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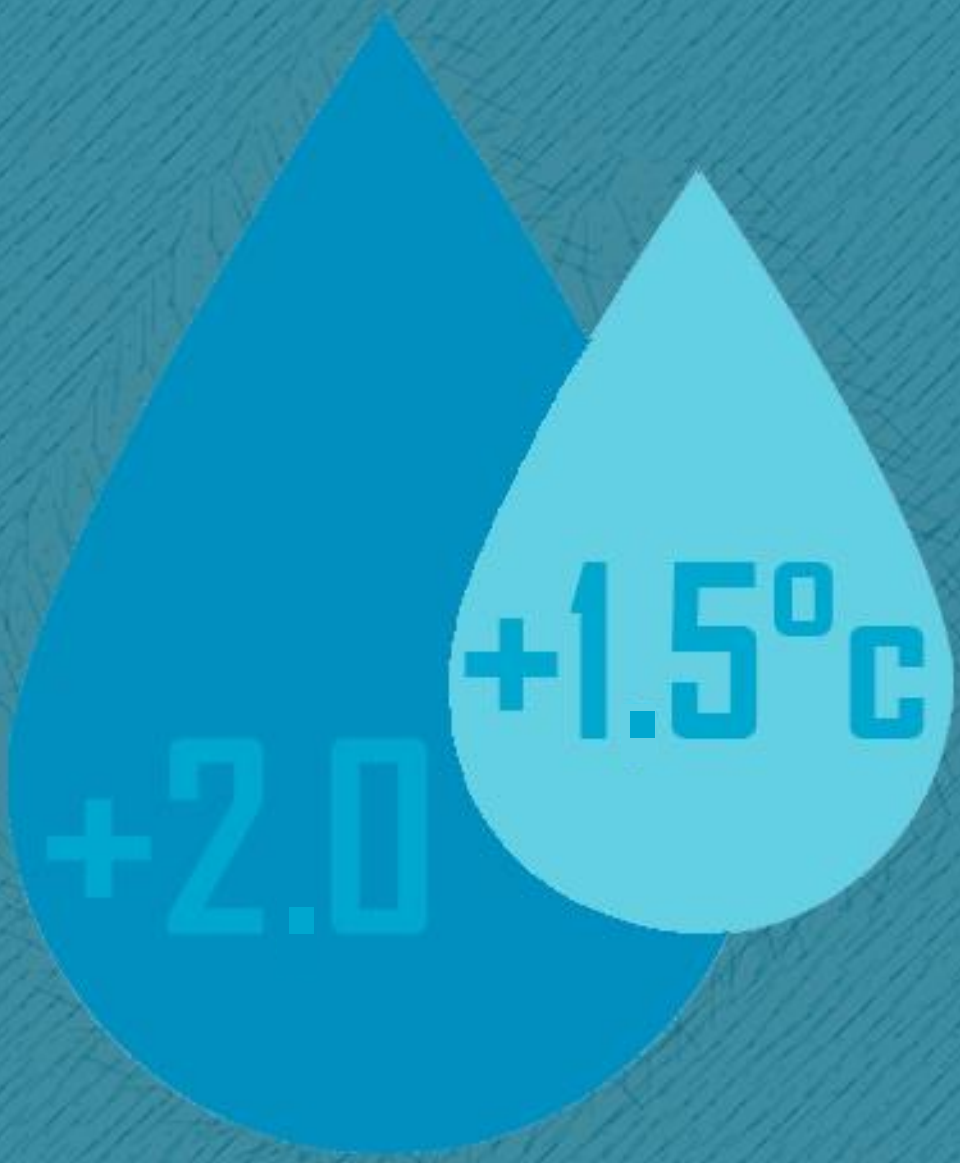
OCTOBER 2018

