/files/resource/cop27_auv_2_cover%20decision.pdf

4 www.g20.org/content/dam/gtwenty/gtwenty_new/about_g20/previous-summit-documents/2022-bali/G20%20Bali%20Leaders%27%20Declaration,%2015-16%20November%202022.pdf

5 https://www.g7germany.de/resource/blob/997532/2153142/960bf2bf29ddb2253fca0c3bf8f983e7/2022-12-12-g7leadersstatement-data.pdf

6 https://unfccc.int/topics/science/workstreams/periodic-review

7 https://unfccc.int/resource/docs/convkp/conveng.pdf

change. Even so, many of the world's most vulnerable countries were already calling for this target to be limited to 1.5˚C, so the **Copenhagen Accord** also included a reference to the need to review the target by 2015 and to consider strengthening that target to 1.5˚C[8]. The 2010 Cancun Climate Summit **(COP16)** then agreed to establish a process to periodically review the adequacy of the long-term global goal and overall progress toward achieving it, with the first review to be concluded by 2015[9].

1.2. First Periodic Review

The First Periodic Review of the long-term global goal of the Convention was concluded at the 2015 Paris Climate Summit **(COP21)**. Article 4 of its conclusions[10] stated that *"in relation to the adequacy of the long-term global goal, and in the light of the ultimate objective of the Convention, the goal is to hold the increase in the global average temperature to well below 2˚C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5˚C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change". The conclusions furthermore encouraged "the scientific community to address information and research gaps identified during the structured expert dialogue, including scenarios that limit warming to below 1.5˚C relative to pre-industrial levels by 2100 and the range of impacts at the regional and local scales associated with those scenarios".*

1.3. Paris Climate Summit

The 2015 **Paris Climate Agreement** adopted the language agreed in the Periodic Review conclusions and defined the new global goal in its Article 2.1: *"This Agreement (..) aims to strengthen the global response to the threat of climate change (..) including by: (a) Holding the increase in the global average temperature to well below 2˚C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5˚C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change".*

The Paris Agreement thus includes references to both 2˚C and 1.5˚C but does so in a way that most would interpret as complementary and not as separate options. The goal is thus taken as referring to the need to keep temperature rise well below 2˚C at any time between now and the end of the century (thus allowing temperature to overshoot 1.5˚C), while ensuring temperature rise would be limited to 1.5˚C by the end of the century. However, this interpretation, which puts the focus on 1.5˚C as the main target, needed to be confirmed.

The **COP21 decision accompanying the adoption of the Paris Agreement**[11] also invited the IPCC *"to provide a special report in 2018 on the impacts of global warming of 1.5˚C above pre-industrial levels and related global greenhouse gas emission pathways".*

8 Article 12 of the Copenhagen Accord: "We call for an assessment of the implementation of this Accord to be completed by 2015, including in light of the Convention's ultimate objective. This would include consideration of strengthening the long-term goal referencing various matters presented by the science, including in relation to temperature rises of 1.5 degrees Celsius."

9 https://unfccc.int/sites/default/files/resource/docs/2010/cop16/eng/07a01.pdf

10 https://unfccc.int/resource/docs/2015/cop21/eng/10a02.pdf#page=23

11 https://unfccc.int/resource/docs/2015/cop21/eng/10a01.pdf#page=2

1.4. IPCC Special Report on 1.5°C

As requested by COP21, the IPCC adopted its **Special Report on Global Warming of 1.5°C**[12] in October 2018. In this report, governments agreed that limiting global warming to 1.5°C compared to 2°C could go hand in hand with ensuring a more sustainable and equitable society. Limiting global warming to 1.5°C would give people and ecosystems more room to adapt and remain below relevant risk thresholds. The report also examined pathways available to limit warming to 1.5°C, what it would take to achieve them and what the consequences could be, and concluded that limiting temperature rise to 1.5°C would require rapid, far-reaching and unprecedented changes in all aspects of society.

