From a risk perspective the most important in the new IPCC reports are numbers that are not included, i.e > 4 °C

- The probability for warming beyond 4 °C and associated impacts must not be forgotten by policy makers, business leaders, academics, NGOs and others working on climate change says Margot Wallström, spokesperson from Global Challenges Foundation (GCF).

GCF welcomes the new AR5 summary for policy makers (SPM) from WGII on Impacts, Adaptation, and vulnerability, and from WGIII on Mitigation as scientifically undisputable and therefore incredibly robust reports that clearly show how serious the impacts for humanity would be already at 2 °C warming, and the devastating impacts at a 4 °C warming. They furthermore clearly show the urgency for global concerted collaboration in order to ensure a world transition to a low-carbon world economy by 2050, only 36 years away.

GCF in particular welcomes that WGII and WGIII emphasise that "assessment of the widest possible range of potential impacts, including low-probability outcomes with large consequences, is central to understanding the benefits and tradeoffs of alternative risk management actions"[1], and that "risks associated with the full range of outcomes are relevant to the assessment of mitigation" [2].

While WGII clearly state the need to assess low-probability high-impact outcomes there is no information included about impacts beyond a 4 °C warming. This is unfortunate as the WGI report showed that already 450 ppm concentration can result in more than a 4 °C warming. Similarly, WGIII emphasizes the necessity to consider risks associated with extreme climate change and in particular low probability high impact "tipping points" that could trigger new climate regimes.[3]

[1] IPCC WGII AR5 Summary for Policymakers, page 10
[2] IPCC WGIII AR5 Summary for Policymakers, page 5
[3] IPCC WGIII AR5 Summary for Policymakers, page 5

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The fact that discussions about impacts beyond a 4 °C warming are not included in the WGII does not mean that they do not exist, on the contrary. The reason that impacts from a warming beyond 4 °C are excluded is often that the models are unable to provide any reliable results, as the impacts will take place in a system that is very unstable.

- The underlying assumption of current models is that nature will continue to absorb about 50% of the CO_2 emitted. This cannot be taken for granted and research shows that many systems are close, or may have passed, their capacity to continue to absorb CO_2. Further, it is important to understand that nature have thresholds and that once we reach certain levels of warming feedbacks may kick-in that reverses the direction of flow of greenhouse gases, where nature instead of being a sink, becomes a source of emissions resulting in a situation where the temperature will continue to increase even if we stop emitting greenhouse gases. Understanding risk therefore prompts us to use a precautionary approach when setting targets for emissions, says Johan Rockström, board member GCF.

The number of times different possible future temperature increases are mentioned in AR5 WGII SPM provides a rough indication of focus. Such an assessment shows that the report focuses on the impacts at 2 °C and 4 °C warming. In addition there are a few discussions about a 1C and 3C warming. The impact of a 5 °C warming is included once, in a graph indicating the level of additional risk due to climate change. (See chart 3 below).

