The Moment of Truth

Key takeaways from the IPCC Special Report on 1.5°C warming

8 October 2018

Climate change is no longer a future threat. It is here and it's rapidly getting worse. Just the examples from this year, from record-breaking heatwaves to wildfires raging from the Arctic Circle to the Mediterranean and the US West Coast, to reports of permafrost abruptly thawing, ancient baobab trees suddenly dying, the Great Barrier Reef collapsing and Antarctic melt tripling in just five years provide extremely alarming and painful reminders of just how far into the danger zone we have already plunged, with warming of 'just' **1°C above pre-industrial levels**.

In the Paris Climate Agreement, governments agreed to pursue a warming limit of 1.5°C. To understand what this truly means, governments asked the Intergovernmental Panel on Climate Change (IPCC) to prepare a Special Report on the topic. Now, after 1.5 years of intensive work by leading scientists from around the world, the report is ready and has been delivered to governments, to inform their decisions. In the following we highlight some of **our key takeaways** from this landmark report.

Key takeaways

- **2°C is much more dangerous than thought when the Paris deal was signed[1].** We are closer to critical tipping points and other key risks than we thought. Four out of the five main Reasons for Concern have been revised to signal substantially higher risks with lower levels of warming for humans, species and economies.

- **Limiting warming to 1.5°C instead of 2°C would make a huge difference for** the life in oceans and land. It would protect hundreds of millions of people from frequent extreme heatwaves, halve the proportion of additional populations suffering water scarcity and help achieve sustainable development and poverty eradication goals.

- **Limiting warming to 1.5°C or below is challenging but still achievable,** if we are fast, bold and lucky, and accelerate action on all fronts now.

- **Solutions exist that could enable halving global carbon emissions by 2030** in ways that support development goals, build climate resilience and deliver us healthier and more prosperous societies.

- **The next few years are critical** for the world to embark on a transformational path to reduce its carbon emissions and increase its forests to bring emissions to **net zero by mid century the latest**. With countries' current climate targets for 2030, we would have no chance. So they must be improved.

- **We need to think big, at all levels, with everyone on board.** The challenge is unprecedented and it won't be solved by technology or economics alone. We need better governance and deeper understanding of system transformations, agency and motivation for change. And we need to prepare for the impacts and losses that can no longer be avoided, meeting the needs of people at risk.

…and in more detail…

---

[1] These refer to new scientific evidence since the 5th Assessment Report published in 2014. See SPM B5.7.

GREENPEACE

International

- **We are now 1°C above pre-industrial levels**. If temperature continues to increase at the current rate, 1.5°C warming will be exceeded between 2030 and 2052.
- **Another 0.5°C will increase widespread impacts, risks and losses**. 1.5°C could be enough to destabilise ice sheets, kill up to 90% of warm water corals, cause severe problems to marine life and to the Arctic and to people.
- **Yet, limiting warming to 1.5°C instead of 2°C would reduce further risks and impacts substantially**, regarding weather extremes, species loss, water scarcity, food shortages, heat-related deaths, ocean impacts, polar regions and so on, (see the table *below* for comparison of 1.5°C vs. 2°C).

Impacts and risks of 1.5°C vs. 2°C		Ref
Ice sheet tipping points	Greenland and Antarctic instabilities, that could lead to irreversible melting and multi-meter sea-level rise, could be triggered at around 1.5°C - 2°C.	SPM B2.2 TS-12
Arctic	Risk of having a sea ice free Arctic summer could be limited into once per century, compared to once per decade in 1.5°C vs 2°C.	SPM B4.1
Sea-level rise	Up to 10 million less people exposed to sea-level rise risks at 1.5C vs 2C	SPM B2.1
Ocean impacts	Ocean ecosystems are already experiencing large-scale changes, with critical thresholds expected to be reached at 1.5oC and above.	TS-13
Corals	Warm water corals would lose a further 70-90% of cover at 1.5°C global warming, and 99% at 2°C.	SPM B4.2
Fisheries	With 1.5°C the decrease in global annual catch for marine fisheries is halved compared to 2°C	SPM B4.4
Ecosystem services	Important benefits for terrestrial, freshwater, and coastal ecosystems and for the preservation of their services to humans in 1.5°C vs 2°C.	SPM B3.1
Species loss & extinction	The number of species projected to lose over half of their range reduced by 50% for plants, vertebrates and 66% for insects at 1.5°C vs 2°C.	SPM B3.1
Ecosystems	The terrestrial area affected by ecosystem transformation is approximately halved at 1.5°C vs. 2°C.	TS-12
Heatwaves	Around 420 million fewer people being frequently exposed to extreme heatwaves at 1.5°C vs 2°C.	TS-11
Water scarcity	The proportion of the world population exposed to a climate-induced increase in water scarcity could be reduced by up to 50 %	SPM B5.4
Multi-sector risks & poverty	Four times more people exposed to multi-sector climate risks and vulnerable to poverty at 2°C vs 1.5°C (86-1229 million vs 24-357 million).	Table 5.1
Food system	Ten times more people exposed to lower crop yields at 2°C vs 1.5°C.	Table 3.4
Weather extremes	Substantial increases in weather extremes between 1.5°C and 2°C.	SPM B1
Permafrost	Stabilising at 1.5 °C rather than 2 °C would save approximately 1.5-2.5 million km2 of permafrost.	SPM B3.3

