



**Deep-sea mining ‘precautionary pause’ and closure of one-third of the ocean among eight urgent measures needed in the next decade to preserve life-supporting ocean function**

**Ocean heating 40% faster than even recently predicted – ratchet effects of some changes could be ‘irreversible’**

London - 24<sup>th</sup> July 2019 – A new scientific Paper says eight urgent, simultaneous actions are needed to head off potential ecological disaster in the global ocean, amid signs of steeper and faster changes than even recent models predicted.

Experts convened by the International Programme on the State of the Ocean (IPSO) warn that failure to take action in the next ten years to halt damage caused by unprecedented rates of climate heating and other human activities could result in catastrophic changes in the functioning of the global ocean, threatening vital ecosystems and disrupting human civilisation.

The Paper says: *“We are witnessing an increase in ocean heat, disturbance, acidification, bio-invasions and nutrients, and reducing oxygen. Several of these act like ratchets: once detrimental or negative changes have occurred, they may lock in place and may not be reversible, especially at gross ecological and ocean process scales.”*

The multi-disciplinary team of marine scientists and experts in law, policy and finance, reviewed and synthesised the findings of 131 peer-reviewed scientific papers on ocean change (120 from the past 5 years) in order to assess changes occurring and the consequences of inaction.

The resulting assessment, published today in *Aquatic Conservation*, says diminished marine food-chain production, reduced ability to store carbon, sinking oxygen levels and the possible release of stored heat back in to the atmosphere are among a slew of changes, either underway or evidenced as possible, in a global ocean under mass assault from human activity.

The IPSO Viewpoint Paper identifies eight priority actions needed in unison to avert worst-case scenarios for the ocean including potentially irreversible change.

Climate breakdown impacts in the ocean are described as ‘pervasive and accelerating, and the pre-eminent factor driving change in the ocean. The highest priority remains to rigorously address global heating and limit surface temperature rise to 1.5°C by 2100. However, measures should be implemented to prepare for a 2-3°C temperature rise.

The call for a precautionary moratorium on deep-sea mining comes as the International Seabed Authority holds its annual meeting amid mounting concern that mining activity could disrupt carbon stores in seafloor sediments, reducing the ocean’s ability to absorb carbon dioxide and mitigate the effects of the climate emergency. 29 exploration licences have

been granted so far and the area of commercial interest for mining activity is estimated at over 4 million km<sup>2</sup>, larger than the total landmass of the top 20 EU countries.

The other priorities are urgently to:

- secure a robust, comprehensive High Seas Treaty with a Conference of Parties and a Scientific Committee; and reformed voting rights on bodies such as the International Seabed Authority to stop vested interests undermining the precautionary approach.
- enforce existing standards for effective marine protected areas (MPAs), and in particular fully-protected marine reserves, and extend their scope to fully protect at least 30% of the ocean, including representation of all habitats and the high seas, while ensuring effective management to prevent significant adverse effects for 100% of the rest of the ocean;
- end overfishing and destructive practices including illegal, unreported and unregulated (IUU) fishing;
- radically reduce marine water pollution, including nitrogen fertilisers and sewage as well as plastics;
- provide a financing mechanism for ocean management and protection; and tax unsustainable activities to remove costs to the global commons and fund innovation and adaptation;
- scale-up scientific research on the ocean and increase transparency and accessibility of ocean data from all sources (i.e. science, government, industry). Increasing the understanding of heat absorption and heat release from the sea to the atmosphere should be a research priority. The UN Decade of Ocean Science beginning in 2021 is a key opportunity to achieve this step change.

The IPSO paper highlights a number of worrying trends emerging from the latest scientific research, which indicate ocean change is occurring at a much faster and deeper rate than projected. These include the facts that:

- ocean warming is accelerating, heating up 40 per cent faster on average than a United Nations panel estimated five years ago;
- upper-ocean warming, a consequence of anthropogenic global warming, is changing the global wave climate, making waves stronger;
- There are signs that the ocean might be starting to release some of that stored thermal energy which could contribute to significant global temperature increases in the coming years;
- an alarming trend of declining oxygen levels in the ocean which combined with chemical pollutants is turning huge areas hypoxic or anoxic.
- Arctic and Antarctic ice is melting faster than scientists anticipated, and the subsequent sea-level rise bringing catastrophic consequences for cities around the world.

The IPSO paper comes ahead of IPCC's first ever report solely focused on the state of the ocean and cryosphere due in September 2019, and a UN Climate COP in December expected to focus on the importance of the ocean within the climate emergency.