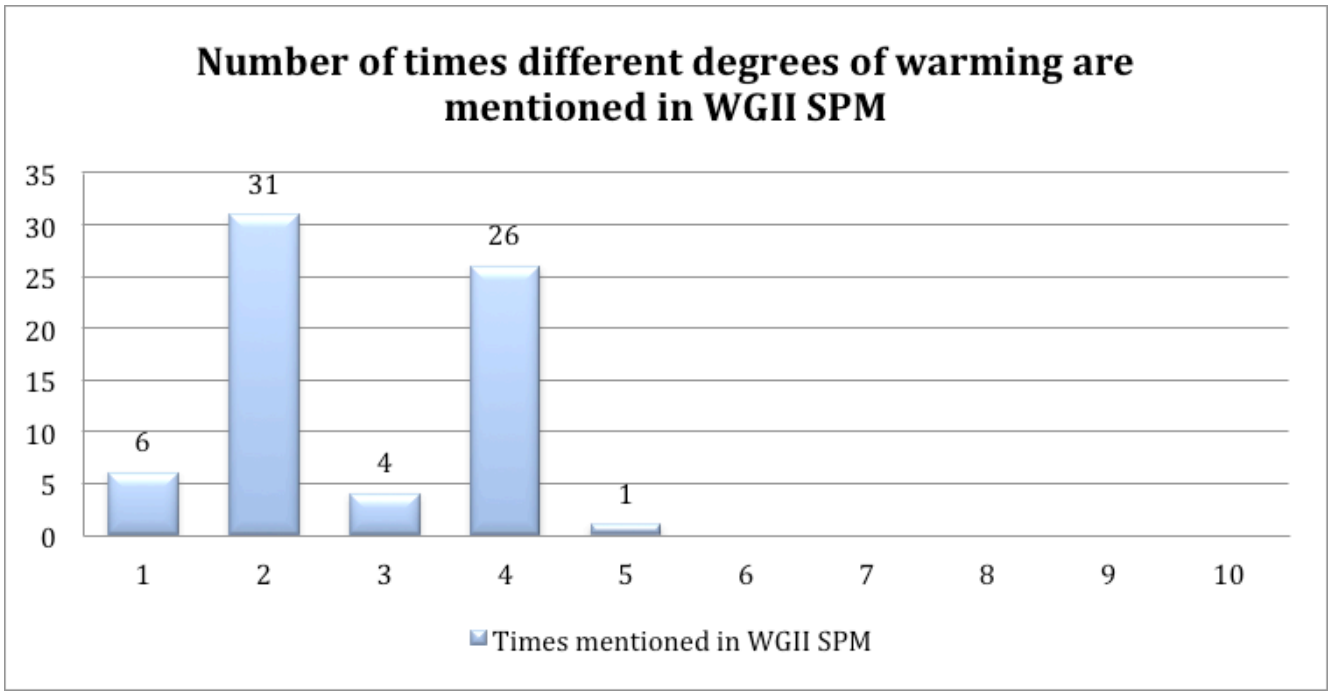

Chart 1: Number of times different degrees of warming (C) are mentioned in AR5 WGII

The fact that nothing is mentioned about impacts beyond 4 °C does not mean that policy makers should ignore such extreme temperature increases. From a risk perspective the

opposite is true. If there is great uncertainty regarding the impacts the worst scenario should be assumed until this is disproven.

The graph from WGII SPM indicating the level of additional risk due to climate change ends at 5.61 °C, or 5 °C compared with today. [4]

