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Quaker United Nations Office

A Government Official's Toolkit

inspiring urgent climate action

12 concise cases

166 quotes

Referenced to over 100 published papers

(Including the IPCC Special Report on Global Warming of 1.5C)

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Welcome

This publication is written to support government officials—at local, regional and national levels—who are concerned about the impact of climate change on their citizens, their country, and the planet. The publication is organized into 12 concise cases, including approaches to effective and sustainable climate action policy. Our aim is to connect you with research available at the international level. All points are quoted from, and linked to, the original, peer-reviewed papers.

We hope this Toolkit will help you engage colleagues on why urgent, rights-based climate action is to the benefit of all people. Decision makers face competing demands and priorities, and they may be more receptive to one case over another. One colleague may respond better to climate science, another to economic concerns. For this reason, we offer a range of concise cases.

As an accredited observer of the United Nations Framework Convention on Climate Change (UNFCCC) and the Intergovernmental Panel on Climate Change (IPCC), we have been closely involved in both the international climate negotiations and the communication of climate science. We believe all people should have easy access to this information.

We hope this publication will support you and your colleagues in understanding what is happening, why it is happening, and how you can help ensure the well-being of your citizens, the environment, and the stability of your countries. Political will is essential if humanity is to avoid experiencing global catastrophic climate change. We hope this publication inspires you to be a champion at this critical time in human history.

Acknowledgements

This booklet follows work on A Negotiator's Toolkit[1], prepared by QUNO for country delegations at the international climate change negotiations, and inspired by a side event at a climate conference in May 2017, co-hosted by QUNO, Brahma Kumaris and Newcastle University. For more information or to share comments and feedback, please contact Lindsey Fielder Cook, our Representative for Climate Change: lfcook@quno.ch

Cover photo: The Comité de Paris: Presentation of the Draft Outcome Document at the UN Climate Change Conference in Paris (UN Photo/Mark Garten).

1 QUNO (2018), *A Negotiator's Toolkit, Second edition*, (Geneva). https://quno.org/resource/2018/4/negotiators-toolkit-second-edition

Contents

The Climate Science Case

What is happening, and why?

- Human influence on the climate system is clear.[2] Human activities include fossil fuel extraction and combustion, black carbon (i.e.: soot, the incomplete combustion of fossil fuels, biofuel and biomass), deforestation and forest degradation, intensive and animal agriculture, industry, transport, buildings[3] and, increasingly, hydrofluorocarbons.

- Human activities are estimated to have already caused approximately 1.0°C of global warming above pre-industrial levels.[4]

- 2017 was the second hottest year since 1880, when global measurements first became possible.[5] 2016 was the hottest.[6]

- The concentration levels of carbon dioxide, methane, and nitrous oxide in the Earth's atmosphere are unprecedented in (at least) the last 800,000 years.[7]

- Our experience of warming from the last ice age (20,000 to 10,000 years ago) to the preindustrial climate, was a global warming of approximately 0.5°C to 1°C per 1,000 years.[8] [9]

- Many of the human activities causing temperature rises are also causing environmental crises in land use, soil erosion, chemical pollution (especially nitrogen and phosphorous), and the highest species extinction rate in our human history.[10]

2 IPCC, (2014). *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, p2. http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf

3 Idem, p. 88.

4 IPCC, (2018). Summary for Policymakers. In: *Special Report on Global Warming of 1.5C* (6 October 2018 final, subject to Copy Edit), p. 6 (A.1). https://www.ipcc.ch/site/assets/uploads/sites/2/2018/07/SR15_SPM_version_stand_alone_LR.pdf

5 Cole, S., and McCarthy, L., (2018). *Long-Term Warming Trend Continued in 2017: NASA, NOAA*. NASA, January 18, 2018. https://www.nasa.gov/press-release/long-term-warming-trend-continued-in-2017-nasa-noaa

6 Yale Environment 360, (2018). It's Official: 2017 Was the Second Hottest Year on Record. *Yale School of Forestry and Environmental Studies*. https://e360.yale.edu/digest/its-official-2017-was-the-second-hottest-year-on-record

7 IPCC, 2013: Summary for Policymakers. In: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, US. p. 11. https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_SPM_FINAL.pdf

8 Shakun, J., et al., (2012). Global warming preceded by increasing carbon dioxide concentrations during the last deglaciation. *Nature*. 484. p49-55. http://www.atm.damtp.cam.ac.uk/mcintyre/shakun-co2-temp-lag-nat12.pdf

9 Marcott, S., et al., (2013). A Reconstruction of Regional and Global Temperature for the Past 11,300 Years. *Science*. 339. P.1198-1201. http://science.sciencemag.org/content/339/6124/1198

10 Steffen, W., et al., (2015). Planetary boundaries: Guiding human development on a changing planet. *Science*. http://science.sciencemag.org/content/early/2015/01/14/science.1259855

- About 2/3 of the carbon dioxide emission quota consistent with a 2°C temperature rise limit has already been consumed.[11]

- In 2016, global emissions from fossil fuels and industry were 62% over 1990 levels. GHG emissions 2017 are projected to be 2.0% higher than 2016 levels.[12]

- Economic and population growth continue to be the most important drivers of increases in carbon dioxide emissions from fossil fuel combustion.[13]

- The Paris Agreement temperature target is set at '*well below 2°C and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels*'. The Agreement requires all Countries to put forward their best efforts through nationally determined contributions (NDCs) and to strengthen these efforts in the years ahead.[14]

- The current global NDC pledges from countries would still allow a global temperature rise of approximately 3.2°C above pre-industrial levels by 2100.[15]

How does this affect the ecosystems on which our lives depend?

- The oceans have absorbed more than 90% of the energy accumulated between 1971 and 2010, and about 30% of carbon dioxide emitted by humans. This causes ocean acidification which threatens the survival of marine ecosystems.[16]

- The ocean's oxygen content (globally) declined by 2% in the last 50 years.[17] Increased carbon dioxide and warming oceans led to the greatest marine extinction, 252 million years ago.[18]

- Without urgent action, the current greenhouse gas (GHG) emission rate would lead to a global average surface temperature rise of approximately 4.8°C by 2100, compared to pre-industrial levels.[19]

11 Friedlingstein, P. and Andrew, R., (2014). Persistent growth of CO2 emissions and implications for reaching climate targets. *Nature Geoscience*. 7, p.709–715 http://www.globalcarbonproject.org/global/pdf/Friedlingstein_2014_Persistent%20growth%20of%20CO2%20emissions%20and%20implications%20for%20reaching%20climate%20targets.NatureG.pdf

12 The Global Carbon Project, (2017). *Global Carbon Budget 2017*. p. 9 http://www.globalcarbonproject.org/carbonbudget/17/files/GCP_CarbonBudget_2017.pdf

13 Idem, p.5.

14 UNFCCC, (2015). *The Paris Agreement.* https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement

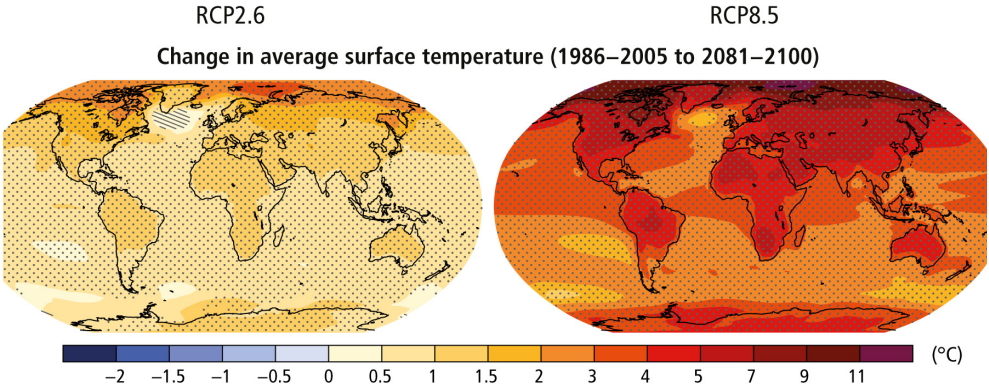
15 *Climate Action Tracker,* (2017), 'Highway to Paris' https://climateactiontracker.org/

16 IPCC, (2014). Climate Change 2014 Synthesis Report Summary for Policymakers. In: *IPCC's Fifth Assessment Report (AR5)*. P .4 https://www.ipcc.ch/site/assets/uploads/2018/02/SYR_AR5_FINAL_full.pdf

17 Schmidtko, S., Stramma, L. and Visbeck, M., (2017). Decline in global oceanic oxygen content during the past five decades. *Nature*. 542. p335–339. https://www.nature.com/articles/nature21399?foxtrotcallback=true

18 The University of Edinburgh, (2016). Greatest extinction driven by acidic oceans. In: *2015 news.* https://www.ed.ac.uk/news/2015/acidoceans-090415.

19 IPCC, 2014: Summary for Policymakers. In: *Climate Change 2014: Mitigation of Climate Change. Contribution of Working*



Without urgent action, RCP8.5 will remain our current warming pattern. (AR5/IPCC)

- Temperatures can rise higher after 2100. The more carbon we burn, the more surface temperatures will rise.[20] [21]

- With urgent action, limiting global warming to 1.5° C cmpared to 2° C is projected to reduce increases in ocean temperature as well as associated increases in ocean acidity and decreases in ocean oxygen levels.[22]

- The Arctic is experiencing the fastest rate of warming. This results in the melting of ice sheets, which raise sea levels, and the melting of permafrost, which releases trapped greenhouse gases. An irreversible melting of the Greenland ice sheet could be triggered around 1.5°C to 2°C of global warming.[23]

- We have until 2030 for the chance to stabilize global temperature rise to 1.5°C above pre-industrial levels[24]. In addition to rapid reduction of fossil fuels, mitigation options limiting the demand for land include sustainable intensification of land use practices, ecosystem restoration and changes towards less resource-intensive (plant rich) diets.[25]

Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. [Edenhofer, O., et al. (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. p.8. https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_summary-for-policymakers.pdf

20 The Royal Society, (2014). In: *Climate change: evidence and causes*. P. 10 https://royalsociety.org/~/media/Royal_Society_Content/policy/projects/climate-evidence-causes/climate-change-evidence-causes.pdf

21 IPCC, (2014). Climate Change 2014 Synthesis Report Summary for Policymakers. In: *IPCC's Fifth Assessment Report (AR5)*. https://www.ipcc.ch/site/assets/uploads/2018/02/SYR_AR5_FINAL_full.pdf Figure SPM.5(b) on page 9 shows the warming predicted in 2100 as a function of the total accumulated amount of CO2 emitted by humankind 1870-2100, very simply the greater the total amount emitted the greater the warming.