Lead Author Professor Dan Laffoley of the International Union for Conservation of Nature (IUCN) said: *"Marine life is threatened with suffocation, starvation, overheating and acid corrosion under current climate impacts. The situation is only getting worse. We need to act on climate change but also, urgently build resilience. All life on Earth is at risk from ocean collapse. This paper sets out eight practical, but ambitious steps that need to be implemented simultaneously in order to help prevent that."*

Co-author Professor Callum Roberts of York University said: “ *We have about 10 years to act. Tipping points in ocean decline are now significantly more likely to happen if action is not taken now, and there is a great opportunity to make this happen. The Paris Climate Agreement comes into force in 2020 with its implementation plan, negotiations for the UN Treaty on biodiversity protection beyond national jurisdiction are scheduled to be completed by 2020, and an ocean Sustainable Development Goal has targets that are to be delivered by 2020. Properly implementing these policy opportunities and bringing these global efforts together must bear fruit.*”

ENDS

**Editor’s Notes:** For images, interviews and more information please contact Patricia Roy  
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### **About the Paper and Workshop**

- The Viewpoint Paper is the result of a Workshop on ocean health held in December 2018 at the Royal Geographical Society in London, convened by IPSO co-lead Professor Dan Laffoley of IUCN.
- Fourteen experts from ocean science (physical, chemical and biological), policy, law and conservation attended the meeting, “**Priorities for ocean action; consequences of inaction and future threats**” to consider the most recent data on ocean change and agreed a set of recommendations.
- The Workshop also heard contributions from Kristina Gjerde, High Seas Policy Advisor for the International Union for Conservation of Nature Global Marine and Polar Program, and Matthew Gianni, Political and Policy Advisor of the Deep Sea Conservation Coalition.

### **About IPSO**

- The International Programme on the State of the Ocean (IPSO) is an initiative created in 2006 by Professor Alex Rogers of Somerville College Oxford and Mirella von Lindenfels, Founder of the High Seas Alliance and Director of sustainability-specialist communications consultancy Communications INC.
- The aim was to address the wide gap in coverage at the time of the growing evidence of anthropogenic damage being cause to the ocean. The initiative brings together experts in physical, chemical and biological ocean science, deep sea ecosystems, fisheries, management policy and law.
- The initiative convenes Workshops and produces scientific updates (2011, 2013, 2019) on the latest scientific evidence for ocean change in addition to specific work around issues of concern.
- IPSO’s mission is to enable a greater scientific understanding of the services the ocean provides to humankind and the impact of the main human stressors upon it, enabling solutions to be explored and greater communication with decision-makers and the public.

### **IPSO Funding**

- Everyone involved with IPSO contributes their time on a voluntary basis and specific projects are funded by Foundations such as the Calouste Gulbenkian Foundation in the UK and organisations such as IUCN. IPSO does not receive any government or corporate money, and all our scientists and experts contribute their time and energy pro-bono. See <http://www.stateoftheocean.org/about/people/>

### **More details on recommended actions:**

**High Seas Treaty:** It is essential that an ambitious Treaty on the conservation and sustainable use of marine biodiversity beyond national jurisdiction (BBNJ) be achieved by 2020. Action is also needed to reform voting rights in sectoral organizations such as the International Seabed Authority as too many have a few dominant economic stakeholders who can, through consensus requirements, make or break reform.

**Deep-Sea Mining Moratorium:** Activities thought to be unequivocally damaging, such as deep-sea mining in international waters, should not take place until proper governance, science and precautionary management tools are secured that will ensure effective protection of the marine environment and its biodiversity. Areas such as active hydrothermal vent sites should already be placed permanently off limits given their ability to support abundant and often endemic biological communities.

**Pollution:** Eutrophication, chemical and plastics pollution are mounting causes of concern. Plastic-debris pollution has been recently recognized as a risk requiring a global-level response, but governments must act with equal vigour against marine nutrient and chemical pollution whose distribution and impacts have only expanded over the past century. Nutrients, mainly from agricultural run-off, are creating algal blooms in contaminated areas, where when the algal bloom dies, a process of decay is established that can radically shift oceanic alkalinity, induce harmful algal blooms, and change the ecological structure of coastal and pelagic communities. Some of the international impacts include the *Sargassum* blooms that plague beaches throughout the entire Caribbean Sea and Gulf of Mexico, harmful algal bloom outbreaks (“Red and Brown Tides”) all over the world and increasing dead zone formations that range from Barbados to China.

**Overfishing:** Consideration should be given to cutting global fishing effort by up to 50% to buffer against the effects of climate change. A significant amount of this cut could be made by eliminating illegal fishing. There is currently a pincer movement on ocean productivity from climate change and overfishing, which is reducing fisheries productivity and threatening population health. The warming of the ocean is, at the simplest level, doing two things: reducing ocean mixing, which reduces nutrient transfer to shallower waters, and reducing oxygen content. This, combined with increased metabolic rates in higher temperatures, means fish will grow more slowly to smaller sizes. At the same time, overfishing continues: recent FAO figures averaged for the world disclose that fully and overexploited fisheries increased to 93%.

**Ocean Finance:** Marine activities that have negative impacts need to be taxed sufficiently to fully internalize the externalities, the cost to the global commons. Such taxes will incentivise a transition to lower impact activities and so encourage better behaviour, and the funds raised can be spent to finance the actions proposed.