1.5. 2022 summits (COP27/G20/G7)

The Second Periodic Review of the long-term global goal ended at **COP27**[13] (November 2022) and helped governments to affirm that the main long-term goal is to limit temperature rise to 1.5°C, as evidenced in COP27's **Sharm el-Sheikh Implementation Plan**, in which Article 8: *"Reiterates that the impacts of climate change will be much lower at the temperature increase of 1.5°C compared with 2°C and resolves to pursue further efforts to limit the temperature increase to 1.5°C".*

The centrality of the 1.5°C target was also confirmed by the 2022 G20 Leaders' Summit: *"we resolve to pursue efforts to limit the temperature increase to 1.5°C" and the 2022 G7 Leaders' Summit: "we commit to urgent, ambitious, and inclusive climate action in this decade to limit global warming to 1.5°C above pre-industrial levels".*

2. Second Periodic Review

2.1. Periodic Review

In 2010, the COP16 decided to **periodically review** (at least every 7 years):

1. The adequacy of the long-term global goal in the light of the ultimate objective of the Convention; and,
2. Overall progress toward achieving the long-term global goal, including a consideration of the implementation of the commitments under the Convention.

In order to ensure all expertise was tapped into, the COP established a structured expert dialogue (SED) to support the review and to ensure scientific integrity through a focused exchange of views, information and ideas.

12 www.ipcc.ch/sr15

13 https://unfccc.int/sites/default/files/resource/cop27_auv_CP%2013_PR2.pdf

The **outcome of the 2013–2015 review** was a contributing factor to the strengthening of the long-term global goal, and governments agreed at **COP25** in Madrid[14] on the scope of the Second Periodic Review that should:

a. Enhance governments' understanding of:

   i. The long-term global goal and scenarios towards achieving it in the light of the ultimate objective of the Convention;

   ii. Progress made in relation to addressing information and knowledge gaps, including with regard to scenarios to achieve the long-term global goal and the range of associated impacts, since the completion of the 2013–2015 review;

   iii. Challenges and opportunities for achieving the long-term global goal with a view to ensuring the effective implementation of the Convention;

b. Assess the overall aggregated effect of the steps taken by governments in order to achieve the long-term global goal in the light of the ultimate objective of the Convention.

2.2. Structured Expert Dialogue

Similar to the First Review, a Structured Expert Dialogue (SED) was established which met three times between 2020 and 2022, and had presentations from the IPCC, IEA and others on all elements of the scope of the Second Periodic Review. Reports were produced from each session, and a Synthesis Report[15] from the co-facilitators of the SED was published in September 2022 and was used as input for the final conclusions of the Second Periodic Review adopted at COP 27.

2.3. Synthesis Report of the Structured Expert Dialogue of the Second Periodic Review

The SED Synthesis Report contained ten key messages which are all worth repeating:

*"1. **At 1.1˚C warming, the world is already experiencing extreme climate change:** widespread and rapid changes have been observed in the atmosphere, ocean, cryosphere and biosphere, many of which are accelerating, with associated risks developing sooner than expected. The impacts of these changes pose a clear threat to human well-being;*

*2. **Knowledge has improved significantly since the first periodic review but important gaps remain:** understanding of the relationship between the temperature limits of the long-term global goal and the frequency and intensity of extreme climate events has improved. Social sciences facilitate understanding of pathways to a fair and equitable low-carbon transition. Key uncertainties include tipping points and feedback in natural systems, as well as GHG accounting and the enablers of and limits to rapid social change;*

*3. **Climate impacts and risks, including the risk of irreversible impacts, increase with every increment of warming:** risks are significantly higher at 2˚C than at 1.5˚C warming. Delaying action reduces options for mitigation and adaptation. Avoiding overshoot of the 1.5˚C limit reduces the risk of crossing tipping points and triggering irreversible impacts;*

*4. **It is still possible to achieve the long-term global goal with immediate and sustained emission reductions:** pathways to limiting warming to 1.5˚C require emissions to peak in 2025 and be roughly halved by 2030 and at net zero by around 2050. Overshooting the 1.5˚C*

14 https://unfccc.int/sites/default/files/resource/Decision%205_CP.25.pdf

15 https://unfccc.int/sites/default/files/resource/sb2022_03E.pdf

limit will mean having to rely on technology to bring warming back below the limit. Key opportunities to reduce emissions include targeting methane emissions and capitalizing on the falling cost of renewable energy and on carbon markets;