22 IPCC, (2018). Summary for Policymakers. In: *Special Report on Global Warming of 1.5C* (6 October 2018 final, subject to Copy Edit), p. 10 (B.4). http://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf

23 Idem. p. 9.

24 Idem, p. 16.

25 Idem, p. 18.

The Economic Case

Why does climate action make economic sense?

- Risks to global aggregated economic growth due to climate change impacts are projected to be lower at 1.5°C than at 2°C by the end of this century.[26]

- Seven of the ten costliest years since 1950 for global weather catastrophes occurred between 2000 and 2014.[27]

- The U.S. has sustained 238 weather and climate disasters since 1980 where overall damages/costs reached or exceeded $1 billion (including CPI adjustment to 2018). The total cost of these 238 events exceeds $1.5 trillion.[28]

The low-carbon transformation is underway

- The global South will account for roughly two-thirds of global infrastructure investment. Building climate-smart, resilient infrastructure is an excellent opportunity for developing countries to bypass inefficient and polluting systems.[29]

- Infrastructure construction is associated with more than 60% of the world's greenhouse gas emissions. This makes climate-smart, resilient infrastructure a critical tool for a more climate-resilient future, especially for the poorest and most vulnerable communities.[30]

- Climate-smart infrastructure means designing and building infrastructure with future climate projections in mind, instead of building infrastructure based on past trends. These designs take advantage of opportunities to reduce heat-trapping emissions and encourages innovative solutions to bring social, economic, health, and environmental benefits.[31]

- GHG emissions from oil, gas and the manufacturing of cement continue to rise, while emissions from coal are decreasing.[32]

- Renewable energy continues to get cheaper: solar and wind energy are now cost-competitive with fossil fuels in many regions.[33]

26 Idem, p. 11.

27 Forbes, T., and Deconcini, C., (2014). A Year of Temperature Records and Landmark Climate Findings, *World Resources Institute Factsheet.* http://www.wri.org/sites/default/files/2014_Temperature_Records_and_Landmark_Climate_Findings_fact_sheet.pdf

28 NOAA National Centers for Environmental Information (NCEI) U.S., (2018). *Billion-Dollar Weather and Climate Disasters: Overview.* https://www.ncdc.noaa.gov/billions/

29 The New Climate Economy, 2016. Executive Summary. In: *The Sustainable Infrastructure Imperative*. p8. https://newclimateeconomy.report/2016/executive-summary/ Idem, p.8.

30 Idem, p.10-18.

31 Gibson, J.R., (2017). *Built to Last Challenges and Opportunities for Climate-Smart: Infrastructure in California.* Union of Concerned Scientists. https://www.ucsusa.org/sites/default/files/attach/2017/11/gw-whitepaper-smart-infrastructure.pdf

32 The Global Carbon Project, (2017). *Future Earth – research for global sustainability.* http://www.globalcarbonproject.org/carbonbudget/17/highlights.htm

33 Shahan, Z., (2013). Solar PV Module Prices Have Fallen 80% Since 2008, Wind Turbines 29%. *Clean Technica.* https://clean-

- Fossil fuel subsidies are large, amounting to 6.5% of global GDP in 2015. [34]

- The majority of proven coal, oil and gas reserves may be considered "un-burnable" if global temperature increases are to be limited to 2° C. This could lead to "stranded carbon" investment assets which are no longer able to earn an economic return, as a result of changes associated with the transition to a low-carbon economy.[35]

- The Divest-Invest movement mobilizes private and public capital to speed the global energy transition from carbon intensive fossil fuels to clean, sustainable forms of energy compatible with a safe climate. Fossil fuel divestment pledges now surpass USD 2.6 trillion.[36]

Why do we need to create a sustainable economic paradigm?

- The prevailing economic model relies on a continual, exponential expansion of the economy. This economic growth is without historical precedent and is totally at odds with finite resources and the fragile ecology on which we depend for survival.[37]

- The global economy is almost five times the size it was half a century ago and has already been accompanied by the degradation of an estimated 60% of the world's ecosystems.[38]

- In order to achieve the Sustainable Development Goals, what is needed now is a dedicated initiative, backed (but not constrained) by national governments, to formulate a more relevant economic and development model or models.[39]

- Recently, the concept of a circular economy has gained traction. The concept is simple: minimize the disposal of waste and the need for raw materials by keeping existing materials and assets in the production cycle.[40]

technica.com/2013/05/06/solar-pv-module-prices-have-fallen-80-since-2008-wind-turbines-29/

34 Coady, D (2017) *How Large Are Global Fossil Fuel Subsidies?* World Development, Volume 91, March 2017, Highlights, https://sciencedirect.com/science/article/abs/pii/S0305750X16304867 .

35 Carney, M. (2014). *Open letter from Mark Carney to Joan Walley MP on Stranded Assets.* UK Parliament. https://www.parliament.uk/documents/commons-committees/environmental-audit/Letter-from-Mark-Carney-on-Stranded-Assets.pdf

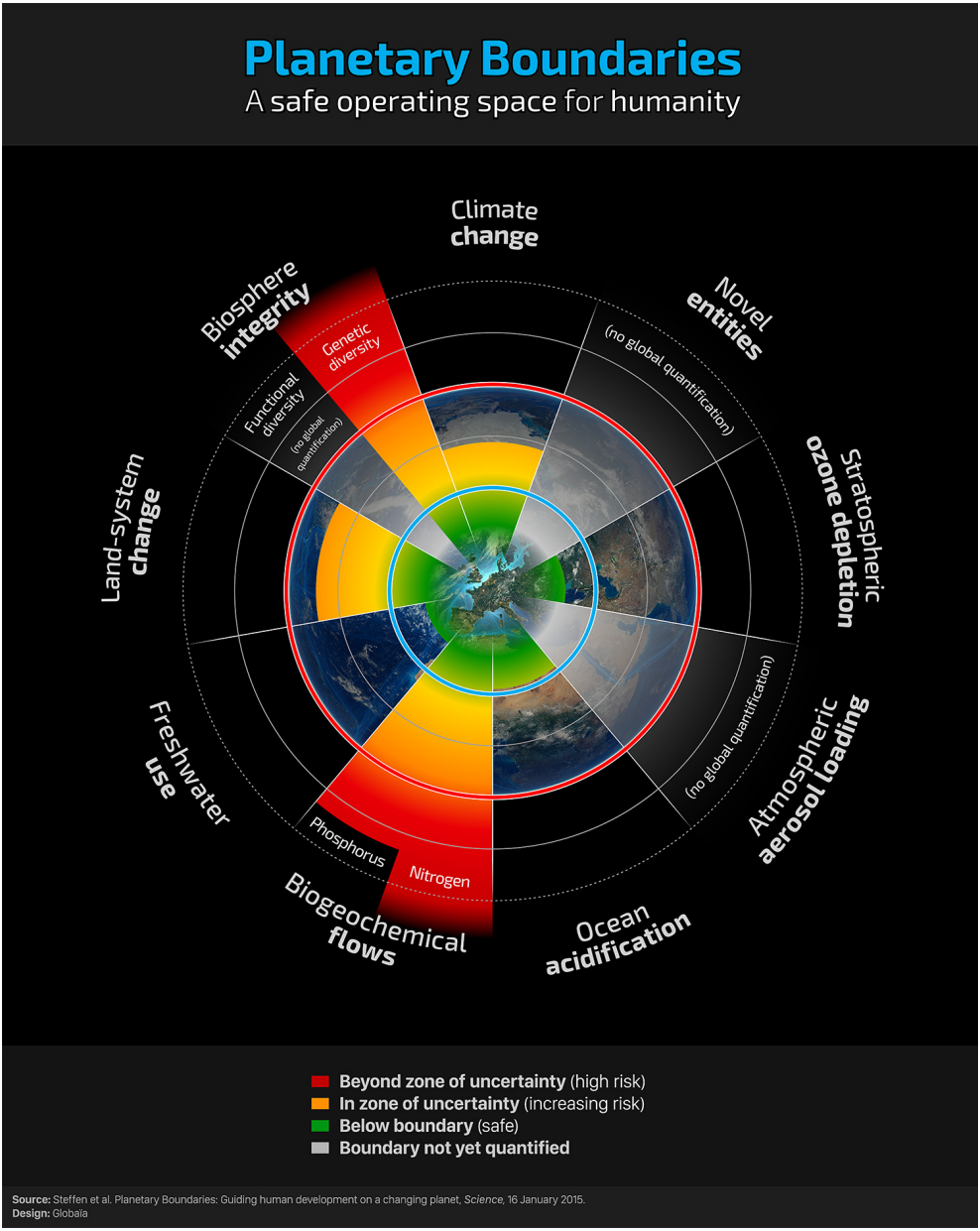
36 UNFCCC, (2015). Fossil fuel divestment pledges surpass $2.6 trillion. *UNFCCC News*. https://unfccc.int/news/fossil-fuel-divestment-pledges-surpass-26-trillion

37 Jackson, T. (2017). *Prosperity without Growth: Foundations for the Economy of Tomorrow*. 2nd Edition. Routledge, London and New York. https://www.routledge.com/Prosperity-without-Growth-Foundations-for-the-economy-of-tomorrow-2nd/Jackson/p/book/9781138935419

38 Jackson, T. (2009). Prosperity without Growth? - The transition to a sustainable economy. *Sustainable Development Commission* http://www.sd-commission.org.uk/data/files/publications/prosperity_without_growth_report.pdf

39 The Club de Madrid´s Environmental Sustainability and Shared Societies Working Group, (2017). *A New Paradigm: For Sustainable Development? Summary of the deliberations of the Club de Madrid Working Group on Environmental Sustainability and Shared Societies,* p10. http://www.clubmadrid.org/es/wp-content/uploads/sites/2/2017/11/Shared_Societies-Report-13.pdf

40 Altamirano, J-C., Maassen, A., and Prieto, O., (2017). Moving Beyond "Take, Make, Waste": Developing Cities Show the Possibilities of the Circular Economy. *World Resources Institute*. https://www.wri.org/blog/2017/10/moving-beyond-take-make-waste-developing-cities-show-possibilities-circular-economy



Many of the human activities driving climate change cause other environmental crises too, therefore addressing the root causes of one crisis, helps others to heal as well.
(Stockholm Resilience Institute, 2015)

The Biodiversity and Food Security Cases

Why does biodiversity matter?