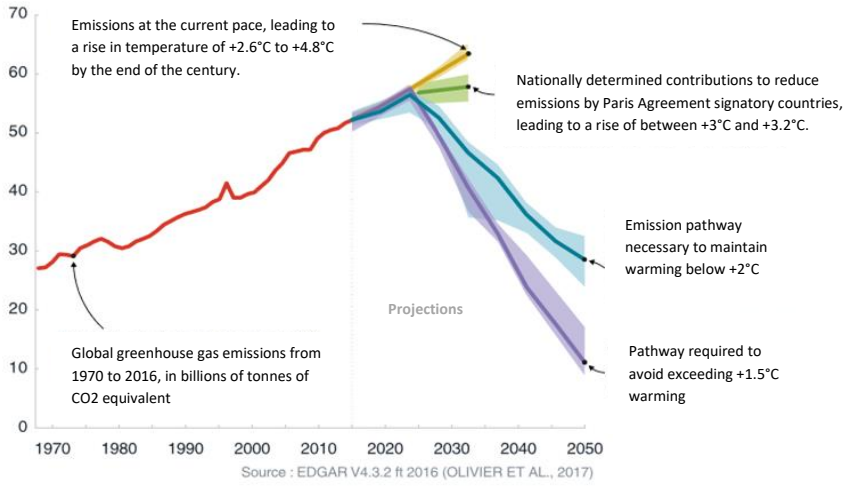
SUMMARY AND KEYS TO UNDERSTANDING THE IPCC's 1.5°C SPECIAL REPORT

WITH A FOCUS ON WATER



This IPCC report responds to an invitation contained in the COP21 decision that led to the adoption of the Paris Agreement on Climate in 2015. It presents the impacts of global warming of 1.5°C above pre-industrial levels, with a comparison between impacts of 1.5°C and 2°C. It is based on the results of the IPCC's fifth report (2014) and on studies and research published since.

According to the report, human activities have to date caused global warming of approximately 1.0°C above pre-industrial levels, in a likely range of between 0.8°C and 1.2°C. Global warming will undoubtedly reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate. Note that the sum of current nationally stated mitigation ambitions puts the planet on a pathway to global warming of between +3°C and +3.2°C by the end of the 21st century.



[1] Read the FWP's guide to the 5th IPCC report (available in French only) at: https://www.partenariat-francais-eau.fr/wp-content/uploads/2015/06/2015-02-12-Enseignements-du-GIEC.pdf

HOW WILL WATER BE AFFECTED?

In general, we can expect an increase in the average temperature of the land and oceans, heavy rainfall in numerous regions, and drought and insufficient rain in other regions.

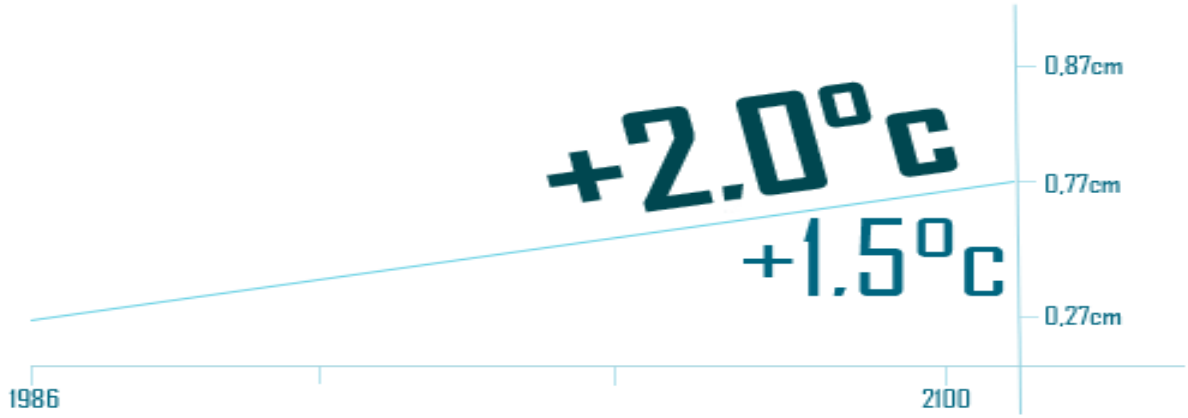
Some populations will be much harder hit by the consequences of climate change. These include disadvantaged and vulnerable populations, certain indigenous peoples, and local communities most dependent on agricultural or coastal livelihoods. The regions most at risk are the Arctic, dryland regions, small-island developing states, and least developed countries. Maintaining global warming at 1.5°C rather than 2°C should reduce the number of people exposed to climate risks by several hundred million by 2050.

Risks associated with an increase in the frequency and magnitude of drought are higher at 2°C than at 1.5°C, in particular in the Mediterranean and southern Africa. Observations show that a drought trend is already detectable in the Mediterranean with the current global warming of under 1°C.

