

Short Summary

Intergovernmental Panel on Climate Change Global Warming of 1.5°C

This is a short summary that is referring to the data provided by the following report:

Title: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. Summary for Policymakers.

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The report “**Global Warming of 1.5°C**” is a response of the **Intergovernmental Panel on Climate Change (IPCC)** to an invitation by the United Nations (UN) to examine “impacts of global warming of 1.5°C above pre-industrial levels” in a special report. The report seeks to draw a comparison to the impacts of global warming of 2°C above pre-industrial level, as constituted as global target in the well-known Paris Agreement of 2015, as well as showing the required decrease in net emissions and possible trajectories for the 1,5°C target and pointing out the connections of global warming to sustainable development. After about 30 months of work since April 2016, IPCC has launched the report on **8th October 2018**. This short summary will refer to assessments and recommendations outlined in the **Summary for Policymakers**, with special consideration for all impacts and perspectives considering the pacific region.

The report states that currently, human activity is estimated to have caused a global warming of 1°C above industrial levels. This is already affecting, naturally spatially disproportionately, living conditions all over the world and is expected to intensify even further during the next few decades. The report finds that “Climate-related risks to health, livelihoods, food security, water supply, human security, and economic growth are projected to increase with global warming of 1.5°C and increase further with 2°C”.

Despite of this assessment that there will be an overall, global increase in the respective risks, it is fundamental to state that particularly “small islands” and “low-lying” areas will be challenged disproportionately by more dramatic and severe consequences if global warming is not limited to 1,5°C above pre-industrial levels.

Potential impacts and associated risks

The report names numerous impacts of global warming in a distinction of their extent, depending on the respective rise of global mean temperature (comparison between 1.5°C and 2°C global warming). This summary will emphasize those impacts with high importance to Pacific island states particularly.

Sea levels are projected to rise at a slower rate if global warming is reduced to 1.5°C above pre-industrial temperatures. Even though the report projects with high confidence that sea level rise will not be stopped completely but will continue to rise well beyond 2100, it is stated that a slower rise will “enabl[e small islands] greater opportunities for adaptation” to risks associated with sea level rise by improved capacities to build up stronger resilience in ecological and infrastructural terms.

Closely connected to a projected decrease in sea level rise, the report also projects “reduced increases in ocean temperature” which will reduce risks to marine ecosystems and thus for example fisheries. This applies particularly to coral reefs, which are already estimated to “decline by a further 70-90% at 1.5°C” but will basically vanish completely at 2°C (>99%). It also increases the risk of cyclones which are projected to strike more frequently at 1.5°C than 2°C.

In some aspects, “small island developing states” will furthermore be disproportionately exposed to the already mentioned overall increase in “Climate-related risks to health, livelihoods, food security, water supply, human security, and economic growth”. The report states that the “global proportion of the world population exposed to climate change-induced increase in water stress” might be reduced at 50% at 1.5°C versus 2°C.

Regarding economical impacts, the report also indicates that Pacific island states will belong to those nations experiencing the largest impacts of climate change on economic growth. The report furthermore states that risks associated with, among others, hot extremes, droughts, food security, natural catastrophes, and biodiversity and ecosystems, will globally decrease at 1.5°C compared to 2°C.

In a nutshell, the IPCC report provides strong evidence that almost all impacts of global warming will decrease at 1.5°C compared to 2°C and threaten Pacific island states particularly in disproportionately many aspects compared to other regions.

The report furthermore gives evidence that not only direct impacts will increase at 1.5°C versus 2°C, but also that adaptation needs will be lower if global warming can be limited to 1.5°C above pre-industrial level. A global warming of 2°C would thus inhibit adaptation capacities intrinsically which would in turn lead to an increase in the already worse impacts of 2°C heating. Improved capacities for adaptation thus reiterate the urgency of a prompt limit to 1.5°C because it renders the argument false that, even with 2°C heating in the first place, a planned and projected as feasible cooling down on 1.5°C on long term view would

have the same impacts as immediate limitation of global warming to 1.5°C. The report also emphasizes the disproportional vulnerability of some regions, including small islands, that is already decreasing their adaptation capacities but will exacerbate them further if global warming exceeds 1.5°C.

The report also emphasizes that even though impacts on small island nations might be less severe at 1.5°C than 2°C, they will still experience high multiple interrelated climate risks even at global warming of 1.5°C. This makes an immediate and effective action against global warming even more imperative for the Pacific region.