- Biodiversity is the diversity of plant and animal life.[41] Over the last two decades alone, the Earth has lost one-tenth (3.3 million km2) of global wilderness areas.[42] [43]

- Current rates of extinction are about 1000 times the background rate of extinction. These are higher than previously estimated and likely still underestimated.[44] [45]

- The Living Planet Index has recorded an overall decline of 60% in species population sizes between 1970 and 2014, with South and Central America suffering an 89% loss, and Freshwater Living Planet Index shows an 83% decline.[46]

- As a result, biodiversity and related ecosystem health and resilience that underpin all life on Earth are under serious threat.[47]

How does biodiversity connect to food security?

- Human food and nutrition depend on biodiversity—both the agrobiodiversity of food species and the diversity of flora and fauna.[48]

- Crop pollination and seed setting stages are very temperature-sensitive, and temperature rises can disrupt the synchronization of plant flowering and pollinator activity.[49] 87 of the world's leading crops depend on insect pollination, with many dependent on just 1 or 2 species of bees.[50]

41 Biodiversity, (1995). *The Oxford English Reference Dictionary,* Oxford University Press. https://en.oxforddictionaries.com/definition/biodiversity

42 Watson, J. et al., (2016). Catastrophic Declines in Wilderness Areas Undermine Global Environment Targets. *Current Biology*, Volume 26, Issue 21, p2929 – 2934. https://www.cell.com/current-biology/fulltext/S0960-9822(16)30993-9

43 Keto, A., et al., (2018). Ecosystem Integrity, Forests & Paris Agreement Goals: Where are we? *Submission for the Talanoa Dialogue*. https://www.griffith.edu.au/__data/assets/pdf_file/0029/483932/Submission-Talanoa-Dialogue-March18.pdf

44 Ibid.

45 Pimm, S.L. et al., (2014). The biodiversity of species and their rates of extinction, distribution, and protection. *Science*, 344. p.987. http://senate.ucsd.edu/media/206192/science-2014-pimm-extinction-review.pdf

46 WWF. 2018. Living Planet Report - 2018: Aiming Higher. Grooten, M. and Almond, R.E.A.(Eds). WWF, Gland, Switzerland, p.10. http://d2ouvy59p0dg6k.cloudfront.net/downloads/lpr2018_full_report_spreads_2.pdf

47 IPBES, (2018). Biodiversity and Nature's Contributions Continue Dangerous Decline, Scientists Warn. *IPBES Media Release*. https://www.ipbes.net/news/media-release-biodiversity-nature%E2%80%99s-contributions-continue-%C2%A0dangerous-decline-scientists-warn

48 Bellard, C., et al., (2012). Impacts of climate change on the future of biodiversity. *Ecology Letters*, 15(4), p365–377. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3880584/

49 Hatfield, J.L., and Prueger, J.H., (2015). Temperature extremes: Effect on plant growth and development. *Weather and Climate Extremes*. 10, (A). p.4-10. https://www.sciencedirect.com/science/article/pii/S2212094715300116

50 Kjøhl, M., Nielsen, A., and Christian Stenseth, N., (2011). Climate Change and Crop Pollination. In: *Potential Effects of Climate Change on Crop Pollination*, Rome: Food and Agriculture Organization of the United Nations (FAO). P.1-8. http://www.fao.org/fileadmin/templates/agphome/documents/Biodiversity-pollination/Climate_Pollination_17_web__2_.pdf

(flickr/Richard Weil)

- Through its impacts on agriculture, climate change will have negative effects on food security in all of its dimensions.[51]

- In 2015-2016, 30% of the Earth's land area experienced drought (El Niño effect included), 14% of which was severe drought.[52]

- Rising temperatures result in reduced fish yields due to ocean acidification and fish migration.[53]

How can urgent climate action help?

- On land, impacts on biodiversity and ecosystems, including species loss and extinction, are projected to be lower at 1.5°C of global warming compared to 2°C.[54]

- Limiting global warming to 1.5°C compared to 2°C is projected to lower the impacts on terrestrial, freshwater and coastal ecosystems and to retain more of their services to humans.[55]

- There are relatively few studies on the consequences to an average 4°C rise by 2100 (at least 5-7°C locally in many areas).

51 Food and Agriculture Organization of the United Nations (FAO), (2016). *The state of food and agriculture: climate change, agriculture and food security.* FAO, Rome. p.8. http://www.fao.org/3/a-i6030e.pdf

52 Greenhalgh, E., (2015). 2015 State of the Climate: Drought. *National Oceanic and Atmospheric Administration*. https://www.climate.gov/news-features/featured-images/2015-state-climate-drought

53 Goldfarb, B., (2017). Feeling the Heat: How Fish Are Migrating from Warming Waters. *Yale Environment 360*. https://e360.yale.edu/features/feeling-the-heat-warming-oceans-drive-fish-into-cooler-waters

54 IPCC, (2018). Summary for Policymakers. In: *Special Report on Global Warming of 1.5C* (6 October 2018 final, subject to Copy Edit), p. 10 (B.3). Available online. http://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf

55 Ibid.

However, it may be impossible for many countries to adapt above a 4°C or 5°C temperature rise.[56]

How can changes in our agriculture and food production help stem climate change?

- The global food system is responsible for up to one-third of GHG emissions. Packaging, storage and transport of food, and fertilizer manufacture, are all responsible, especially in developed countries, but food production *per se* is the greatest contributor.[57]

- Dietary choices towards foods with lower emissions and requirements for land, along with reduced food loss and waste, could reduce emissions and increase adaptation options.[58]

- Delayed action to reduce GHG emissions could result in policies with a dangerous reliance on widespread bioenergy with carbon capture and storage, known as BECCS.[59] Widespread bioenergy is of concern because of potential effect on land use, food security and eco-system health, and carbon capture storage because of its potential to delay rapid reduction of fossil fuel use.

- Bioenergy production from biomass raises profound questions about carbon neutrality, land availability, competition with food production, and competing demands for bioenergy from the transport, heating, and industrial sectors. The logistics of collating and transporting vast quantities of bioenergy—equivalent to up to half of the total global primary energy consumption—are seldom addressed.[60]

56 Porter, J.R., et al., (2014). Food security and food production systems. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Field, C.B., et al. (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p485-533. https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-PartA_FINAL.pdf

57 Gilbert, N. (2012). One-third of our greenhouse gas emissions come from agriculture. *Nature*. https://www.nature.com/news/one-third-of-our-greenhouse-gas-emissions-come-from-agriculture-1.11708

58 IPCC, (2018). Chapter 4: Strengthening and implementing the global response, in *Special Report on Global Warming of 1.5C* p. 4-6, *subject to Copy Edit* http://report.ipcc.ch/sr15/pdf/sr15_chapter4.pdf

59 ActionAid, (2015). *Caught in the Net: How "net-zero emissions" will delay real climate action and drive land grabs*. https://actionaid.nl/2015/06/03/caught-the-net-how-net-zero-emissions-will-delay-real-climate-action-and-drive-land-grabs/

60 Anderson, K., and Peters, G., (2016). The Trouble with Net Emissions, *Science*: 354, 6309, p182-183. http://www.geoengineeringmonitor.org/2016/10/the-trouble-with-negative-emissions/

The Human Rights Case

How does climate change affect human rights?

- Rising global temperatures threaten the effective enjoyment of human rights, including the right to life, adequate food, the enjoyment of the highest attainable standard of physical and mental health, adequate housing, self-determination, and safe drinking water and sanitation.[61]

- Climate change heightens existing social and economic inequalities, intensifies poverty and reverses progress towards improvements in children's well-being. All children are exceptionally vulnerable to the negative impacts of climate change, with the youngest children being most at risk.[62]

- Those most vulnerable to anthropogenic climate change have contributed the least to the current crisis. Consequently, those who have contributed the most have a responsibility to protect them.[63]

- Crafting an effective and just policy includes consideration of how the benefits of a given policy may outweigh the harm it causes. However, this is about more than just balance: if the benefits of a policy accrue to the powerful, while the harm is felt by the vulnerable, it would not reasonably be considered just'.[64]

What human rights obligations are triggered by the impacts of climate change?

- States and enterprises have moral and legal responsibilities to take effective actions to prevent the harmful human rights impacts of climate change.[65]

- International law entails obligations to act cooperatively to protect and advance fundamental human rights, including in the context of climate change and its effects on people's ability to exercise such rights.[66]

61 United Nations General Assembly / Human Rights Council (2017). *Human rights and climate change,* Geneva: United Nations. https://www.ohchr.org/Documents/Issues/ClimateChange/COP21.pdf

62 OHCHR Summary (2017), Climate change and the full and effective enjoyment of the rights of the child (A/HRC/35/13) https://www.ohchr.org/Documents/Issues/ClimateChange/RightsChild/ChilrenOnePager.pdf

63 Elliott, D., and Fielder Cook, L., (2016). *Climate justice and the use of human rights law in reducing greenhouse gas emissions.* Geneva: Quaker United Nations Office. p4. https://quno.org/sites/default/files/resources/Climate%20Justice_August_2016.pdf

64 Ibid.

65 Expert Group on Global Climate Obligations, (2014). *Oslo Principles on Global Climate Change Obligations*, Oslo, Norway, p. 1. https://globaljustice.yale.edu/sites/default/files/files/OsloPrinciples.pdf

66 Idem, p.2

(flickr/Pallab Seth)

- Through the widespread ratification of international human rights treaties, States have committed to respect, protect and fulfil the human rights of all persons. The Paris Agreement commits to respecting, promoting and considering their respective obligations on human rights, the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations and the right to development, as well as gender equality, empowerment of women and intergenerational equity.[67]

What is a rights-based approach to climate action?