5. ***The window of opportunity to achieve climate-resilient development is rapidly closing:*** *ambitious mitigation and transformative adaptation must be accompanied by efforts to address structural inequalities, marginalization and multidimensional poverty. Climate-resilient development requires inclusive, multi-sectoral and forward-thinking planning, alongside a significant injection of resources;*

6. ***The world is not on track to achieve the long-term global goal:*** *not enough has been done to reduce emissions. The world is on a pathway to global warming of 1.5°C in 2021–2040 and 2°C around 2050. A significant gap remains between pledged emission reductions and the reductions required to meet the long-term global goal. The emissions gap must be urgently bridged if achieving net zero emissions and the long-term global goal is to remain possible;*

7. ***Despite some progress on mitigation and adaptation, more efforts are needed:*** *parties are taking clear steps to reduce emissions. An increase in national climate laws, strategies and policies has led to significant avoided emissions. Adaptation action is widespread but remains incremental, with little evidence of reduced climate risk resulting from it. Some human and natural systems may be encountering, and even surpassing, their adaptation limits;*

8. ***Equity is key to achieving the long-term global goal:*** *historical emissions are unequal. The impacts and risks associated with warming are also unevenly distributed. Parties have differing responsibilities and capacities to contribute to achieving the long-term global goal, but many are constrained by structural inequalities. Equitable action therefore requires fair consideration of the remaining carbon budget, inclusive decision-making and a just transition;*

9. ***Key enablers of climate action are not aligned with the urgency of a rapid and equitable low-carbon transition:*** *climate finance is growing but continues to fall short of needs and commitments. The financial system overall is poorly aligned with the Paris Agreement goals, with investment in fossil fuels still outweighing climate investment. Capacity to respond to climate change remains most lacking where risk is highest. Data and methodological gaps inhibit measurement and reporting of emission reductions. Low-carbon technologies are feasible but there are economic and financial barriers to their dissemination;*

10. ***Knowledge, technology and resources are needed to transform global systems in line with low-emission pathways and climate-resilient development:*** *the financial system has sufficient capital to decarbonize economies and enhance climate resilience towards meeting the long-term global goal. Support provided by developed to developing countries can help to de-risk investment and enable technology transfer. Continued capacity-building will enable more robust and transparent reporting on GHG emission reductions and adaptation efforts. Improved climate services will help to reduce climate impacts on lives and livelihoods."*

2.4. Second Periodic Review at COP27

Like many other more 'technical' debates, the discussions on the Second Periodic Review of the long-term global (PR2) goal at COP27 in Sharm el-Sheikh (November 2022) did not get much attention due to the main political debate happening elsewhere on issues such as loss and damage, climate finance and the phasing out of fossil fuels. At the same time, climate politics were highly visible in the PR2 debate as very quickly rather traditional Annex 1 versus non-Annex 1 issues were put front and centre in the debate. While there was broad agreement on the assessment that governments are not on track to achieve the long-term goal, there were intense discussions on how to divide the responsibility for bridging the gap between rich and poor countries (the 'equity' issue). These discussions prevented the debate from exploring more in-depth issues such as the need to avoid overshooting 1.5°C as much as possible and the need to rapidly phase out fossil fuel use.

While the PR2 discussions continued to focus on equity, the debate on the centrality of the 1.5°C target and on the phasing out of all fossil fuels was transferred from the Periodic Review to the overall conclusions of COP27, with a large number of countries calling for a strong statement in support of 1.5°C being set as the long-term goal and subsequently the need to agree on a full phase-out of the use of all fossil fuels.

The final conclusions of the Second Periodic Review (see Annex 3) were thus less outspoken on 1.5°C than the Sharm el-Sheikh Implementation Plan but did contribute to this discussion. Overall, the conclusion is that the Periodic Review did serve its purpose. The debates on equity however showed that there is still a lot of work to be done to ensure adequate action is taken by all countries together, commensurate with their responsibility and capability. It is therefore also regrettable that a real assessment of progress made under the Second Commitment Period of the Kyoto Protocol was not produced, in particular because full reporting is only expected by mid-2023. In Annex 1 we provide a provisional assessment of the fulfilment of the Second Commitment Period of the Kyoto Protocol. A large overshoot is foreseen. So, while developed countries have largely failed to fulfil their commitment to provide USD 100 billion per year in climate finance, at least a number of developed countries have achieved their emission reduction commitment under the Kyoto Protocol (though it should be made clear that these commitments were not aligned with the 1.5°C target and the Paris Agreement).

