

## **The Fifth Assessment Report of the Intergovernmental Panel on Climate Change IPCC AR5<sup>1</sup>**

### **1. What is it?**

This is the “Fifth Assessment Report” (AR5) of the Intergovernmental Panel on Climate Change (IPCC), from “working group one” (WG1) which covers the “physical science.”

The Intergovernmental Panel on Climate Change (IPCC) is a UN body, made up of scientists and experts, tasked with producing five yearly updates of knowledge on the scientific, technical and socio-economic aspects of climate change. It has three scientific working groups each producing and publishing a detailed report. These are synthesised into one document after completion of all three. The “Fourth Assessment Report” (AR4), released in 2007, is widely credited with sparking greater global awareness of the challenge of climate change - after its release its authorship team won the Nobel Peace Prize for their efforts.

The “Fifth Assessment Report” is expected to confirm many of the predictions from AR4.

### **2. What is the process**

The WG1 report will have 14 chapters produced by 209 lead authors and 50 review editors from 39 countries. Over 600 authors from 32 countries will have contributed. Over 9200 scientific publications will be cited in the report. The summary report will be agreed line by line by up to 195 countries in a three day meeting in Sweden.

Because of the nature of the process the AR5 report is likely to be conservative in its conclusions, and it will not reflect science in papers submitted for publication after the 31<sup>st</sup> of July 2012.

### **3. When do the other chapters come out?**

*Working Group 1:* Will focus on the physical science basis of the climate system and climate change. It will take place 23-26 September 2013 in Stockholm, Sweden. The Summary for Policy Makers (SPM) will be released at 10am Stockholm time on Friday, 27 September and the press conference will be webcast. The full report from Working Group I is expected to be released on 30 September.

*Working Group 2:* Will focus on impacts, vulnerability and adaptation, and take place 25-29 March 2014 in Yokohama, Japan.

*Working Group 3:* Will address mitigation options and take place 7-11 April 2014 in Germany.

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<sup>1</sup> This note is based on the latest available draft of the SPM, please check against final version.

The final installment will be a “synthesis report” which brings together the work of the three working groups into one report. This will be released during a meeting on 27-31 October 2014 in Copenhagen, Denmark.

#### 4. What are the key findings of this report (WG1)?

The basic findings are:

- Climate change is happening and that humans are driving it.
- Temperatures are rising particularly over landmasses
- The oceans are acidifying
- Arctic sea ice retreat has doubled
- Antarctic and Greenland ice sheets are shrinking
- Sea-level rise caused by climate change is projected to be higher than initially thought

#### 5. What are our key messages?

Our focus is on showing that:

- Climate change is real and is driven by human emissions
- The impacts of climate change will be catastrophic, particularly for food production
- To avert the worst impacts of climate change we must substantially and continually reduce emissions
- A starting place to reduce emissions is the transformation of the energy sector.

#### 6. Are the skeptics right?

No. There is nothing in the IPCC that could be said to give credence to climate skeptic talking points. In fact the IPCC have again examined and rejected major arguments of the skeptics, such as the that volcanoes, variations in the sun’s output, or the urban heat island effect are the main causes of observed warming.

The IPCC *does* note that the rate of warming in the last 15 years is “smaller than trend” but that does **not** mean there has been “no” warming; in fact the IPCC stresses that each of the last three decades have been warmer than all of the preceding decades going back to 1850 and the first decade of the 21<sup>st</sup> century **(2000-2010) has been the warmest.**

It also provides various explanations for the slower warming in the atmosphere. A main reason is that more of the warming has appeared in the oceans recently. This is linked to the *La Nina* weather pattern that has predominated in the last 15 years, and which has historically had a cooling effect.

#### 7. What does it mean that “climate sensitivity” might be lower?

Climate sensitivity is the how much temperature rise would be caused by a doubling of CO<sub>2</sub> in the atmosphere from pre-industrial levels.

In the last IPCC report (AR4) the range for this sensitivity was 2C – 4.5C; in this report (AR5) the lower bound has changed to 1.5C.

This does not mean that 1.5C temperature rise is the likely result of doubling CO2 concentrations, it means it is a possible (greater than 10% likelihood).

This may be good news – it may give us slightly more time to reduce emissions – but it is most likely irrelevant because:

- Impacts are being projected at lower temperatures, so we could experience the same impacts at 1.5C as were projected at 2C;
- Our current emission pathway is so far above a ‘doubling’ of CO2 concentrations that we are currently facing 4C-6C of warming this century.
- While climate sensitivity might – in a best case scenario – turn out to be at the 1.5C end of the range, it is just as likely to be at the 4.5C end of the scale, which would imply tremendous adaptation costs and devastating impacts.
- A new published scientific article has assessed ‘climate sensitivity’ including tipping-points/feedbacks (which the IPCC excludes) and suggests that it is ‘likely to be larger than 3-4C.’<sup>2</sup>

## 8. What do the terms “likely” and “very likely” even mean?

The IPCC uses the following terms to express probability:

<b>Term</b>	<b>Likelihood of the Outcome</b>
<i>Virtually Certain</i>	99-100%
<i>Extremely Likely</i>	95-100%
<i>Very Likely</i>	90-100%
<i>Likely</i>	66-100%
<i>About as likely as not</i>	33-66%
<i>Unlikely</i>	0-33%
<i>Very unlikely</i>	0-10%
<i>Exceptionally unlikely</i>	0-1%

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<sup>2</sup><http://rsta.royalsocietypublishing.org/content/371/2001/20120294.abstract.html?cited-by=yes&legid=roypta;371/2001/20120294>