- Incorporating human rights in climate policies and actions is known as a rights-based approach. If a human rights-based approach is adopted from the outset, climate action can help improve lives and realize rights.[68]

67 United Nations Framework Convention on Climate Change, (2015). *Adoption of the Paris Agreement*, 21 Conference of the Parties, Paris: United Nations. https://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf

68 Duyck, S. (2016). *Incorporating Human Rights into Climate Action*. Version 2. Mary Robinson Foundation - Climate Justice, p.5. https://www.mrfcj.org/wp-content/uploads/2016/05/Incorporating-Human-Rights-into-Climate-Action-Version-2-May-2016.pdf

- Integrating a rights-based approach to local, national and international policies promotes policy coherence, legitimacy and sustainable outcomes.[69]

- Based on the experience of the countries that have adopted constitutional rights to a healthy environment, recognition of the right has proved to have real advantages, including:

  - raising the profile of environmental protection
  - providing a basis for the enactment of stronger environmental laws
  - helping provide a safety net to protect against gaps in statutory laws
  - creating opportunities for better access to justice.[70]

- There are also international agreements that establish norms and rights relevant to climate change risks, such as the Universal Declaration of Human Rights, the International Covenant on Civil and Political Rights, and the International Covenant on Economic, Social and Cultural Rights.[71]

- Lack of resources (financial, human, technical and political) and failure to act in the face of preventable harm (starvation, drowning, diseases, displacement and death), reflects a lack of compassion, solidarity and commitment that must be addressed globally.[72]

- Despite environmental rights enshrined in over 100 constitutions, in 2017, almost four people a week were killed defending their right to a clean and healthy environment.[73]

69 Knox, J., (2016). Report of the Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment. In: *Report to the 31st session of the UN Human Rights Council*. P.13. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2729611

70 Knox, J., (2018). Report of the Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment. In: *Report to the 37th session of the UN Human Rights Council*, p.4, paragraph 13. https://documents-dds-ny.un.org/doc/UNDOC/GEN/G18/017/29/PDF/G1801729.pdf?OpenElement

71 IPCC, (2014). Part A: Global and Sectoral Aspects. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p906 https://www.ipcc.ch/report/ar5/wg2/full-report-global-aspects/

72 Schachter, B., (2017). Statement by Benjamin Schachter Human Rights Officer, Thematic Engagement, Special Procedures and Right to Development Division at a *Side Event to the 34th Session of the Human Rights Council - A human-rights based approach to the Sustainable Development Goals and Paris Climate Agreement*. https://www.ohchr.org/Documents/Issues/ClimateChange/OHCHRStatement1March2017.pdf

73 UN Environment, (2018). Press Release: UN Environment calls on governments and business to promote, protect and respect environmental rights. *UN Environment News and Stories*. 06 March 2018. https://www.unenvironment.org/news-and-stories/press-release/un-environment-calls-governments-and-business-promote-protect-and

The Peace and Conflict Cases

What relationship are we seeing between climate change and violent conflict?

- Climate change is a direct threat in itself and a multiplier of many other threats, from poverty to displacement to conflict.[74] Over the long term, climate change will result in more disruption, more instability and more displacement as impacts intensify. [75]

- The best way to diminish the threats posed by the compound climate-fragility risks is to mitigate climate change.[76]

What is true security?

- The proper goal of security should be grounded in the wellbeing of people in their social and ecological context, rather than the interests of a nation state as determined by its elite.[77]

- World military expenditure is estimated to have reached $1739 billion in 2017, the highest level since the end of the cold war.[78]

How can we contribute to peacebuilding in an era of climate change?

- Conflict in itself is not negative. Conflict becomes destructive when root causes are not addressed, including a breakdown of communication among groups, damaging social relations and exacerbating tensions that can lead to violence.[79]

- Addressing conflict over resources constructively not only helps to prevent violence but can also facilitate wider social change, building sustainable peace by bridging divides and changing attitudes between groups.[80]

- Prevention of destructive conflict around natural resources, including

74 Former UN Secretary-General, (2017). *Secretary-General's climate remarks at NYU Stern: Climate Action: Mobilizing the World*. New York, 30 May 2017. https://un.org/sustainabledevelopment/blog/2017/05/secretary-generals-climate-remarks-at-nyu-stern/

75 Espinosa, Patricia., (2017). *The Climate Change Story Is a Security Story*. Munich Security Conference, 18 Feb 2017, Munich, Germany. Opening Address. https://unfccc.int/news/patricia-espinosa-the-climate-change-story-is-a-security-story

76 Rüttinger, L., Smith, D., Stang, G., Tänzler, D., and Vivekananda, J., (2015). A New Climate For Peace: Taking Action on Climate and Fragility Risks. adelphi, *International Alert, Woodrow Wilson International Center for Scholars, European Union Institute for Security Studies: Full report* p. 13 https://www.newclimateforpeace.org/#report-top

77 Ammerdown Group. (2016). Rethinking Security: A discussion paper, p.3 https://rethinkingsecurityorguk.files.wordpress.com/2016/10/rethinking-security-a-discussion-paper.pdf

78 SIPRI, Trends in World Military Expenditure, https://sipri.org/publications/2018/sipri-fact-sheets/trends-world-military-expenditure-2017

79 Roberts, E. and Finnegan, L., (2013). *Building Peace around water, land and food: Policy and practice for preventing conflict,* Quaker United Nations Office, Geneva. p4. http://www.quno.org/sites/default/files/resources/QUNO%20%282013%29%20Building%20peace%20around%20water%20land%20and%20food.pdf

80 Idem. p27.

escalation to violence, can be understood as a process of peacebuilding—creating the personal and institutional capacities needed to handle conflict constructively and addressing the root causes that lead to destructive conflict such as inequality and marginalization.[81]

- The extent to which these changes are likely to lead to destructive conflict will often depend on the capacity of individuals, communities and institutions to respond to them in a positive way.[82]

- "Reducing greenhouse gases as rapidly as possible is probably the most urgent global disaster risk treatments. It is core to achieving the global targets in the Sendai Framework and of course to the Paris Agreement and the Sustainable Development Goals more broadly."—*(Robert Glasser, UNISDR, 2017)*[83]

- The Sendai Framework for Disaster Risk Reduction 2015-2030 outlines seven clear targets and four priorities for action to prevent new and reduce existing disaster risks.[84]

Four approaches are critical:

- **Rapid reduction of GHG emissions**: The best way to diminish the threats posed by climate-fragility risks is to mitigate climate change.[85]

- **Strong institutions**: Where institutions and governments are unable to manage the stress, or absorb the shocks of a changing climate, the risks to the stability of states and societies will increase.[86]

- **Rights-based approaches**: Local, national and international policies that include a rights-based approach promote policy coherence, legitimacy and sustainable outcomes.[87]

- **Adequate resources**: for adaptation, water security and food security to ensure migration doesn't become the only option for those affected by climate change.[88]

81 Idem, p26.

82 Idem, p4.

83 Glasser, R., (2017). *Address to the UN Office for Disaster Risk Reduction (UNISDR)*, 17 October, Bonn. https://www.unisdr.org/archive/55498

84 United Nations Office for Disaster Risk Reduction (UNISDR), (2015). *Sendai Framework for Disaster Risk Reduction 2015-2030*. https://www.unisdr.org/we/inform/publications/43291

85 Rüttinger, L., Smith, D., Stang, G., Tänzler, D., and Vivekananda, J., (2015). A New Climate For Peace: Taking Action on Climate and Fragility Risks. adelphi, *International Alert, Woodrow Wilson International Center for Scholars, European Union Institute for Security Studies*. p.vii. https://www.newclimateforpeace.org/#report-top

86 Ibid.

87 Elliott, D., and Fielder Cook, L., (2016). *Climate justice and the use of human rights law in reducing greenhouse gas emissions.* Geneva: Quaker United Nations Office. p8. http://www.quno.org/sites/default/files/resources/Climate%20Justice_August_2016.pdf

88 UN Environment, (2015). Climate Change and Security Risks. In: *Disasters & conflicts*. https://www.unenvironment.org/explore-topics/disasters-conflicts/what-we-do/risk-reduction/climate-change-and-security-risks

The Gender Case

The gender gap

- Climate change affects everyone. However, women and men may experience the impacts of climate change differently, with women often disproportionately affected.[89]

- This is because women, compared to men, often have limited access to resources, less access to justice, limited mobility, and limited voice in shaping decisions and in influencing policy.[90]

- Women tend to be poorer than men and experience higher poverty rates than men with the same characteristics.[91]

- Poor women in developing countries are often the most vulnerable[92] to climate impacts, with women and children 14 times more likely to die during natural disasters.[93]

- Women, on average, make up 43%[94] of the agricultural labor force in developing countries, and around 50% in sub-Saharan Africa.[95]

- Climate change has a greater impact on those most reliant on natural resources for their livelihoods.[96]

- The impact of a storm, flood, drought or earthquake is more than twice as significant for poor people than anyone else. The poorest people are more likely to live in fragile housing in disaster-prone areas, and work in sectors susceptible to extreme weather events, like farming and agriculture.[97]

89 Capacity Building Initiative (ecbi), (2017). *Pocket Guide to Gender Equality Under the UNFCCC*, p.3. http://wedo.org/wp-content/uploads/2017/11/Final-Gender.pdf

90 Ibid.

91 United Nations Statistics Division, (2015). Chapter 8: Poverty. In: *The World's Women 2015*, p.179. https://unstats.un.org/unsd/gender/downloads/WorldsWomen2015_chapter8_t.pdf

92 Olsson, L., M. et al., (2014). Livelihoods and poverty. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.* Cambridge University Press, Cambridge, United Kingdom and New York, USA, p.793-832. https://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap13_FINAL.pdf

93 United Nations Development Program (UNDP), (2013). *Policy Brief: Gender and disaster risk reduction.* Gender and Climate Change: Asia and the Pacific. New York, USA. http://www.undp.org/content/dam/undp/library/gender/Gender%20and%20Environment/PB3-AP-Gender-and-disaster-risk-reduction.pdf

94 UN Women Watch, (2012). *Facts & Figures: Rural Women and the Millennium Development Goals*. http://www.un.org/womenwatch/feature/ruralwomen/facts-figures.html

95 The Food and Agriculture Organization of the United Nations (FAO), (2011). *The role of women in agriculture*, EAS Working Paper No.11-02, prepared by the SOFA Team and Cheryl Doss, p.3-4. http://www.fao.org/docrep/013/am307e/am307e00.pdf

96 UNFCCC Gender Team, (2012). *Introduction to Gender and Climate Change: What is the connection and why is Gender and Climate Change important?* https://unfccc.int/topics/gender/the-big-picture/introduction-to-gender-and-climate-change

97 The World Bank, (2016). *Breaking the Link Between Extreme Weather and Extreme Poverty*. http://www.worldbank.org/en/news/feature/2016/11/14/breaking-the-link-between-extreme-weather-and-extreme-poverty

- Informal sector jobs are often the worst hit—and slowest to recover—when disasters strike. A disproportionately large number of women work in the informal sector.[98]