The report also stresses that even though these particularly vulnerable regions depend strongest on swift and efficient limitation of global warming to 1.5°C, there will be a globally significant decrease of adverse impacts of global warming of 1.5°C in comparison to 2°C.

Emission Pathways and System Transitions Consistent with 1.5°C Global Warming

The report thus also provides an overview of possible trajectories that would lead to a limitation of global warming to 1.5°C, as well as their respective feasibility.

It assesses that global net anthropogenic CO₂-emission will have to decline by about 45% until 2030, compared to 2010, and reach net zero in 2050 in order to achieve “no or limited overshoot of 1.5°C”. This constitutes a significant difference to below 2°C pathways, as currently postulated by the Paris Agreement of 2015, which would require a reduction of net emissions “by about 25% by 2030”, reaching net zero in 2070. This significant difference clearly shows the required fundamental changes in net emissions, while the consequences of not limiting global warming to 1.5°C above pre-industrial level show the urgency and importance of this limitation.

First of all, the report states that there are two fundamentally different ways of trying to approach a limit of global warming of 1.5°C above pre-industrial level.

The first one would be to limit the mean temperature to 1.5°C without ever exceeding it (no or limited overshoot pathways), whereas the second pathway allows temperatures to rise above 1.5°C and then relies on so called negative emissions, which means that more CO₂ must be absorbed from the atmosphere than emitted to it (overshoot pathways). However, the latter entails several disadvantages:

First, the high pressure to reach negative emissions would require heavier reliance and even dependence on the use of Carbon Dioxide Removal (CDR). CDR methods have not yet been proven to work with required efficiency and could furthermore potentially compete with other required measures associated with sustainable development, like increased need of agricultural land. The IPCC report therefore does not consider them to be sufficiently reliable methods at the scale required by negative emissions.

Second, a temporary overshoot of 1.5°C would both lead to irreversible impacts of global warming like loss of certain distinct species/ coral reefs, and would, as already mentioned above, significantly reduce vulnerable countries' capacities to adapt to adverse impacts of global warming and therefore further neglect regions and population groups which are already disproportionately affected by climate change.

Additionally, a temporary overshoot of 1.5°C might even entail a crossing of yet insufficiently studied tipping points which would lead to a in both speed and extend yet unknown rise in mean temperature and therefore render pathways to return to 1.5°C impossible.

These concerns also reiterate the imperative need for swift and effective limitations of global warming to 1.5°C, despite of the required efforts.

In sight of these concerns, the IPCC report illustrates four different exemplary pathways that limit global warming to 1.5°C with no or limited overshoot.

All four limited or no overshoot pathways vary in their reliance on Carbon Dioxide Removal (CDR) methods, but all rely less heavily on CDR than overshoot pathways. They also vary in the proportion between different methods of CDR, and naturally the amount of CDR directly effects the amount of necessary reduction of CO₂ emissions, and vice versa.

The report furthermore states that different socio-economic and political developments will lead to different pathways, respectively that certain developments could facilitate the implementation of one pathway but inhibit another. Therefore, the pathways reflect different scenarios which are all considered to be both possible and successful. For example, one scenario might rely more heavily on decreased demand by consumers, while a second can rely more heavily on technological innovations which reduce energy demand and therefore emissions by increased efficiency and a third calculates with widespread energy and resource intensive lifestyles but also includes higher amounts of Carbon Dioxide Removal. However, the report explicitly states that this is not a matter of “either or”, but that changes on supply and demand side as well as reductions of emissions and increases in CDR **can and must happen simultaneously.**

Despite of all the differences, the report emphasizes that all pathways have in common that they “would require rapid and far-reaching transitions in energy, land, urban and infrastructure” as well as industrial systems. These transitions are “unprecedented in terms of scale”, but not necessarily in terms of speed. The need for rapid change applies particularly to the span of time from now until 2030, during which almost all pathways consistent with global warming of 1.5°C with no or limited overshoot show “clear emission reductions”, more concrete reductions by 40-50%. The IPCC report stresses that delayed action against global warming will lead to several additional difficulties in regards to limiting global warming to whatever temperature and might furthermore even “increase uneven distributional impacts between countries at different stages of development”. **This again reiterates the need for immediate and efficient action against global warming by all players of society without further hesitation and delay.**

The report also points out that even though all pathways with no or limited overshoot rely on CDR to some extent, a heavy dependence on CDR is “subject to multiple feasibility and sustainability constraints”, meaning that the already mentioned risk of insufficient efficiency of CDR and competition of CDR with other sustainability associated needs may apply not

only to overshoot pathways requiring negative emissions but also to trajectories with relatively less reduction of emissions.