- **With countries' current climate targets we are heading for well above 3°C.** This is a possible future with frequent heatwaves and other climate extremes, escalating forest fires, more destructive hurricanes, major and irreversible ecosystem destruction and species loss, causing massive disruption to local livelihoods. We could see large agriculture areas abandoned, major conflicts wrecking societies and entire countries becoming dysfunctional. It is a future where life, for many Indigenous and rural groups and islanders, could become untenable in their ancestral lands, with Peoples or whole nations looking to an increasingly fragmented global community for refuge. **By 2100 the world as we know it now would no longer be recognisable**.[2]

- **Sticking to countries' current 2030 targets would close the door from 1.5°C**. Countries' current Nationally Determined Contributions (NDC) would lead to about double the emissions of where we'd need to be by 2030. This is a problem that cannot be fixed with new targets after 2030. That would be too late.[3]

- **To get below 1.5°C global CO2 emissions would need to be halved by 2030**[4] **and reach net zero by mid-century at the latest,** with substantial reductions in other gases. The faster we cut emissions the smaller the warming and related risks.

- **Rapid and far-reaching societal and systems transitions will be needed** in energy, land, food, urban, consumption and industrial systems, enabled by a range of new social, behavioural and technological innovations. Successful approaches will likely be those that try to solve mitigation, adaptation and development needs in an integrated and inclusive way.

- **Pathways that aim for both rapid decarbonisation and sustainability come with most benefits and least risks.** These type of pathways[5] assume social, economical and technological innovations, sustainable consumption patterns, healthier diets with low animal-calorie shares, low food waste, well-managed land systems and with strong focus on energy and resource efficiency. Accelerated short-term emissions cuts reduce risks of exceeding 1.5°C and limit the need for carbon dioxide removals.

- **Delayed action comes with more risks and less benefits.** These are high-risk pathways, given that carbon dioxide removal (CDR) deployed at scale is unproven and comes with many barriers, and whether negative emissions can eventually reduce temperatures after they peak is still an open question[6]. Delayed action comes with cost escalation, lock-in in carbon-emitting infrastructure and stranded assets[7].

- **In the power sector, a system transition for 1.5°C may already be underway,** as feasibility of solar, wind and electricity storage technologies has improved significantly over the past few years. Real potential of renewables is even higher than the renewable energy growth numbers shown in the SPM (70-85 % of electricity by 2050), as the models they are based on are failing to capture the true speed and nature of this transformation. Sectoral studies find potential for scaling up to 100% renewable energy.[8]

- **Fossil fuels will need to be phased out very rapidly.** By 2030 overall coal consumption would need to be cut by at least two thirds[9], and by 2050 to almost zero

---

[2] Chapter 3, Cross-Chapter Box 8, Table 2: Storylines of possible worlds resulting from different mitigation options. The storylines build upon Cross-Chapter Box 8, Table 1, and the assessments of Chapters 1-5.

[3] SPM D1

[4] See SPM Figure SPM.a3 and para C1.

[5] The descriptions here describe the illustrative pathways P1 and P2 used in the Report. See SPM and Chapter 2, pages 72 and 84.

[6] SPM C3.3

[7] SPM D1.3

[8] Chapter 2, page 52.

[9] See Chapter 2, Table 2.6, median value for coal reductions from 2020 to 2030.

in power[10]. Oil and gas will need to decline rapidly too. In the P1 pathway[11], that doesn't rely on carbon dioxide removal technologies, global oil consumption would decline by 37 % by 2030 from 2010 levels and gas by 13 %, which correspond to even higher cuts from current levels[12]. These provide good benchmarks for the dramatic speed of change needed.

- **Smarter energy use, decarbonising power sector and electrification** of energy end use in transport, industry and urban systems are essential components of the broader system transformations.

- **Forests and land play a key role in pathways to 1.5°C.** In addition to preserving existing forests and land carbon stocks, and reducing agriculture emissions, action is needed to enhance carbon dioxide removals, to achieve negative emissions.