- Climate change is also likely to cause an increase in health problems in affected societies, due to disruptions to food and water supplies as well as an increase in chances of a natural disaster.[99] It is likely that women's unpaid care work will increase further as climate change symptoms worsen.[100]

- Efforts to reduce poverty and gender inequalities, and to enhance food, health and water security can reduce vulnerability to climate change.[101]

- It has been demonstrated that policies and interventions accounting for gender differences have better chances of sustained and successful impact.[102]

- Building effective responses to climate change requires an understanding of how gender equality affects access to, and control of, institutional structures; social, cultural and formal networks; and decision-making processes.[103]

Gender and climate change in international processes

- Of the three Conventions to evolve from the Earth Summit in 1992, the UNFCCC was the only one that lacked mandates on women's rights and gender equality from the outset.[104]

- At COP23 in 2017, the first UN Climate Gender Action Plan was adopted, to highlight the role of women in climate action and advance gender-responsive climate policy work. [105]

- In March 2018, the Committee on the Elimination of Discrimination Against Women adopted the first general recommendation by a human rights treaty-body that focused on disaster risk reduction and climate change and the disproportionate impact these issues will have on women and girls.[106]

98 Masika, R. (2002). Editorial. In: *Gender, Development and Climate Change*, Oxfam Publishing, p.5 https://policy-practice.oxfam.org.uk/publications/gender-development-and-climate-change-121149

99 Ibid.

100 Nelson, V., et al., (2010). Uncertain predictions, invisible impacts, and the need to mainstream gender in climate change adaptations, *Gender & Development*, 10:2, p.51-59. https://www.tandfonline.com/doi/abs/10.1080/13552070215911

101 IPCC, (2018). Chapter 5, Sustainable Development, Poverty Eradication and Reducing Inequalities In: *Special Report on Global Warming of 1.5C* p. 5-46. *Subject to copy edit* http://report.ipcc.ch/sr15/pdf/sr15_chapter5.pdf

102 Capacity Building Initiative (ecbi), (2017). *Pocket Guide to Gender Equality Under the UNFCCC*, p.6. http://wedo.org/wp-content/uploads/2017/11/Final-Gender.pdf

103 Ibid.

104 Ibid.

105 United Nations Framework Convention on Climate Change (UNFCCC), (2016). *Decision 21/CP.22 - Gender and Climate Change*, p.19, para 27. http://unfccc.int/files/gender_and_climate_change/application/pdf/pages_17-20_from_10a02.pdf

106 Committee on the Elimination of Discrimination against Women (CEDAW), (2018). Sixty-ninth session: *Statement of the Committee on the Elimination of Discrimination against Women on gender related dimensions of disaster risk reduction in the context of climate change*. Office of the United Nations High Commissioner for Human Rights (OHCHR). https://www.ohchr.org/Documents/HRBodies/CEDAW/Statements/StatementGR_DRRCC.pdf

The Poverty Case

- Poverty is not a solely economic issue. It is characterized by "the sustained or chronic deprivation of the resources, capabilities, choices, security and power necessary for the enjoyment of an adequate standard of living and other civil, cultural, economic, political and social rights."[107]

- Extreme poverty is thus characterized by a combination of income poverty, human development poverty and social exclusion, for it is both a cause and a consequence of human rights violations.[108]

- Climate change could lead to significant impacts on extreme poverty by 2030.[109]

- In countries where decades-long deforestation caused extensive soil erosion, such as in Haiti, poor neighborhoods suffered the most from landslides that destroyed their homes built on the hillsides when many hurricanes occurred in the same year 2008.[110]

- In developed countries, the poorest often bear the heaviest brunt of global warming. At the time of Hurricane Katrina in 2005 in the United States, those with resources left in advance of the approaching hurricane; those without resources (largely the poor, African-American, elderly or residents without private cars) remained, trapped as the floodwaters rose.[111]

- The Paris Agreement recognizes the impacts of measures taken in response to climate change; the Agreement emphasizes their relationship with equitable access to sustainable development and eradication of poverty.[112]

- Climate actions pursuing the promising prospect of a Green Economy sometimes fail to take account of their social impacts on vulnerable populations.[113]

107 UN ECOSOC (2001), Statement by the Committee on Economic, Social and Cultural Rights (E/C.12/2001/10 para.8) available https://www2.ohchr.org/english/bodies/cescr/docs/statements/E.C.12.2001.10Poverty-2001.pdf

108 UN Human Rights Council (2008) Reference A/HRC/7/15, para.13. https://www.ohchr.org/Documents/Publications/OHCHR_ExtremePovertyandHumanRights_EN.pdf

109 IPCC, (2018). Chapter 5: Sustainable Development, Poverty Eradication and Reducing Inequalities In: *Special Report on Global Warming of 1.5C* p. 5-10. *Subject to copy edit* http://report.ipcc.ch/sr15/pdf/sr15_chapter5.pdf

110 ATD Fourth World (2014). Participatory research evaluating the MDGs from the viewpoint of people living in extreme poverty. *Challenge 2015: Towards Sustainable Development that Leaves No One Behind, page 58.* http://www.atd-fourthworld.org/challenge-20153588/

111 Black, R., and Collyer M. (2014). Populations 'trapped' at times of crisis. FMR 45 Forced Migration Review. https://www.fmreview.org/crisis/black-collyer

112 UNFCCC (2015) Preamble of the Paris Agreement on Climate Change, https://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf

113 Raworth, K., Wykes, S, and Bass, S. (2014). *Securing social justice in green economies: a review and ten considerations for policymakers*. IIED Issue Paper p4. http://pubs.iied.org/pdfs/16578IIED.pdf

- It is imperative that 'clean energy' programmes prioritize the most vulnerable communities and make sure that people living in poverty benefit from training and job creation in the context of transitioning to a 'Green Economy'.[114]

Effective policy actions that "leave no one behind" include: [115]

- **Involve** those in poverty in determining prevention, adaptation or mitigation strategies.

- **Ensure** that people living in poverty have access to better energy and technology options, and to new scientific developments and products that can improve their living standard

- **Design** policies which avoid or lower adverse impacts of climate projects on people living in extreme poverty and their communities.

Lakka, Sierra Leone.
(flickr/Eduardo Fonseca Arraes)

114 ATD Fourth World (2015). Five Climate Change Solutions that-Leave No One Behind. http://www.atd-fourthworld.org/five-climate-change-solutions-that-leave-no-one-behind/

115 International Movement ATD Fourth World and Franciscans International (2015). *Making Human Rights Work for People Living in Extreme Poverty*. P. 41 http://www.atd-fourthworld.org/wp-content/uploads/sites/5/2015/05/2015-09-01-GuidingPrinplsEPHR-HANDBOOK-EN-ATD_FI_Handbook_English_WEB-1.pdf

The Environmental Discrimination Case

How do inequalities magnify suffering in climate change?

- On a national or local level, those people who are most vulnerable to the adverse environmental and health consequences of climate change include poor people, members of minority groups, women, children, older people, people with chronic diseases and disabilities, those residing in areas with a high prevalence of climate-related diseases, and workers exposed to extreme heat or increased weather variability. [116]

- Climate change and climate variability worsen existing (levels of) poverty and exacerbate inequalities, especially for those disadvantaged by gender, age, race, class, caste, indigeneity and (dis)ability. [117]

- The fundamental societal and systemic changes to achieve sustainable development, eradicate poverty and reduce inequalities while limiting warming to 1.5°C would require a set of institutional, social, cultural, economic and technological conditions to be met.[118]

- Long-standing configurations of power and privilege result in the poorest and most vulnerable people facing the greatest risks from climate change. Ethnic and racial minorities are overrepresented among these populations, and are disproportionately impacted by pollution and extreme weather events, both globally and within individual countries.[119]

- Indigenous people are especially vulnerable to the adverse consequences of climate change, in part because their lives are closely tied to the natural environment.[120]

- Environmental consequences of climate change can affect the physical well-being of indigenous people, such as their ability to obtain adequate food, water, and shelter, but also their spiritual well-being, in part because land is often an integral part of their culture and spiritual identity.[121]

116 Levy, B.S., Patz, J.A., (2015). Climate Change, Human Rights, and Social Justice. *Annals of Global Health*. 81, 3, p310-322. https://www.sciencedirect.com/science/article/pii/S2214999615012242

117 IPCC, (2018). Chapter 5: Sustainable Development, Poverty Eradication and Reducing Inequalities In: *Special Report on Global Warming of 1.5C* p. 10. *Subject to copy edit* http://report.ipcc.ch/sr15/pdf/sr15_chapter5.pdf

118 Idem. Chapter 5, p.6

119 Krause, D., and Yomoah, D.A., (2018). Environmental Justice in the United States – What's Missing? *UNRISD Blogs and Think Pieces.* http://www.unrisd.org/80256B3C005BE6B5/search/83877A520A40C5F7C1258256005235AF?OpenDocument&newstype=viewpoint

120 Ibid.

121 Ibid.

Environmental activists march in Washington, D.C. *(flickr/Robert Meyers)*

- Non-white people in the United States are disproportionately impacted by environmental injustice, meaning they are more exposed and susceptible to the negative effects of pollution, extreme weather events and large-scale agricultural practices.[122]

- The victims of Hurricane Katrina in 2005 were disproportionately black - the mortality rate for black adults was 1.7-4 times higher than the mortality rate for white adults in certain areas of New Orleans.[123]

- Years after Hurricane Katrina, thousands of low-income families in New Orleans still cannot find adequate housing. While the affluent and tourist areas of the city have been rebuilt, the traditionally under-resourced neighborhoods have not.[124]

122 Ibid.

123 Finch, C., Emrich, C.T. & Cutter, S.L., (2010). Disaster disparities and differential recovery in New Orleans. *Population and Environment*. 31, 179. https://link.springer.com/article/10.1007/s11111-009-0099-8

124 Olson M.G., Stornelli K., Victoire Marie., (2012). Not Meant to Live Like This – Weathering the Storm of Our Lives in New Orleans. ATD Fourth World Publications. https://4thworldmovement.org/publications_wp/not-meant-to-live-like-this/

The Civil Society Case

Partnerships between governments and civil society can lead to successful climate action.