Annex 1 - Kyoto Protocol implementation

One of the key elements of the Second Periodic Review that received rather limited attention related to the assessment of action to achieve the long-term goal, and in particular the binding targets of industrialised countries under the Kyoto Protocol. There are many reasons for this, including that only a few countries[16] adopted targets under the Kyoto Protocol's Second Commitment Period (2013–2020) and that the official process to assess compliance with these targets will only be finalised in 2023. Nevertheless, on the basis of currently available information, the targets under the Kyoto Protocol's Second (and last) Commitment Period will be largely overachieved, as evidenced in the table below.

Country	Base Year emissions ($GtCO_2$-e)	KP 2013-2020 reduction target %	Realised 2013-2020 emission reductions %
EU27+UK+Iceland	5,875.69	-20.00	-28.31
Australia	566.79	-0.50	-4.81
Belarus	145.46	-12.00	-37.88
Kazakhstan	371.30	-12.00	-4.17
Liechtenstein	0.23	-16.00	-15.87
Monaco	0.10	-22.00	-14.94
Norway	51.92	-16.00	-16.26
Switzerland	53.71	-15.80	-15.31
Ukraine	937.95	-24.00	-63.46
TOTAL	8,003.15	-18.19	-29.65

Overall, those annex 1 countries that participated in the Second Commitment Period of the Kyoto Protocol will largely overachieve their collective target, and will achieve a reduction of their 2013–2020 greenhouse gas emissions by almost 30%, as compared to their base year emissions. This corresponds to an overall emission reduction of almost 33% in 2020 (compared to 1990 emissions) in these 37 countries. This compares to a reduction of close to 19% in all A1 countries (with an emission reduction of 10% in A1 countries without a KP commitment), and an increase of emissions by over 50% globally (with an increase of almost 150% in NA1 countries).

The below table provides an overview if GHG emissions in A1 countries that are part of the G20 but who do not have a target under the 2nd Commitment Period of the KP.

Country	1990 emissions ($GtCO_2$-e)	2013-2020 actual emissions ($GtCO_2$-e)	Change compared to 1990
Canada	590	6.000	+27,12
Japan	1.310	10.450	-0,29
Russia	3.040	18.080	-25,66
USA	6.200	49.550	-0,04
TOTAL	1.114	84.110	-5,62

16 Only 37 countries, representing 11% of 2012 global emissions adopted a target

Annex 2 – 2022 Decisions on 1.5°C

G20 Bali Leaders' Declaration (16 November 2022)

"13. Mindful of our leadership role, we reaffirm our steadfast commitments, in pursuit of the objective of UNFCCC, to tackle climate change by strengthening the full and effective implementation of the Paris Agreement and its temperature goal, reflecting equity and the principle of common but differentiated responsibilities and respective capabilities in light of different national circumstances. We will play our part fully in implementing the Glasgow Climate Pact and the relevant outcomes of previous COPs and CMAs, in particular COP 26, including the call to revisit and strengthen the 2030 targets in our NDCs, as necessary to align with the Paris Agreement. In this regard, we welcome enhanced climate actions resulting from the new or updated NDCs and invite parties to urgently scale up mitigation and adaptation ambition and means of implementation as well as make progress on loss and damage at COP 27 which is being held in Africa. Noting the IPCC assessments that the impact of climate change will be much lower at a temperature increase of 1.5°C compared with 2°C, we resolve to pursue efforts to limit the temperature increase to 1.5°C. This will require meaningful and effective actions and commitment by all countries, taking into account different approaches, through the development of clear national pathways that align long-term ambition with short and medium-term goals, and with international cooperation and support, including finance and technology, and sustainable and responsible consumption and production as critical enablers, in the context of sustainable development."

Sharm el-Sheikh Implementation Plan (20 November 2022)

"7. Reaffirms the Paris Agreement temperature goal of holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change."

"8. Reiterates that the impacts of climate change will be much lower at the temperature increase of 1.5°C compared with 2°C and resolves to pursue further efforts to limit the temperature increase to 1.5°C."