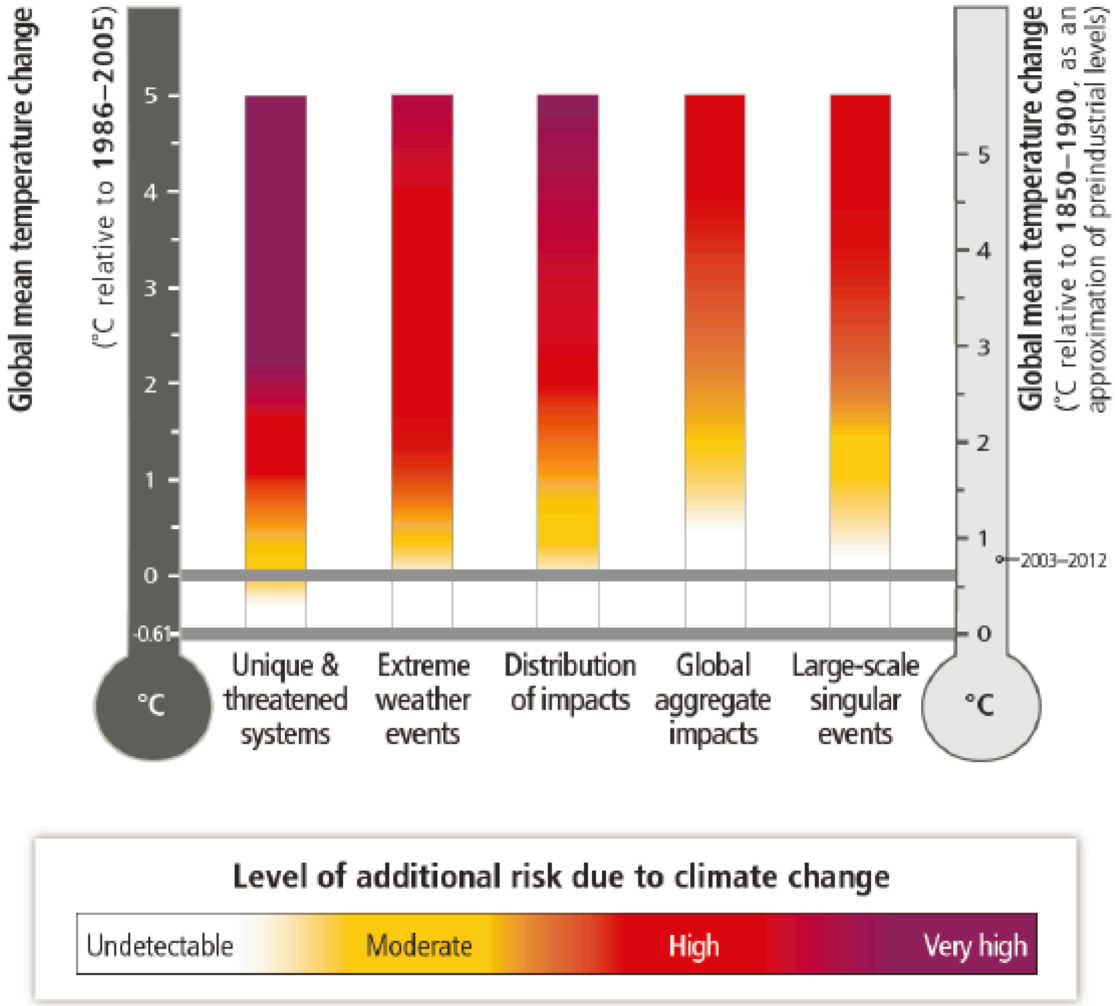

Chart 2: Level of additional risk due to climate change[5]

As an example of the lack of knowledge about the impacts above 3 °C IPCC WGII writes ”Losses accelerate with greater warming (limited evidence, high agreement), but few quantitative estimates have been completed for additional warming around 3°C or above.”[6]

[4] IPCC WGII AR5 Summary for Policymakers, page 39
[5] IPCC WGII AR5 Summary for Policymakers, page 39
[6] IPCC WGII AR5 Summary for Policymakers, page 19

The AR5 WG1 report provided excellent data that made it possible to calculate a probability distribution for different degrees of warming at different PPMs. The probabilities for a 5 °C warming or more for a 550ppm equilibrium green house gas concentration is more than 10% and for a 450ppm it is 3.5%.

Those are both very high probability numbers for such serious consequences. As we move forward the Global Challenges Foundation hope that policy makers approach the WGII report with a scientific risk approach, where a lack of data for low probability high-impact outcomes result in increased action not less.