- Governments and civil society could work more effectively and meaningfully together to implement climate action.[125]

- Working with civil society can result in government policies better meeting the needs of the general population, meaning these policies have more legitimacy and support from citizens. [126] [127]

Civil society and resource management

- When civil society groups and local communities are not able to have a voice in resource management or hold decision makers accountable, implementation of good policy frameworks often remains limited. This can result in management rules and practices that are unclear, contradictory or perceived as illegitimate by certain groups.[128]

- Community involvement in decision-making around natural resources is key to building peaceful, equitable and effective management. To make this involvement possible, the power dynamics between local communities and higher-level decision makers, as well as the dynamics between and within communities, need to be recognized and addressed.[129]

- When governments engage with the interests of civil society, they can increase legitimacy and accountability of their policies without imposing pre-determined policies on their population.[130]

- It is critical that climate policies are of benefit to the local communities, in order for them to help implement, support and ultimately ensure success of those actions.[131]

125 Chan, S., Brandi, C. and Bauer, S., (2016). Aligning Transnational Climate Action with International Climate Governance: The Road from Paris. *RECIEL*. 25, 2. p238–247. https://onlinelibrary.wiley.com/doi/full/10.1111/reel.12168

126 Rietig, K., (2018). The Links Among Contested Knowledge, Beliefs, and Learning in European Climate Governance: From Consensus to Conflict in Reforming Biofuels Policy. *Policy Studies Journal*. 46, 1. p137-159. https://onlinelibrary.wiley.com/doi/full/10.1111/psj.12169

127 Weible, C. M., (2008). Expert-based information and policy subsystems: A review and synthesis. *Policy Studies Journal*. 36, 4. p615–635. https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1541-0072.2008.00287.x

128 Roberts, E. and Finnegan, L., (2013). *Building Peace around water, land and food: Policy and practice for preventing conflict*, Quaker United Nations Office, Geneva. p4. http://quno.org/sites/default/files/resources/QUNO%20%282013%29%20Building%20peace%20around%20water%20land%20and%20food.pdf

129 Idem, p24.

130 Betsill, M. and Corell, E., (2008). *NGO Diplomacy: The Influence of Non-Governmental Organizations in International Environmental Negotiations.* Cambridge, MA: MIT Press. https://mitpress.mit.edu/books/ngo-diplomacy

131 Younger, P.L., (2007). Pro-poor Water Technologies Working both Ways: Lessons From a Two-way, South-North Interchange. *Geoforum*. 38, 5. p828-840. https://www.infona.pl/resource/

What is gained?

- The recent *Special Report on Global Warming of 1.5°C*, noted that political leaders with a vision for the future of the local community can succeed in reducing GHG emissions, when supported by civil society.[132]

- Civil society can play the following roles in global environmental governance:

  - collecting, disseminating, and analyzing information;
  - providing input to agenda-setting and policy development processes;
  - performing operational functions;
  - assessing environmental conditions and monitoring compliance with environmental agreements; and
  - advocating environmental justice.[133]

- Environmental NGOs often have greater capacity than governments on areas of compliance and concerns. Also, the NGO network across sectors can facilitate implementation and can increase support for a policy.[134]

- Governments often turn to UN, intergovernmental organizations and NGOs to provide research, information and facilitate effective decision-making. Examples include the World Resources Institute (WRI), the World Conservation Union (IUCN)[135], the Global Environment Outlook (GEO) of UNEP[136], the Global Forest Watch[137], and the recently launched UN Millennium Ecosystem Assessment.[138]

- One of the most important roles that civil society can play in global environmental governance is to provide up-to-date information on critical issues, helping to fill research and analytical gaps.[139]

bwmeta1.element.elsevier-666edd33-8458-37f4-9d65-6cb-1be08278f

132 IPCC, (2018). Chapter 4: Strengthening and implementing the global response, in *Special Report on Global Warming of 1.5C* p. 4-62, *Subject to copy edit* http://report.ipcc.ch/sr15/pdf/sr15_chapter4.pdf

133 Rietig, K. (2016), The Power of Strategy: Environmental NGO Influence in International Climate Negotiations. *Global Governance.* 22, 2. p168-189. http://journals.rienner.com/doi/abs/10.5555/1075-2846-22.2.268?code=lrpi-site

134 Bomberg, E., (2007). Policy Learning in an Enlarged European Union: Environmental NGOs and New Policy Instruments. *Journal of European Public Policy*. 14, 2. p248-268. https://www.tandfonline.com/doi/abs/10.1080/13501760601122522

135 Rietig, K., (2014). 'Neutral' Experts? How Input of Scientific Expertise Matters in International Environmental Negotiations. *Policy Sciences.* 47, 2. p141-160. https://www.masader.om/eds/detail?db=bsu&an=96364230&isbn=00322687

136 UN Environment, (2012). Global Assessment Reports. In: *Global Environment Outlook*. https://www.unenvironment.org/global-environment-outlook

137 World Resources Institute, (2018). *Global Forest Watch*. https://www.globalforestwatch.org/

138 Millennium Ecosystem Assessment, (2005). *Global Assessment Reports*. http://www.millenniumassessment.org/en/Global.html

139 Moldan, B (2005). The Millennium Assessment, Chapter 18, *Choosing Responses*, p. 528, Available http://www.millenniumassessment.org/documents/document.323.aspx.pdf

The Ethical Case

- "Protecting our environment is an urgent moral imperative and a sacred duty for all people of faith and people of conscience."—*(Former United Nations Secretary General Ban Ki-moon, 2015)*[140]

- Ours can be the first generation to succeed in ending poverty; just as we are the last to have a chance of saving the planet… The future of humanity and of our planet lies in our hands…We have mapped the road to sustainable development; it will be for all of us to ensure that the journey is irreversible.[141]

- We know our human activities and behaviors are driving current climate change, so we have an ethical duty, or moral obligation, to act urgently to protect all living species from a rate of global temperature rise that would lead to profound suffering and loss, transforming the environment and human civilization as we know it.[142]

- The current dominant world view has taken us to the current state of the Earth and it needs to transform.[143]

- This challenge is a call to conscience, recognizing a personal and collective responsibility to ensure the poorest and most vulnerable peoples now, and all our future generations, do not suffer because of our actions.[144]

- "The deep psychic change needed to withdraw us from the fascination of the industrial world, and the deceptive gifts that it gives us, is too difficult for simply the avoidance of its difficulties or the attractions of its benefits. Eventually only our sense of the sacred will save us."—*(Thomas Berry, 2003, UNEP)*[145]

- The social environment has also suffered damage. Both are ultimately due to

140 Ban Ki-moon, (2015). Protecting Environment Is 'an Urgent Moral Imperative', Sacred Duty for All People of Faith, Secretary-General Tells Vatican Workshop on Climate Change. 28 April 2015. *UN Statements and Messages.* https://www.un.org/press/en/2015/sgsm16710.doc.htm

141 UN General Assembly, (2015). *Transforming our world: the 2030 Agenda for Sustainable Development.* 21 October 2015, A/RES/70/1, paragraphs 45 and 48. https://sustainabledevelopment.un.org/post2015/transformingourworld

142 UNFCCC side event (2017). *A Negotiator's tool-kit: a range of powerful arguments to engage with busy Ministries on clear and concise reasons for urgent climate action.* 8 May 2017. 11 minutes 26 seconds. [online video]. https://drive.google.com/file/d/0B3c9HJGvfPsAczRyVmd0emVMTGM/view

143 Ibid.

144 Michaelis, L., and Cook, L.F., (2014). *Call to Conscience.* Geneva: Quaker United Nations Office. http://quno.org/sites/default/files/resources/QUNO%20Call%20to%20Conscience.pdf

145 Berry, T. (2003). Prosperity: Transform societies to have sustained, inclusive and sustainable economic growth, and sustainable lifestyle. In: *Environment, Religion and Culture in the Context of the 2030 Agenda for Sustainable Development (2016).* United Nations Environment Programme, Nairobi, p27.https://wedocs.unep.org/bitstream/handle/20.500.11822/8696/-Environment,_religion_and_culture_in_the_context_of_the_2030_agenda_for_sustainable_development-2016Environment,_religion_and_culture_in_the_context_.pdf?sequence=2&isAllowed=y

the same evil: the notion that there are no indisputable truths to guide our lives, and hence human freedom is limitless. We have forgotten that "man is not only a freedom which he creates for himself. Man does not create himself. He is spirit and will, but also nature.[146]

(Andrey Smirnov/Getty Images)

- A transformation is needed in our behaviors, lifestyles, and our political and economic systems, to live more sustainably and fairly, and to flourish on the Earth.[147]

- An awareness of caring for the Earth can bring greater clarity in support of political decisions for the greater good. This awareness can help decision makers to move beyond short-term political interests or economic considerations, and to prioritize long-term policies which are accountable to present and future generations.[148]

- We fail to respect the integrity of ecosystems as designed by nature and made abundant for the well-being of all. Our lives are dependent on water, clean air, safe food and complex systems which sustain all of these.[149]

- Several Indigenous world views state that true human well-being depends on the quality of our connection to the Earth and our attitude towards our relationship with nature.[150]

- Many polluting activities may appear financially lucrative, but they are destroying the ability of our children and all future generations...to live on this Earth.[151]

146 Pope Francis, ENCYCLICAL LETTER LAUDATO SI, Vatican Press, para 6. http://w2.vatican.va/content/dam/francesco/pdf/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si_en.pdf

147 Seyfang, G., 2004. *Shopping to save the planet? a critical analysis of sustainable consumption policy and practice*. Paper presented to ECPR Joint Sessions, Uppsala April 13-18, 2004. https://ecpr.eu/Filestore/PaperProposal/e677ee7d-23fd-4f58-adb1-1de91c9f696f.pdf

148 UNFCCC side event (2017). *A Negotiator's tool-kit: a range of powerful arguments to engage with busy Ministries on clear and concise reasons for urgent climate action*. 8 May 2017. 11 minutes 26 seconds. [online video]. https://drive.google.com/file/d/0B3c9HJGvfPsAczRyVmd0emVMTGM/view

149 Ibid.

150 Four Arrows (aka Donald Trent Jacobs), (2016). *Point of Departure: Returning to Our More Authentic Worldview for Education and Survival.* Charlotte, NC: Information Age Publishing Inc.

151 Franciscans International and Brahma Kumaris, (2017). *Joint Oral Statement at 36th Session of the UN Human Rights Council Agenda, Item 4: General Debate.* 19 September 2017.