The interconnectedness of global warming and sustainable development

The last chapter of the IPCC report summary for policymakers deliberately refers to the several reciprocal connections between global warming and sustainable development. The report states that limiting global warming to 1.5°C will potentially limit the adverse impacts of climate change on sustainable development stronger than global warming of 2°C, as long as mitigation and adaptation processes are themselves conducted consistently with sustainable development. This naturally entails the warning that mitigation and adaptation processes must be conducted in constant regard to their impacts on areas beyond global warming, as shown in the example of possible competition of CDR with food security and biodiversity. It should, however, not deceive over the fact that the mere limitation of global warming will already strengthen the implementation of sustainable development, as proven in the first section of the report by showing the innumerable, sustainability associated, adverse impacts of global warming.

Seeing relatively decreased global warming as enhancing sustainable development and sustainable development as, in a nutshell, “balancing social well-being, economic prosperity and environmental protection”, the report also emphasizes that adverse impacts of global warming are particularly linked to the Sustainable Development Goals of eradicating poverty and reducing inequality. This additionally points out how global warming is very likely to have disproportionately adverse effects on the already most vulnerable which can be considered to reinforce the urgency of tackling climate change.

Apart from pointing out positive impacts limitation of global warming will have on the implementation of sustainable development, the report states that also in reverse, sustainable development “enables [...] transformations that help limit global warming to 1.5°C”. This can, exemplarily, include the promotion of social justice, equity, or ecological resilience.

The report finally states that all sectors of society, including “national and sub-national authorities, civil society, the private sector, indigenous peoples and local communities” can contribute to the limitation of global warming and should be strengthened in their capacities to fulfill their potential. Of particular interest might be the explicit notion of indigenous knowledge as key contribution to successful mitigation and adaptation to climate change. In regards to vulnerable countries, the report stresses the importance of international cooperation in sight on its potential to enhance “domestic capacities”.

The report repeatedly emphasizes the vast differences between local contexts which render detailed action recommendations in the report and thus this summary impossible.

Conclusion

To draw a conclusion, this summary will point out some of the key findings of this report in regards to both a global and a pacific context, in consideration of and respect for the diversity of pacific contexts which might let well-meant conclusions sound like wrongful generalizations.

The report points out how almost all impacts of global warming will strike more severe at 2°C than at 1.5°C. It emphasizes the interconnectedness between sustainable development and global warming, which reiterates the urgency for action which is already postulated by recognized differences in the extend of impacts depending on the respective extend of global warming.

These adverse impacts will have disproportionately adverse effects on pacific countries whose capacities to adapt to these impacts will be even further compromised by global warming.

The IPCC report clearly stresses that overshoot pathways which temporarily, and therefore on short term, overshoot 1.5°C are linked to several constraints associated with feasibility and sustainability as well as entailing several negative, irreversible impacts and restraining vulnerable countries' adaption capacities intrinsically.

The report therefore emphasizes the need to implement limited or no overshoot pathways which require system transformations unknown in terms of their scale. Even the current national mitigation plans are estimated to lead to global warming of 3°C in 2100 with further warming afterwards, without including the risks of tipping points which would accelerate the process significantly.

However, the report explicitly states that these so urgently needed pathways with limited or no overshoot can only be "achieved if global CO₂ emissions start to decline well before 2030", meaning that immediate action by all players of society is required to implement the required reduction in emissions. **It should also be pointed out that despite of the required scale of transformations, the report shows the strong conviction that these transformations are possible.**

For vulnerable pacific countries, this poses the challenge to find a suitable balance between reducing their own emissions, which in sight of the findings of the report can be assessed as potentially necessary and helpful, and adapting to the projected, expected and already visible impacts of climate change. Since both measures will require financial, political, and social capital, each pacific context is exposed to the inconvenient yet imperative task to analyse their individual context in regards to this required balance.

However, it remains the main finding of this summary that reduction of CO₂-emissions needs to be implemented as soon as possible on all levels around the globe, since further delay is not going to improve capacities to reduce emissions at a later stage of time, but will only allow global warming to continue further and thus automatically make the task of combating it more difficult. This applies particularly to those already most severely affected by global warming, adding another dimension of injustice to the already complicated topic.

Vincent Gewert, Volunteer at Institute for Mission and Research, Pacific Theological College