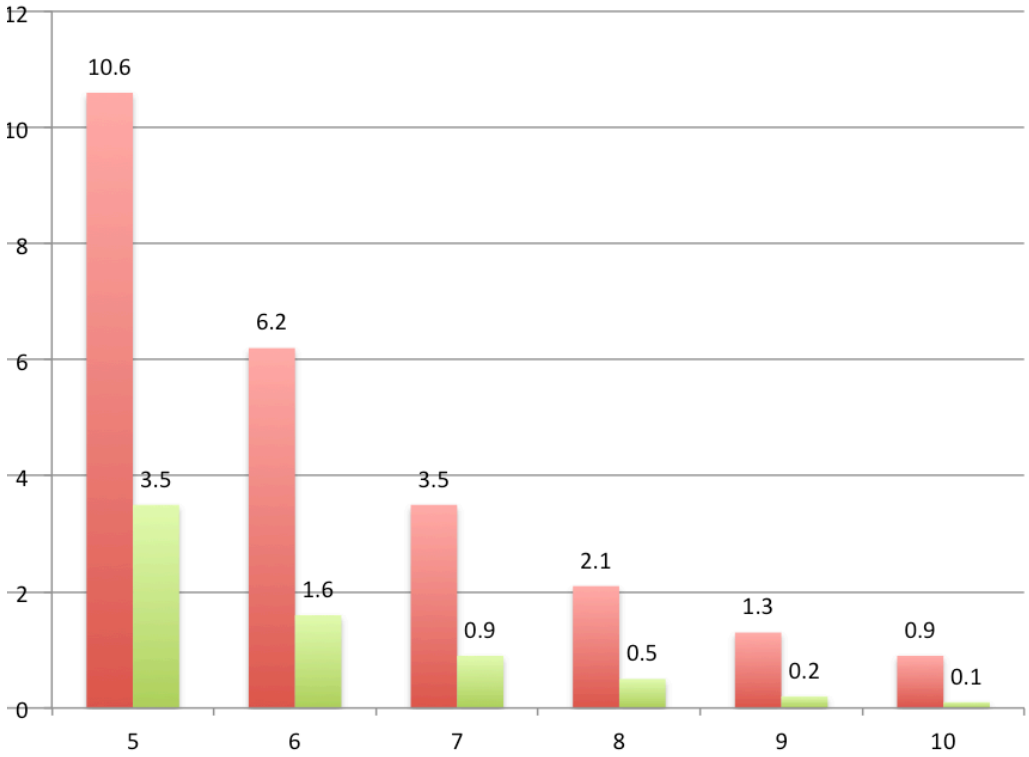

Chart 3: Probability in % for temperature increases above 4 °C at different PPMs[7]
Red bars: probability for 5, 6, 7, 8, 9 and 10 °C warming at 550ppm
Green bars: probability for 5, 6, 7, 8, 9 and 10 °C warming at 450ppm

From a risk perspective it was a great step forward that WGIII included text about carbon budget for not exceeding1.5 degree, or below 430 ppm CO2eq atmospheric concentration in 2100, requiring a 70-95% reduction below 2010 emissions by 2050.[8] This is, as WGIII concludes such a larger challenge it requires aggressive climate policy that involves building institutions and capacity for governance, at local, national, regional and global scale.

[7] The graph is based on the data in the IPCC WGI report. Methodology described in the document "Risk Shifts Under Changing Climate Sensitivity Estimates" http://global-risk-indicator.net/data/pdf_01.pdf
[8] IPCC WGIII AR5 Summary for Policymakers, page 19

GCF agrees with this conclusion, in particular as this necessary but very ambitious emission trajectory significantly reduces the probabilities of much nastier outcomes, i.e., the probability that even 70 % emissions reductions may lead to (i) higher temperatures and (ii) that we reach points of self-acceleration where “nature takes over” the warming trajectory through reinforcing feedbacks.

"The world urgently needs a global legally bounding climate agreement, with a emission trajectory towards 350 ppm and 1.5C warming, which is enforced through a transparent and democratic global governance regime that on a regular basis revises the targets based on the latest science and a risk approach.

- During 2014 the GCF will continue to develop the Global Risk and Opportunity Indicator (GROI) so it includes a best estimate of the emissions current pledges and trends will result in as well as an overview of the impacts based on the latest IPCC findings.[9] This will make it easier to understand the relatively lower probability scenarios with devastating impacts that often are forgotten. With the latest results from IPCC WGII and WGII it is more clear that ever that we are in a situation where a global risk approach that include low-probability high-impact is a must when solutions are developed, says Dennis Pamlin, executive program manager, Global Challenges Foundation.

For more information about Global Challenges Foundation risk approach regarding climate change, please contact:

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[9] See http://globalchallenges.org/projects/global-risk-and-opportunity-indicator/