Rescuers evacuate residents after flooding in Carlisle, UK. *(Jeff J Mitchell/Getty Images)*

- It is not enough, however, to think of different species merely as potential "resources" to be exploited, while overlooking the fact that they have value in themselves. Each year sees the disappearance of thousands of plant and animal species which we will never know, which our children will never see, because they have been lost forever. The great majority become extinct for reasons related to human activity. Because of us, thousands of species will no longer give glory to God by their very existence, nor convey their message to us. We have no such right.[152]

- All countries have a responsibility to spend more money on environmental programmes rather than on military programmes.[153]

- Whatever we do, whatever place we are in, we should ask first not what shall I do, but what does this place, what does this Earth require of me? In other words, we are called not simply to action, but to service.[154] [155]

https://franciscansinternational.org/fileadmin/media/2017/Global/UN_Work/2017.09.19_Oral_Statement_CC_and_HR.pdf

152 Pope Francis, ENCYCLICAL LETTER LAUDATO SI, Vatican Press, para 33. http://w2.vatican.va/content/dam/francesco/pdf/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si_en.pdf

153 Yan, T., (2006). Towards an Egalitarian Global Environmental Ethics. In: *Environmental Ethics and International Policy.* UNESCO, p. 41. http://publishing.unesco.org/chapters/978-92-3-104039-9.pdf

154 IUCN/UNEP/WWF, (1991). *Caring for the Earth. A Strategy for Sustainable Living.* Gland, Switzerland. https://portals.iucn.org/library/efiles/documents/cfe-003.pdf

155 Spirit of Humanity Forum. (2017). *Climate Action – the Ethical Perspective.* https://www.sohforum.org/2017/07/06/climate-action-ethical-perspective/

The Healthier World Case

The case is often forgotten in the fearful narrative of climate change, yet it is arguably the most powerful motivator for change.

- Transforming fear, anger, and confusion into compassion, clarity, and hope will inspire environmental action.[156]

- The Sustainable Development Goals (SDGs) call for transformative policies to deliver on our collective promise to build a life of dignity for all on a cleaner, greener planet.[157]

- The solutions to the negative effects of climate change are also the paths to a safer, healthier, cleaner and more prosperous future for all. However, for such a future to become reality, citizens in all countries, at all levels of government, society and enterprise, need to understand and be involved.[158]

- The Paris Agreement provides an international framework for action in which Parties to the Agreement agree to aim for net zero carbon emissions shortly after mid-century.[159]

- Many initiatives that reduce greenhouse gas emissions have benefits that go beyond contributing to climate change mitigation. Reducing air pollution from emissions of fossil fuels and the accompanying health and environmental impacts is the most obvious co-benefit, but there are many other areas, including:

  - Resource efficiency
  - Economic security
  - Sustainability of ecosystems
  - Increased economic dynamism where positive impacts can be expected[160]

156 Bohn, A., Mclarty, M., and Oman, J., (2016). Creating A New Culture Around Climate Change. *Proposal for Shifting Behavior for a Changing Climate 2016 by Etho. Climate Co-Lab.* https://www.climatecolab.org/contests/2016/shifting-behavior-for-a-changing-climate/c/proposal/1331669

157 United Nations Department of Economic and Social Affairs, (2016). *'New UN report: Inequalities cause and exacerbate climate impacts on poor and vulnerable people'*, New York, 3 October. https://www.un.org/development/desa/en/news/policy/wess-2016.html

158 Paas, L., (2016). *Action for Climate Empowerment: Guidelines for accelerating solutions through education, training and public awareness.* Paris, France: UNESCO and UNFCCC, p2. http://unesdoc.unesco.org/images/0024/002464/246435e.pdf

159 United Nations / Framework Convention on Climate Change, (2015). In: *Adoption of the Paris Agreement, 21st Conference of the Parties*, Paris: United Nations. Article 4.1. https://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf

160 United Nations Economic Commission for Europe (UNECE), (2016). *Sustainable Development Brief No.2: The co-benefits of climate change mitigation.* p1. http://www.unece.org/fileadmin/DAM/Sustainable_Development_No._2__Final__Draft_OK_2.pdf

- Fewer environmental health risks from transport, housing, and energy systems

- Health benefits from healthier lifestyles (e.g. more physical activity) and diets

- Harnessing climate change actions for health benefits can play a transformative role in the climate debate—strengthening public and policymaker will for action.[161]

- There are huge opportunities for near-term, rapid, and deep reductions today at little to modest cost, such as improving energy efficiency, encouraging low-carbon behaviors, and continued deployment of renewable energy technologies.[162]

- Efficient cookstoves improve health especially for indigenous and poor rural communities.[163]

- Household energy efficiency has positive health impacts on children's respiratory health, weight, and susceptibility to illness, and the mental health of adults. Household energy efficiency improves winter warmth, lowers relative humidity with benefits for cardiovascular and respiratory health.[164]

- Done right, the energy transition can generate funds to help deliver public services. Changing our approach to the production and ownership of energy—who generates it, and who profits—could have many wider benefits, including that communities could benefit financially from local renewable energy projects.[165]

- Isolated, stressful, consumer-focused lifestyles can be replaced by a sense of connection with community and nature, delivering enormous benefits in physical and psychological well-being.[166]

- Limiting warming to 1.5°C will make it markedly easier to achieve the SDGs for poverty eradication, water access, safe cities, food security, healthy lives, and inclusive economic growth, and will help to protect terrestrial ecosystems and biodiversity.[167]

161 WHO, (2014). *Discussion Draft: Promoting Health While Mitigating Climate Change.* Technical Briefing for the World Health Organization Conference on Health and Climate, 27-29 August 2014, Geneva, p4. http://www.who.int/phe/climate/conference_briefing_2_promotinghealth_27aug.pdf

162 Anderson, K., Peters, Glen., (2016). The trouble with negative emissions. *Science*, 354: 6309, p182-183. http://smartstones.nl/wp-content/uploads/2016/12/Kevin-Anderson-2016.10.13-the-Trouble-with-Negative-Emissions-Science-2016.pdf

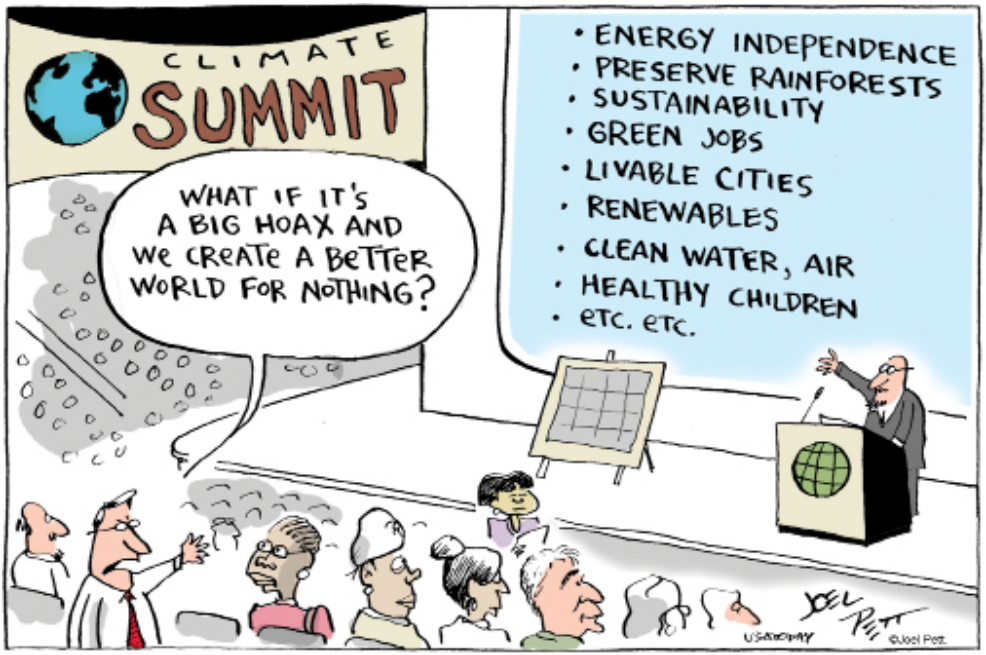
163 IPCC, (2018). Chapter 5: Sustainable Development, Poverty Eradication and Reducing Inequalities In: *Special Report on Global Warming of 1.5C* p. 5-50. *Subject to copy edit* http://report.ipcc.ch/sr15/pdf/sr15_chapter5.pdf

164 Ibid.

165 Centre for Alternative Technology, (2017). *Zero Carbon Britain: Making It Happen,* Powys: Allan Shepherd. p226 and 229. Available http://www.zerocarbonbritain.org/images/pdfs/ZeroCarbonBritain-MakingItHappen.pdf

166 Idem. p267.

167 IPCC, (2018). Chapter 5: Sustainable Development, Poverty Eradication and Reducing Inequalities In: *Special Report on Global Warming of 1.5C* p. 5-12. *Subject to copy edit* http://report.ipcc.ch/sr15/pdf/sr15_chapter5.pdf.



Joel Pett (2009)[168]

- An alternative to the industrial agricultural model, agroecology has been promoted as a means of mitigating the environmental impacts of food production (including GHG emissions), while at the same time enhancing famers' ability to adapt to changing growing conditions.[169]

- "Effective climate change responses can be a way to build a richer, more resilient, fundamentally more vibrant world. Access to low-carbon energy can improve health and livelihoods, while also protecting the climate."—*(Katharine Mach, pers. comm., IPCC AR5 Working II Technical Support Unit,* 2017*)*

168 *Joel Pett Editorial Cartoon* used with the permission of Joel Pett and the Cartoonist Group. (2009) All rights reserved. http://www.cartoonistgroup.com/store/add.php?iid=41786

169 Smith, C., Elliott, D., and Bragdon, S.H., (2015). *Realizing the right to food in an era of climate change.* Geneva: Quaker United Nations Office. P. 14 http://quno.org/sites/default/files/resources/Realizing%20the%20right%20to%20food%20in%20an%20era%20of%20climate%20change.pdf

What we can do to help—effective climate actions

Almost all the solutions here lead to regenerative economic outcomes that create security, produce jobs, improve health, save money, facilitate mobility, eliminate hunger, prevent pollution, restore soil, clean rivers, and more.[170] The most effective short and long-term climate actions include:

- Sustainable economic and development models[171]
- Rapid reduction of fossil fuel extraction and combustion[172]
- Deep reductions in emissions of methane and black carbon[173]
- Energy efficiency[174]
- Reduced food waste[175]
- A plant-rich diet[176]
- Reforestation[177]
- Refrigerant management[178]
- Onshore wind turbines[179]
- Educating girls[180]
- Family planning[181]
- Rooftop solar[182]
- Solar farms[183]
- Clean cooking stoves[184]
- Offshore wind turbines[185]
- Protection of peatland areas[186]
- Sustainable transport[187]
- Tropical staple tree regeneration[188]
- Restoration of tropical forests[189]
- Restoration of temperate forests[190]
- Sustainable afforestation[191]
- Sustainable agriculture practices[192]