- **Natural Climate Solutions exist in reality, but not yet in models.** These conservation, restoration, and improved land management actions that increase carbon storage and/or avoid greenhouse gas emissions across global forests, wetlands, grasslands, and agricultural lands have the potential to provide over a third of the cost-effective CO2 mitigation needed through 2030 for a 2°C target, which implies high potential for 1.5°C too.[13] Yet these ecosystem-based approaches are not yet well explored in Integrated Assessment Models that underpin the IPCC report[14].

- **BECCS exists in models but not in reality.** Bioenergy coupled with Carbon Capture and Storage (BECCS) is a common feature in pathways that try to remove excess emissions from the atmosphere. While the different components exist, it remains unproven on a commercial scale. Its deployment would take up vast amounts of land and water, threatening food production, wildlife and land rights. It faces major constraints from governance, infrastructure and finance to issues of permanence and liability, which are not yet well factored in to the current 1.5°C pathways - with the exception of some model runs (that then result in less or no BECCS). However, the role of BECCS as the dominant CDR measure in deep mitigation pathways has been reduced since the previous IPCC report (AR5) and is expected to be reduced further as other CDR measures are being included in the models.[15]

- **Dietary choices along with reduced food loss and waste** could reduce emissions and increase adaptation options with significant co-benefits for food security, human health and sustainable development.

- **The feasibility of staying within 1.5°C depends upon a range of enabling conditions** with geophysical, environmental- ecological, technological, economic, socio-cultural, and institutional enabling conditions. It also involves identifying technology and policy levers to accelerate the pace of transformation.

- **Addressing inequalities and acceptability** will be key to enable the kind of societal and systems transformations required, both on national and international level.

- **Addressing adaptation as well as limits to adaptation will be crucial** even if the 1.5°C limit was met[16] as impacts that people are already experiencing are going to get worse still.

---

[10] SPM paragraph C2.2

[11] SPM, Figure SPM3b

[12] The P1 pathway is the Low Energy Demand scenario by Grubler et al (2018), which assumes oil use to be almost halved (-46 %) and gas use to decline by about one third (-37%) between 2020 and 2030. See https://db1.ene.iiasa.ac.at/LEDDB/

[13] Chapter 5, page 156. See also SPM C3.5.

[14] Chapter 2, page 14.

[15] Chapter 2, page 41, TS-8 & TS-19.

[16] SPM B6

What does this mean for action?

This is an all hands on deck moment. We need to do everything faster and bolder, at all levels and leave no sector behind.

Heading for zero global emissions, through halving them by 2030 provides clear benchmarks for the challenge we have ahead. Those with more capacity and responsibility must lead the way and support others in their journey.

Governments must fundamentally upgrade their 2030 targets and plans, as current targets are on track to an apocalyptic 3-4 °C future. At the COP24 climate conference in Katowice this year, governments must act on this report and commit to aligning their national plans with 1.5°C by 2020.

Cities, often at the forefront of action and impacts, can be forerunners in showing how decarbonisation, sustainability and building climate resilience go hand in hand.

Financial system must align with the 1.5°C challenge, as shifting investment flows will be key in avoiding high-carbon lock-in. Progressive businesses and investors can lead the way by aligning their strategies with 1.5°C.

Accelerate the transition into a world powered fully by renewable energy, where smart, efficient and sustainable solutions lower our overall energy needs.

Protect and restore ecosystems to build resilience. Healthy ecosystems are more resilient in the face of inevitable climatic changes. We must end deforestation, restore forests and other terrestrials ecosystems; adopt agroecology and more plant-based diets and protect at least 30% of our oceans in marine reserves, including ocean sanctuaries at the Arctic and the Antarctic.

Prepare for the unavoidable - with justice. Climate change is a reality. All future development and water management plans, infrastructure projects and food security programmes must factor in climate reality. The ‘polluter pays’ principle must be at the heart of adaptation and compensation efforts between and within countries

Those who condemn 1.5°C as unrealistic must be challenged to present their ‘realistic’ plans for thriving in a ‘hothouse Earth’. That existence is truly unrealistic. Yet, most governments are neither preparing for the 1.5°C world we should be going to, nor for a 3-4°C world we are currently heading towards. So we’re just drifting. Sleepwalking towards chaos. We must take control of our future.

This is our moment of truth. For radical honesty. This is the moment to admit that with incremental action we are only fooling ourselves. We have no time for small steps anymore. This is the moment to rise up, be bold and think big.

There’s a role to play for everyone. And we must leave no-one behind.

For more information, contact:
enquiries@greenpeace.org

Greenpeace International
Ottho Heldringstraat 5
1066 AZ Amsterdam
The Netherlands
Tel: +31 20 7182000

greenpeace.org

GREENPEACE

International