Limiting global warming to 1.5°C rather than 2°C could halve the proportion of the world population exposed to water stress.

Risks associated with an increase in the frequency and magnitude of flooding are also higher at 2°C than at 1.5°C, but they vary greatly from one region to another and are strongly influenced by local socioeconomic conditions.

The report also identifies a global trend of increased heavy precipitation, although with differences between regions. This trend is particularly marked in regions located at high latitudes (such as Alaska, Canada, Greenland, Iceland, Northern Europe and Asia) and high altitudes (e.g. the Tibetan Plateau), as well as in East Asia (including China and Japan) and eastern North America.



Projections of the average sea level rise compared to 1986-2005 suggest an increase of between 0.26 and 0.77 metres by 2100 for global warming of 1.5°C. Warming of 2°C would mean a sea level rise of an additional 0.1 m, thus exposing another 10 million people compared to 1.5°C (in the absence of adaptation measures). The rise in sea levels will continue after 2100, even if global warming is maintained at 1.5°C. This will amplify the exposure of small islands, low-lying coastal areas and deltas to the risk of saltwater intrusion, flooding and damage to infrastructure. Local subsidence and modifications to river flows could potentially exacerbate these effects.

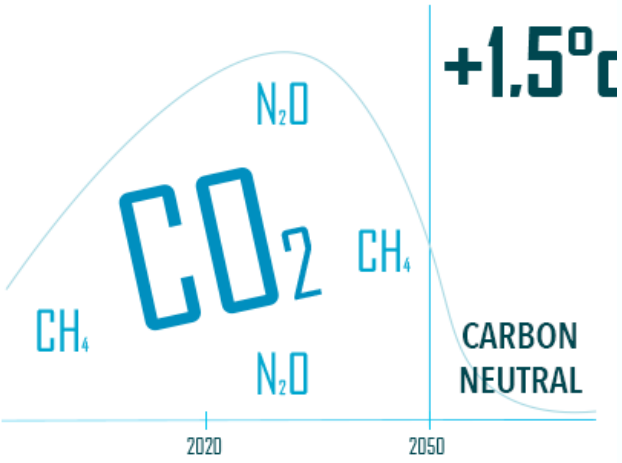
Some impacts will be irreversible, such as the loss of numerous ecosystems, in particular in marine and coastal areas. This will result in a decrease in resources, threatening fisheries and aquaculture. 70% to 90% of coral reefs are likely to disappear at 1.5°C, with larger losses of 99% at 2°C.

The combination of these impacts will bring risks to health, livelihoods, food security, water supply, human security and economic growth. These risks are projected to increase with global warming of 1.5°C and increase further with 2°C. The report underlines a likely decrease in the yields of wheat, maize and rice crops along with threats to livestock due to changes in feed quality, spread of disease, and water resource availability.

Little space is given to loss and damage issues (irreversible consequences of extreme phenomena such as cyclones and slow phenomena like rising sea levels), yet this is one of the main points of conflict in negotiations between states. The report notes, however, that adaptation has its limits and that some losses will be inevitable from 1.5°C, in particular for ecosystems and in the most vulnerable regions (small islands, etc.).

WHAT ARE THE ADAPTATION AND MITIGATION PATHWAYS?

To respect the 1.5°C limit, it is crucial that CO2 emissions decrease from 2020 to reach carbon neutrality by 2050 at the latest, along with a reduction in emissions of other gases (methane, nitrous oxide, etc.).



Overall, pathways limiting global warming to 1.5°C involve rapid, far-reaching transitions that are unprecedented in all sectors of society: energy, land, urban areas, infrastructure (including buildings and transport) and industry.

Different mitigation strategies exist to reach carbon neutrality and maintain global warming at 1.5°C with no temperature overshoot, or with a limited overshoot. All of these strategies involve so-called negative emission measures (CDR for "Carbon Dioxide Removal ") that aim to remove CO2 from the atmosphere, including bioenergy with carbon capture and storage (BECCS) and removals in the agriculture, forestry and other land use (AFOLU) sector. Use of CDR varies depending on the model, but is viewed as inevitable: the most optimistic model employs only afforestation techniques, whereas the most pessimistic involves massive use of CDR and BECCS.