"15. Recognizes that limiting global warming to 1.5°C requires rapid, deep and sustained reductions in global greenhouse gas emissions of 43 per cent by 2030 relative to the 2019 level."

"16. Also recognizes that this requires accelerated action in this critical decade, on the basis of equity and the best available scientific knowledge, reflecting common but differentiated responsibilities and respective capabilities in the light of different national circumstances and in the context of sustainable development and efforts to eradicate poverty."

G7 Leaders Statement (12 December 2022)

"Reaffirming our steadfast commitment to implement the Paris Agreement and the outcomes of COP26 and COP27, we commit to urgent, ambitious, and inclusive climate action in this decade to limit global warming to 1.5°C above pre-industrial levels.

We reaffirm our commitment to reach net-zero emissions no later than 2050. To that end, and building on our statement adopted in June in Elmau, we endorse the Climate Club's terms of reference as established by the Climate Club Task Force and hereby establish an open and cooperative international Climate Club. Focusing in particular on the decarbonisation of industries, we will thereby contribute to unlocking green growth. We invite international partners to join the Climate Club and to participate in the further elaboration of its concept and structure. In doing so, we will continue working closely together with relevant International Organisations and stakeholders. We ask the Organisation for Economic Cooperation and Development (OECD), in tandem with the International Energy Agency (IEA), to host an interim secretariat working together with other International Organisations."

Annex 3 - COP27 Decision on the Second Periodic Review

Second Periodic Review of the long-term global goal under the Convention and of overall progress towards achieving it

1. Welcomes the work under the structured expert dialogue (...) and takes note of the synthesis report thereon, including the 10 key messages highlighted therein (...).

(..)

5. Reaffirms the long-term global goal of holding the increase in global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels (...).

6. Expresses alarm and utmost concern that human activities have caused a global average temperature increase of around 1.1°C above pre-industrial levels to date and that impacts are already being felt in every region and will escalate with every increment of global warming.

7. Recalls that the impacts of climate change will be much lower at the temperature increase of 1.5°C compared with 2°C, and acknowledges that limiting the global average temperature increase to 1.5°C above pre-industrial levels with no or limited overshoot would avoid increasingly severe climate change impacts, stressing that the severity of impacts will be reduced with every increment of global warming avoided.

8. Reaffirms that limiting global warming to 1.5°C requires rapid, deep and sustained reductions in global greenhouse gas emissions, including reducing global carbon dioxide emissions by 45 per cent by 2030 relative to the 2010 level and to net zero around mid-century as well as deep reductions in other greenhouse gas emissions.

(..)

15. Notes that, despite overall progress on mitigation, adaptation and means of implementation and support, Parties are not collectively on track to achieving the long-term global goal and that the pre-2020 pledges of some Parties and their subsequent implementation have been insufficient.

16. Also notes that there are still significant gaps between collectively pledged emission reductions and the reductions required to achieve the long-term global goal, as well as gaps in support for adaptation and means of implementation for developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change, as provided for in the Convention.

17. Acknowledges that in order to shift to and remain on a pathway to achieving the long-term global goal, Parties must enhance their efforts under the Convention and the Paris Agreement to significantly reduce their aggregated emissions prior to 2030, while recognizing the financial, technological, economic, capacity-building and institutional challenges and needs and special circumstances of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change, as provided for in the Convention.

18. Notes that, although some progress has already been made by the UNFCCC, its constituted bodies and other entities in scaling up financial, technological and capacity-building support, these enablers for climate action are not yet aligned with the urgency of a rapid, just and equitable low-emission and climate-resilient transition and significant gaps still exist in terms of both the scale and the speed of such progress.

19. Recognizes that climate finance has increased since the first periodic review but is still inadequate to address the needs and priorities, reiterates that developed country Parties provide enhanced support, including through financial resources, technology transfer and capacity-building, to assist developing country Parties with respect to both mitigation and adaptation, in continuation of their existing obligations under the Convention, and encourages other Parties to provide or continue to provide such support voluntarily.

20. Notes that Parties have different responsibilities, national circumstances and capabilities to contribute to achieving the long-term global goal, while the impacts and risks associated with warming are unevenly distributed, and in this regard, also notes the need for enhanced efforts towards achieving the long-term global goal, taking into account ambition, equity, just transition and the best available science.