

IPCC WGII report on climate change impacts, adaptation and vulnerability

March 2014

What to expect?

The Intergovernmental Panel on Climate Change (IPCC) is the world's leading body for the scientific assessment of climate change. Operating under the UN, it brings together top climate scientists to assess the latest climate science and to inform governments in decision making.

The IPCC is best known for its comprehensive Assessment Reports, published about every six years (since 1990). The 5th Assessment Report (AR5) is being released in 2013-2014 in four parts¹.

The first part, in September 2013, reconfirmed that climate change is happening, we're causing it, and it is rapidly getting worse. It also introduced four new IPCC scenarios that reflect different levels of action to cut emissions, resulting in different levels of future warming and impacts.

This briefing gives a **preview of the second part of the AR5** that is to be finalised at an IPCC meeting 25-29 March in Yokohama, Japan, and **released on March 31**.

What's the Working Group II report about?

The IPCC Working Group II report deals with climate change impacts, vulnerability and adaptation. Scientists have assessed the damage we've already caused to the planet and human systems; what's ahead if we continue burning fossil fuels and destroying forests; and how we can reduce and manage risks ahead.

In more than 2,000 pages and [30 chapters](#), the report covers impacts, risks and adaptation options globally, as well as for different sectors and regions.

What's new in the report?

Climate change has been researched for decades now. The WGII report is less about radical new discoveries and more about increasing certainty and evidence of what we already knew and broadening and deepening the scope of our understanding. The WGII now draws on **twice as much literature** than last time.

The report has a **stronger human dimension** than previous ones, focusing more on what climate change means for us, our societies, our food and water security, livelihoods, homes, health, risks of violence and conflicts. For the first time it has a whole chapter devoted to **human security**.

Another key focus is on **choice**: how much further damage and risks can we avoid by cutting emissions fast and preparing for impacts – and what if we fail to do it? This comparison is now possible due to new Representative Concentration Pathway (RCP) scenarios used in the AR5, which assume different levels of mitigation actionⁱⁱ. The SRES scenarios used before assumed no specific climate policies to be implemented.

Two whole chapters have been devoted to oceans; [ocean acidification](#), in particular, is a key focus area, as research has been advancing rapidly since the last report.

What constitutes a risk and for whom is elaborated in detail, recognising that the answers can't be derived from biophysical realities alone. The WGII report has focused increasingly on the interaction between climate hazards and "social hazards", namely vulnerabilities emerging from poverty, social and institutional weaknesses and inequalities, and what it means for adaptation needs.

Finally, there is increased attention to **limits to adaptation**: when do risks or impacts for human societies or natural systems become intolerable? How far can we get with incremental or technical approaches to adaptation? How to avoid maladaptation?

How bad is climate change now?

The two recent IPCC reports on [science](#) and [extreme weather events](#) already painted a scary picture: air temperatures and oceans are warming, Arctic sea ice has melted much faster than anticipated, ice-sheet melt has accelerated dramatically, and sea-levels are rising. Heat waves are increasing, precipitation patterns are changing, and plant and animal species are moving and changing in abundance.

According to the World Meteorological Organisation (WMO), the world experienced unprecedented high-impact climate extremes during the 2001-2010 decade, which was the warmest since the start of modern measurements. It is too early to define how much of this "[Decade of Climate Extremes](#)" could be natural variability, and how much could be attributed to human-caused warming, but the trends are clear.

The WGII report will elaborate on how this is already affecting our food security, water supply, health, livelihoods, human security, and so on.

How bad can it get?

We have now experienced less than 1°C warming in global mean temperature compared with pre-industrial levels. Half a degree more, and some key risks start turning from moderate to high. Governments have agreed to limit warming to less than 2°C, which would prevent the worst impacts, but with recent emission trends we are heading towards 4°C. (During the last ice age, global average temperature was only about 4°C to 5°C colder than now.)

The IPCC WGII report compares these two possible futures – a warming of 2°C and warming of 4°C – and how much key global and regional risks could be reduced with adaptation.

For a preview of a 4°C world, the World Bank's recent [Turn Down the Heat](#) report by top scientists gives a helpful overview, with [infographics](#) and [animation](#).

What will WGII be remembered for?