170 Hawken, P., (2017). *Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse Global Warming.* New York: Penguin Books. https://www.drawdown.org/

171 The Club de Madrid´s Environmental Sustainability and Shared Societies Working Group, (2017). *A New Paradigm: For Sustainable Development?* http://www.clubmadrid.org/es/wp-content/uploads/sites/2/2017/11/Shared_Societies-Report-13.pdf

172 IPCC, (2018). Summary for Policymakers. In: *Special Report on Global Warming of 1.5C* (6 October 2018 final, subject to Copy Edit), p.8 http://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf

173 Idem, p. 14 (C.1.2).

174 Idem, C.2.2.

175 Idem, p.23.

176 Idem, C.2.5.

177 Idem, p.19 C.3.1 and D.3.4.

178 Hawken, P., (2017). *Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse Global Warming.* New York: Penguin Books. p164-65. https://www.drawdown.org/,

179 Idem, p2-3.

180 Idem, p81.

181 Idem, p78-79.

182 Idem, p.10-11.

183 Idem, p8-9.

184 Idem, p44-45.

185 Idem, p2-3.

186 Idem, p136-156.

187 Ibid.

188 Idem, p66-67.

189 Griscom, B.W., (2017). Natural climate solutions. *PNAS*, 114 (44), p11645-11650. http://www.pnas.org/content/pnas/114/44/11645.full.pdf;

190 Idem, p11645-11650.

191 Idem, p11645-11650.

192 FAO, (2018). *Agroecology Knowledge Hub* http://www.fao.org/agroecology/overview/en/.

- With urgent action it is still possible to stabilize global warming at 1.5°C: '*Warming from anthropogenic emissions from the pre-industrial period to the present will persist for centuries to millennia and will continue to cause further long-term changes in the climate system, such as sea level rise, with associated impacts (high confidence), but these emissions alone are unlikely to cause global warming of 1.5°C.*'[193]

- Solutions are not solely technological, they are also ecological, economic and social[194] actions which can lead to regenerative economic outcomes.[195]

- In all actions, it is critical to prioritize social inclusion and environmental protection in economic and development paradigms.[196]

- Behavior, lifestyle and culture have a considerable influence on energy use and associated emissions, with high mitigation potential. Emissions can be substantially lowered through changes in consumption patterns, adoption of energy savings measures, dietary change and reduction in food wastes.[197]

- Family planning and poverty reduction are linked to population stabilization.[198] The current world population of 7.6 billion is expected to reach 8.6 billion in 2030, 9.8 billion in 2050.[199]

- Dietary shifts could contribute one-fifth of the mitigation needed to hold warming below 2°C, with one-quarter of low-cost options.[200]

- Humanity also needs to control the loss of forests, while stopping soil degradation. Restoring soil carbon levels should be included in the criteria for agriculture management.[201]

193 IPCC, (2018). Summary for Policymakers. In: *Special Report on Global Warming of 1.5C* (6 October 2018 final, subject to Copy Edit), (A 2.2). http://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf

194 Hawken, P., (2017). *Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse Global Warming.* New York: Penguin Books, p.ix.

195 Idem, p.x.

196 Club de Madrid, (2017). *A New Paradigm For Sustainable Development?: Summary of the deliberations of the Club de Madrid Working Group on Environmental Sustainability and Shared Societies.* p9. http://www.clubmadrid.org/es/wp-content/uploads/sites/2/2017/11/Shared_Societies-Report-13.pdf

197 IPCC, (2014). *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.* [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, p29. https://www.ipcc.ch/site/assets/uploads/2018/02/SYR_AR5_FINAL_full.pdf

198 UNFPA, (2014). *Family Planning and the Environment: Stabilizing Population Would Help Sustain the Planet.* http://onu.org.pe/wp-content/uploads/2014/12/Family-Planning-and-the-Environment.pdf

199 UN DESA, (2017). *World Population Prospects: The 2017 Revision.* https://www.un.org/development/desa/publications/world-population-prospects-the-2017-revision.html

200 IPCC, (2018). Chapter 4: Strengthening and implementing the global response, in *Special Report on Global Warming of 1.5C* p. 4-23, http://report.ipcc.ch/sr15/pdf/sr15_chapter4.pdf

201 European Academies' Science Advisory Council (EASAC), (2018). Negative emission technologies: What role in meeting Paris Agreement targets? *EASAC policy report 35.* Summary, https://easac.eu/fileadmin/PDF_s/reports_statements/Negative_Carbon/EASAC_Report_on_Negative_Emission_Technologies.pdf

- The role of natural climate solutions have been underestimated. These include conservation, restoration, and improved land management actions that increase carbon storage and/or avoid greenhouse gas emissions across global forests, wetlands, grasslands, and agricultural lands, and can provide 37% of cost-effective CO2 reduction needed through 2030 for >66% chance of holding warming to below 2°C.[202]

- Education, information, and community approaches, including those that are informed by indigenous knowledge and local knowledge, can accelerate the wide-scale behaviour changes consistent with adapting to and limiting global warming to 1.5°C.[203]

- Renewable energies are competing with fossil fuel industries that are subsidized both directly (government incentives) and indirectly (no accountability for polluters).[204]

- Increased government investment in clean energy—in the form of subsidies, loan assistance, and research and development—is needed.[205]

- By 2016, 688 institutions and 58,399 individuals across 76 countries have committed to divest from fossil fuels.[206]

When climate policy fails to address the root causes of climate change

- There is a danger that technological innovation today looks for solutions that help avoid the change needed. We need to change social, economic, political, institutional, and legal areas if we are to tackle the roots of the problems we face.[207]

- Negative emission technologies (NETs) may have a useful role to play but, on the basis or current information, not at the levels required to compensate for inadequate mitigation measures.[208] Relying on NETs to compensate for failures to adequately mitigate emissions may have serious implications for future generations.[209]

- Although bio-energy and carbon capture storage (BECCS) is subject to

202 Griscom, B.W., (2017). Natural climate solutions. *PNAS*, 114 (44), p11645-11650. http://www.pnas.org/content/pnas/114/44/11645.full.pdf

203 IPCC, (2018). Summary for Policymakers. In: *Special Report on Global Warming of 1.5C* (6 October 2018 final, subject to Copy Edit), D.5.6 http://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf

204 Union of Concerned Scientists, (2017). *Barriers to Renewable Energy Technologies.* https://www.ucsusa.org/clean-energy/renewable-energy/barriers-to-renewable-energy#.W_KvTDhKjIW

205 Ibid.

206 Arabella Advisors, (2016). *The Global Fossil Fuel Divestment and Clean Energy Investment Movement.* Pg1 https://www.arabellaadvisors.com/wp-content/uploads/2016/12/Global_Divestment_Report_2016.pdf

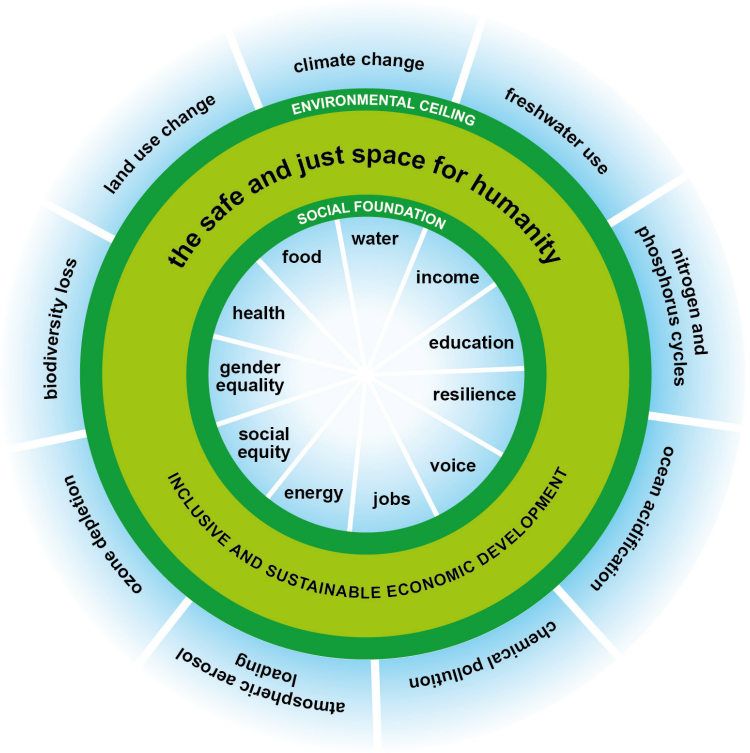
207 Tansey, G., (2013). Food and thriving people: paradigm shifts for fair and sustainable food systems. *Food and Energy Security,* 2:1. p1-11. https://onlinelibrary.wiley.com/doi/full/10.1002/fes3.22

208 European Academies' Science Advisory Council (EASAC), (2018). *Negative Emissions Technologies: What Role in Meeting Paris Agreement Targets?* EASAC Policy Report 35, p.1 https://easac.eu/fileadmin/PDF_s/reports_statements/Negative_Carbon/EASAC_Report_on_Negative_Emission_Technologies.pdf

209 Ibid.

scientific and political uncertainties, it dominates the scenario landscape. Its land-use impacts could include terrestrial species losses equivalent to, at least, a 2.8°C temperature rise, leading to difficult trade-offs between biodiversity loss and temperature rise. There is little robust analysis of the trade-offs between large-scale deployment of BECCS (and all negative-emission technologies) and the SDGs.[210]

- Avoiding efforts to address the root causes of climate change, and focusing on end-of pipe geoengineering technologies, is a political choice. It says that it is more acceptable to risk irreparable harm to our planet than alter the dominant economic system.[211]



Inspired by the "Planetary Boundaries" image shown on p. 9, the "Oxfam Doughnut" connects environmental health with a safe and just space for humanity. (Source: Oxfam)

210 Anderson, K., and Peters, G., (2016). The trouble with negative emissions. *Science,* 354: 6309, p182-183. http://science.sciencemag.org/content/354/6309/182

211 Fuhr, L., et al., (2017). *The Big Bad Fix: The Case Against Climate Geoengineering.* Biofuelwatch, Heinrich Böll Foundation and ETC Group, p4. https://www.boell.de/sites/default/files/bigbadfix.pdf?dimension1=division_iup

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