CAN Expectations

IPCC Special Report on the Ocean and Cryosphere in a Changing Climate (SROCC)

Introduction and background

The IPCC will release its Special Report on the Ocean and Cryosphere in a Changing Climate (SROCC) on 25 September in Monaco.
Oceans and ice (the cryosphere) harbour unique and rich biodiverse ecosystems. Oceans contain about 97% of all water and cover more than 70% of the earth's surface. Ice, snow and glaciers cover about 10% of terrestrial surface, particularly in the polar regions and in the Himalayas, but contain 70% of the planet's freshwater allowing life on land to thrive.

Oceans and the cryosphere are intensively linked with the global carbon cycle and climate change impacts in various ways, as buffers and a source of climate change.
Because oceans are a sink for about one quarter of all human-induced carbon dioxide, the marine environment is experiencing rates of acidification unprecedented in geological time scales, contributing to the mass die-off of coral ecosystems, for instance.
The glacial ice sheets are melting at an exponential speed resulting from global warming and are now the largest reason for the global sea level rise the annual rate of which was never higher than in 2018 since measurements started.
Continued sea level rise, increased frequency and intensity of storms and floods endanger countries with low lying coastlines and small island developing nations. This threatens the nearly two billion people today living in coastal megacities around the globe. Unless CO2 is curbed drastically, climate impacts in coastal regions might inflict economic damages of several percent of global GDP annually in a few decades. This might wipe out entire nations, like many small islands from the map.
Oceans store more than 90% of the heat originating from human-induced global warming and impact the environment and sea level rise even if greenhouse gas emissions return to zero very soon.
Enhanced permafrost melting in the Arctic environment is likely to accelerate speedily and might release billions of tons of CO2 and methane annually in the future, escalating global warming.
All of these impacts will last for several centuries and not stop by 2100 even under full decarbonisation scenarios. Humans are now facing the challenge how to strongly reduce the rate and intensity of impacts on oceans and ice that are already happening.

Climate impacts on oceans and the ice ecosystems are already severely aggravated by other detrimental human interventions. Pollution from agriculture and coastal settlements,

destruction of natural coastal ecosystems like mangroves for tourism and other purposes, overfishing and increasingly deep sea mining for minerals reduce resilience and recovery potential of these very vulnerable habitats.

Atmospheric CO2 concentrations are now higher than any time in at least the last 3 million years caused by geologically unprecedented rates of human CO2 pollution in the last 1000 years resulting from burning fossil fuels and destruction of forests. 2017 and 2018 saw the highest rates of fossil fuel burning ever.
Global warming temperature levels vary around the planet and over land are almost double the global average since pre-industrial times, and in some polar regions they are up to four times higher.
In addition to radical reduction of greenhouse emissions to avoid tipping points and run-away climate change for instance with unstoppable melting of the polar ice sheets by already triggered changes in the environment, CAN urges that nations must address the need for significant upscaling resilience building, enhance adaptation support and Loss and Damage funding for the impacted and increasingly replaced populations from climate impacts.

CAN urges all governments to invest 2% of the equivalent of global GDP annually for addressing climate change, both on mitigation and adaptation in an equitable manner.

The IPCC report on oceans and ice will be released against the backdrop of three other recent global assessments: the 2018 report by the IPCC on staying below 1.5 °C, the May 2019 global assessment report on the state of biodiversity and ecosystem services by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) and the August 2019 IPCC Special report on land.

The IPCC report on the feasibility and challenges of staying below a global 1.5 °C threshold clearly showed that current national climate pledges (Nationally Determined Contributions, NDCs) fall far short of achieving the Paris Agreement targets, leading instead to a 3-4°C warming over pre-industrial times by the end of this century. The IPBES report concluded that a biodiversity crisis is resulting in the collapse of natural and agricultural ecosystems, posing a threat to life on Earth as serious as the climate crisis. The IPCC land and climate report demonstrated that humans massively overuse the land capacity, eroding soil fertility with intensive agriculture, destroying and degrading carbon- and biodiversity rich ecosystems like natural forests, savannahs and peatlands while emitting a substantial portion of global greenhouse gases from unsustainable practices including meat-based diets.

The release of the SROCC coincides with the preparation of the climate COP in Chile at the end of the year that will be a “blue” COP and highlight strongly the importance of the oceans for food security, biodiversity and coastal planning among others.
Furthermore, the report will be published in a period in which governments are expected to enhance their pledges for climate action under the Paris Agreement. CAN is urging all governments, particularly of richer, higher emitting economies, to update and strengthen their climate pledges (NDCs) by 2020 at the latest, in line with a need to reduce carbon pollution by 50% by 2030 compared to today as suggested by the IPCC in its 1.5 C report. In particular, governments must use the important findings of the IPCC SROCC to design and incorporate actions on resilience building, adaptation and Loss and Damage provision for the impacted populations in coastal areas and Arctic regions as they enhance their NDCs over the coming months.
CAN asserts that unabated climate change is a huge survival issue for people and the planet, but particularly so for the most vulnerable communities who are at the frontline of impacts. To have a chance to avert climate chaos, we need all actions to be ambitious, transformational and simultaneous.

CAN's expectations for the Oceans and Ice report fell under three themes:

1. The IPCC and governments should recognize the enormous threat of irreversible changes and climate impacts on and caused by the oceans and ice dynamics under global warming

The report must highlight the risks of future and already ongoing irreversible changes and potential tipping points on a planetary scale of entire ecosystems and biodiversity, cultures, safe livelihood of peoples and physio-chemical dynamics of Earth-supporting systems even under decarbonisation scenarios.