The WGII report will update the famous [Reasons for Concern](#) graph that visualises how overall risks increase along with temperature. In one illustration, it is expected to make an even stronger argument for why limiting warming as far below 2°C as possible is crucial. It is expected to also explain why it is perfectly sensible that the most vulnerable countries are now urging for this global goal to be revised down to a maximum warming of 1.5°C.

This will be a key message from the world's scientific community to governments, who are currently preparing for new climate targets to contribute to a new UN climate treaty due to be agreed in Paris in December, 2015.

What else to look for?

To be successful, adaptation can't be approached as a standalone technical issue. Risk management has to be integrated into overall economic and social planning and be sensitive to local values and livelihoods, as the WGII will elaborate in detail.

The **UN World Water Day** celebrations, [taking place](#) March 20-21 just before the IPCC meeting in Japan, will give an introduction to what climate adaptation means for the energy sector. In a warming world that faces increasing water shortages, coal power in particular, with its huge and growing water footprint, will only make the problem worse, by competing for scarce water resources with agriculture, cities and other users. Meeting development needs in a water-constrained and climate-impacted world will require rapid deployment of energy efficiency, wind and solar.

Who's going to pay for adaptation and compensate for loss and damage?

While money alone won't solve adaptation, it will be necessary for both adaptation and compensating for loss and damage. Today there's a major funding gap and a growing adaptation deficit, particularly in developing countries.

It's not in the mandate of the WGII to suggest who should pay for the adaptation, but it will indicate who is already paying a high price for climate change: those who have typically contributed to the problem the least.

Greenpeace believes that those who have caused the problem – and even profited from doing so – should be made to pay for the damage they've caused. According to a [recent study](#), just 90 entities (companies, state-owned enterprises and states) are responsible for greenhouse gas emissions equivalent to 63% of all historic emissions.

What's clear, however, is that climate change threatens to cause incalculable and irreversible losses of lives, species and cultures that money can't buy. Pursuing high-carbon growth or profits now to fix things later with money is not an option.

We need an emergency plan. What does that look like?

The IPCC will discuss mitigation in its WGIII report to be released mid-April.

Here's what Greenpeace thinks is needed now:

1. Fossil fuel phase-out

To minimise further warming and ocean acidification, and to cope with a worsening climate reality, new [fossil fuel projects](#) must be halted, and most of the oil, coal and gas reserves kept in the ground. By mid-century, fossil fuel emissions must be phased out.

2. Speed up the transition to green energy

Since the last IPCC report, renewable energy has made a breakthrough. It's bigger, it's cheaper, it's growing fast and it's ready to [challenge](#) fossil fuels. Now what's needed is policy certainty to enable [transition](#) towards 100% renewables.

3. Give global cooperation a chance

A new climate deal is to be sealed in Paris in 2015. To get there, countries must deliver on existing commitments and make offers for new emissions cuts that are fair and adequate to keep global warming as far below 2°C as possible.

4. Protect our forests, oceans and the Arctic. Smarten our food chains

A healthy ecosystem can cope better with external stress than one that's already degraded due to other human activities. We must protect the Arctic, intact forest ecosystems and oceans from exploitation, and move to ecological farming.

5. Make polluters pay for the damage

Financial flows must be turned from problems to solutions. This requires fixing distorted economic incentives and attributing responsibility to polluters.

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ⁱ The IPCC 5th Assessment Report will be published in four parts by different Working Groups (WG):
WGI: [The Physical Science Basis](#), was published 27 Sep 2013, Stockholm, Sweden
WGII: **Impacts, Adaptation and Vulnerability**, 31 Mar 2014, Yokohama, Japan
WGIII: **Mitigation of Climate Change**, 13 Apr 2014, Berlin, Germany
AR5 **Synthesis Report (SYR)**, 27-31 October 2014, Copenhagen, Denmark.

ⁱⁱ One of the four new IPCC scenarios is compatible with staying below 2°C (RCP2.6), while one is a so-called business-as-usual scenario (RCP8.5), that results in warming of about 5°C by 2100, compared to pre-industrial levels. The remaining two (RCP4.5 and RCP6.0) fall in between. RCP stands for “Representative Concentration Pathways” and each number refers to the radiative forcing level (W/m²) each scenario will lead to by 2100.