Models that limit global warming to 1.5°C therefore require considerable land use transitions towards energy crops with carbon capture (1 to 7 million KM2 by 2050 compared to 2010) and more forests (1 to 10 million KM2 by 2050 compared to 2010). Most negative emission measures could therefore compete with other land uses and have significant impacts on agricultural and food systems and biodiversity. In addition, BECCS and afforestation/reforestation could directly impact regional climates through biophysical feedback (albedo, etc.), which is not generally included in models. Some AFOLU-related CDR measures could, however, bring co-benefits, such as preserving and restoring biodiversity, soil quality and local food security.

Models limiting global warming to 1.5°C are projected to involve annual average investment needs in the energy system of around 2.4 trillion US dollars from 2016 to 2035, which represents around 2.5% of world GDP.

Adaptation solutions exist but are limited to 1.5°C, leading to inevitable losses. The higher the global warming, the more limited human adaptive capacity will be.

Adaptation options that reduce the vulnerability of human and natural systems have many synergies with sustainable development, such as ensuring food and water security, reducing the risk of disaster, improving health conditions, maintaining ecosystem services and reducing poverty and inequality.

THE FRENCH WATER PARTNERSHIP'S RECOMMENDATIONS

ABSOLUTELY MAINTAIN GLOBAL WARNING AT 1.5°C

The report demonstrates the necessity of maintaining global warming at 1.5°C. This will mean significantly changing our current development patterns and mobilising negative emission technologies, combined with reductions in carbon-based energy, given that the latest studies point to a clear increase in greenhouse gas emissions round the globe.

DEVELOP ADAPTATION MEASURES AS FAST AS POSSIBLE

Impacts on water will be substantial at 1.5°C, and even greater at 2°C. Adaptation efforts in addition to mitigation efforts thus appear crucial to tackle the challenges of water availability, excess water, and the decrease in aquatic biodiversity. It is however important to point out that the adaptive capacities of humans and ecosystems are limited and that some losses will be unavoidable from 1.5°C.

STUDY THE POTENTIAL IMPACT OF NEGATIVE EMISSIONS ON FRESHWATER, GROUNDWATER AND COASTAL WATERS AND AVOID "MAL MITIGATION"

Plus The longer we wait to reduce our greenhouse gas emissions, the more inevitable and intense our use of negative emission technologies will be The longer we wait to reduce our greenhouse gas emissions, the more inevitable and intense our use of negative emission technologies will be. Yet their impact is still difficult to measure and they compete strongly with other sectors related to human development. If deployed on a wide scale, BECCS and afforestation/reforestation measures could impinge upon very important land and water resources. The demand for bioenergy could, for example, lead to a substantial increase in the demand for water for irrigation or an increase in the use of chemical inputs.

DEVELOP DECISION-MAKING TOOLS TO HELP REGIONAL PLAYERS STRIKE A BALANCE BETWEEN MITIGATION, ADAPTATION AND DEVELOPMENT

The connection that the IPCC makes with Sustainable Development Goals highlights the need to move towards sustainable management of territories to improve synergies between mitigation, adaptation and development. For example, it will be necessary to limit competition between land use for negative emissions on the one hand, and other land uses related to human development on the other (agriculture, etc.). This shows the importance of supporting regional players to develop an integrated approach to their policies on water, energy, agriculture and climate.

QUICKLY BUILD UP KNOWLEDGE ON WATER RESOURCES, AQUATIC ENVIRONMENTS AND THEIR EVOLUTION TO IMPROVE CLIMATE MODELS AND WATER MANAGEMENT

Sur For freshwater, the IPCC ranks most of its observations as “medium confidence”. Knowledge on this subject has in fact progressed little since the fifth report. We note a lack of references, regionalised expertise and field data that cannot be fully compensated by remote sensing. In addition, the report illustrates the difficulty of differentiating between climate-related and socio-economic causes. The water sector, for instance, is highly impacted by changes in lifestyle and usages, human demography and agricultural models. The expertise of the freshwater section therefore merits deeper analysis.

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October 2018

ABOUT FWP

The French Water Partnership is the only platform for all the French water stakeholders, public and private, operating at international level. For more than 10 years, the FWP has been advocating for water so that it becomes a real priority in sustainable development policies worldwide. The FWP also stands as a facilitator for exchanges between the French and international water know-how.

https://www.partenariat-francais-eau.fr/en/