- The report needs to highlight the paramount importance of stringent mitigation to avoid the worst impacts on oceans and cryosphere. It needs to be clear on the widespread and severe impacts that will be experienced if we are continuing on the current pathway towards ~3°C. At the same time, it also needs to illustrate what of these impacts can still be avoided if warming was limited to 1.5°C.

- Human-induced CO2 emissions are the key reasons for climate change impacts in the oceans and cryosphere. If CO2 is not cut deeply and speedily it will be too late to save coral reefs, to prevent dangerous ocean acidification, and melting of polar as well as mountain glaciers and sea ice. Local warming of 2-3 °C, as already experienced in several locations, will lead to accelerated melting of Arctic sea ice and glaciers. Even a global threshold of 1.5 °C leads to a much higher temperature rise in many regions, and does not save ecosystems like coral reefs from dramatic decline.

- The report must scientifically address what sea level and other impacts are to be expected under current and predicted CO2 levels based on research of the last interglacials.

- The report must address the issue of probably underestimated "positive feedback" by massively gassing out of methane and CO2 from permafrost thawing in coming decades reducing any available carbon budget for mitigation significantly.

- The IPCC should highlight all the facts showing the observed high exponential growth rate of climate impacts on oceans and ice. Which in several cases had been underestimated in the past. And alert to the continued potentially exponential dimensions of irreversible climate changes affecting oceans and ice ecosystems, its species and the people in coastal areas and in glacial environments. That is true particularly for terrestrial mountain and polar ice melting, Arctic sea ice melting, acidification of the marine surface waters, sea level rise, warm water coral reefs bleaching, oxygen losses in ocean waters, temperature increase in ocean waters and others.

- In that context, limits to adaptation in all ecosystems and particularly for the several hundreds of million people in coastal regions under continued high emissions scenarios needs to be clearly spelled out.

- Once triggered and because of the "buffering" and delay time of certain responses by oceans and the ice-based ecosystems, impacts will continue unavoidably for decades and even well beyond into the next centuries. The IPCC should provide comprehensive information on the long-term impacts on ocean and cryosphere and beyond 2100 including on the long-term benefits of stringent mitigation in line with the

1.5C limit. The report should state very clearly that even 1.5 °C is not a safe temperature level for these ecosystems and the societies that depend on them.

- Rapid and deep decarbonisation is fundamentally crucial for limiting the risk of run-away climate change impacts and dire consequences for both nature and people. The report needs to clearly underline this as an important enabler for governance.

2. The IPCC and governments should highlight the necessity for massively enhanced financial adaptation and Loss and Damage provisions

While the report will very likely address all the real and potential impacts on oceans and ice and the triggered changes, it needs to be very clear to governments on some key recommendations and conclusions.

- Because some of the impacts will be unavoidable and will be growing in the future even under deep decarbonisation, all countries need to upscale their local, regional and national resilience and adaptation approaches as appropriate to particularly address sea level rise.
  Rich countries need to significantly increase their global solidarity spending and support for poorer countries and communities for resilience and adaptation spending.

- In recognition of the growing limits to adaptation in several occasions and occuring extreme weather events, rich countries need to embark speedily on an internationally verified and administered Loss and Damage mechanism to compensate for poor people and communities for lost property, income, land and livelihoods from climate impacts and disasters.

- Most adaptation and resilience building projects do make social sense even in the absence of climate change. Early warning systems and education are very important. So are enhanced coastal protection interventions. Proper building codes and settlements for robust housing and safe living above sea level is crucial.

- Significant efforts must be undertaken for ecosystem-based adaptation that limits impacts of sea level rise and flood surges on low-lying settlements and their vulnerable population. Since about half of all original coastal ecosystems have been destroyed already, for including for instance recovery of mangrove forests, seagrass meadows, salt marshes and artificially planted new coral reefs will assist all efforts.

3. The IPCC and governments must include the plethora of non-climate impacts on oceans and the cryosphere in their conclusions. A holistic approach to reduce all stress is needed to explore the full adaptive and resilience building capacity of oceans and the cryosphere.

Whereas temperature rise and acidification alone will have dramatic effects, the climate impacts on oceans and ice systems do not happen in isolation. Both large planetary systems suffer since decades from multiple stress factors and human interventions that very negatively affect their health, ecological functioning and reduce their resilience to global warming. The IPCC needs to acknowledge that and governmental conclusions must include actions in these areas very urgently as well.

- The ecosystems, species and people around oceans and the cryosphere have been continuously affected by remote air pollution and river discharge of human settlements, coastal tourism and city pollution; for instance, untreated sewage and nutrient spills into rivers by agriculture and humans increased the load of nitrogen and phosphorous into oceans substantively, causing eutrophication of coastal waters, algae blooms, biodiversity decline, coral die off and oxygen deficiency in many marine regions.

- Overfishing and high by-catch by primarily large commercial fishing vessels have significantly reduced marine biodiversity and abundance of species. This amplifies the impacts of warming seas that might lose significant fish and other biomass under continued global warming.

- Further threats to marine biodiversity include the high plastic pollution across global seas. Emerging dangers to the marine web of life consist of the resource-hungry big nations that plan for large scale deep-sea mining for a variety of minerals and drilling for oil and gas in the Arctic region.

- Targeting ecosystem-based and other adaptation successes, sustainable healthy fisheries for food security in times of global warming and a resilient marine web of life require all governments to significantly reduce and abandon these and other stress factors and pollutant load flows in combination with deep decarbonisation.