

# Global Open NAP

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# Global Open NAP

## Introduction

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## Key risks

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[Life and safety, Disasters] Risk of loss of life for people living in coastal areas and coastal cities all over the world including due to extreme climatic events (major storms, flooding, etc)

[Cities/Economic operations/livelihoods] Risk of severe disruption of livelihoods and economic operations for people living in cities all over the world including due to urban flooding, water scarcity, limited power, extreme events/climate related disasters and other climatic factors

[System structure and function] Risk of collapse/failure of systems that have developed/evolved in synchrony with normal climate (climate conditions over a period of time), ecological (biogeographical, coupled ecosystems) as well as subsistence economies of rural and indigenous communities that are based on nature and rain-fed systems

[State collapse] Risk of collapse of small economics (e.g. some small island states) due to climate related disasters and breakdown of economic activities (based on fisheries, tourism) and water scarcity

[Global warming] Risk of rising temperatures leading to major disruption in global circulation patterns resulting in significant changes in climate globally, regionally and ultimately locally, thereby affecting systems that are aligned and synchronized to "normal" climatic patterns and levels (risk of global warming, specific impacts are discussed below)

[Heat waves] Risk of large-scale heat waves as a result of global warming leading to severe loss of life and reduced water supply in heavily populated regions or major bread basket regions of the world

[Storms] Risk of increase in major storms in terms of frequency and intensity as well as paths, leading to increased damages

[Supply chains] Risk of significant disruption of "global food supply" (or any other major commodity) chains caused by one or several climate change factors

[Joint risk] Risk of multiple failures of major food baskets of the world leading to food insecurities for significant populations

[Ecosystem structure and function] Risk of breakdown of ecosystem function for ecoregions of global importance (e.g. rain forests)

[Ecosystem services] Risk of breakdown of regionally significant ecoregions leading to severe disruption in ecosystem services

[Ecosystem services and function] Risk of loss of critical ecosystem functions e.g. pollination ... food production? hydrological cycles ...

[Pandemic risk] Risk of widespread loss of life and many significant cascading impacts due to a pandemic of an infectious disease triggered by climate change (e.g. mosquito-borne disease?)

[Pest or disease outbreak] Risk of widespread loss of agricultural production due to disease or pest outbreaks triggered or exacerbated by climate change (e.g. locust, fall-army worm, etc.)

[Economic collapse] Risk of collapse of the global economic system due to widespread disruptions in important systems triggered by climate change impacts

[Loss of territory] Risk of some countries losing significant territory for living space or agricultural production due to adverse impacts of climate change

[Global heritage] Risk of loss of global heritage - culture, unique biodiversity (e.g. centers of endemism; monarch butterflies, major coral reefs, etc.)

[Global networks] Risk of major shifts in global processes due to climate change impacts that would impact regional or national economic activities (e.g. global shipping system and ports traffic and contribution to national economies, due to port damages, or longer shipping access over the Arctic circle)

[Global networks] Risk of breakdown of global travel due to regional impacts leading to cascading impacts and economic losses (e.g. for countries dependent on tourism)

[Non-human migrations] Risk of breakdown of major global migration patterns for fish and wildlife, leading to changes in economic benefits

[Regional to Global Cascades] Risk of disrupted global supply chains for critical supplies due to regional climate impacts (medical supplies, equipment, important food commodities – corn/maize, rice, wheat, coffee, orange juice, tea, alcohol, soya beans, beef, pork, bananas, etc.)

[Regional climate processes] Risk of major regional climatic processes changing pattern leading to serious changes in hydrological cycles and other weather events that agriculture and other important activities are synchronized to (e.g. failure of the monsoon; shifts in main seasons for a region – bimodal rainfall to unimodal for instance)

[Tipping points] Risk of disruptions, restructuring and breakdown of major global climate processes leading to many significant impacts globally and regionally, including :

- Reorganisation of the Atlantic Meridional Overturning Circulation (CMOC) ... that involves a permanent shutdown of convection in the Labrador Sea and a drastic reduction in deep water overflow across the Greenland-Scotland ridge by at least 80%. (A) 16 (B) 4 [Reasons: remote; model results inconclusive] (C) 2 [local cooling overwhelmed by overall warming trend]
- Melt of the Greenland ice sheet (MGIS) . . . an alternative state that is largely ice-free. (A) 13 (B) 1 [Reason: too far into the future] (C) 1 [fastest melt is 600 years, too slow to be dangerous]
- Disintegration of the West Antarctic ice sheet (DAIS) . . . in which West Antarctica becomes an archipelago . . . (A) 14 (B) 1 [Reason: uncertainty about time scale of disintegration; possibility of collapse due to glacial readjustments only]
- Dieback of the Amazon rainforest (AMAZ) . . . in which at least half of its current area is converted to raingreen forest, savannah or grassland. Besides climate change, a second driver . . . is land use change from human activity . . . factor out this driver by assuming . . . that not more than 20

percent of the current rainforest will be deforested by human activity in the long run. (A) 10 (B) 1 [Reason: vegetation change inconclusive for assessing feedbacks on climate] (C) 3 [Global effects limited; CO2 sink to source conversion not a dangerous feedback on the climate]

- Shift to a more persistent El Nino regime (NINO) . . . a shift of the ENSO mean state towards El Nino like conditions. (A) 10 (A\*) 1 (B) 3 [Reasons: original definition remote; Model results, paleo record inconclusive] (C) 1 [impacts of El Nino superimposed on a warmer world uncertain]
- (Notes: Option A: event will lead to potentially dangerous climate change, and willing to answer questions about its probability; option B: elicitation of probabilities not appropriate; option C: event will not lead to potentially dangerous climate change. See Table S1 for more details of the expert response ).

# References

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