

The Plurality of Commons: Climate Change from an Anthropological Perspective

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ABSTRACT: The concept of commons has gone through an evolutionary process in terms of natural resource management and its associated challenges. I find, coordinated efforts at multiple levels are required to bring resilience in environmental policy making as the ongoing COVID-19 pandemic has weakened conservation efforts in some key areas with a possibility of inducing further imbalance to the state of natural systems of the planet. Therefore, in the light of climate change, mass scale biodiversity loss and natural capital depletion, I propose multipronged strategy covering legal, socio-political and economic aspects to improve effectiveness and resilience of collective actions. The discipline of anthropology can provide the necessary holistic view in integrating several aspects of science, economy, human perceptions, culture and politics related to global environmental changes in order to untangle the complexity of adaptation and mitigation strategies

INTRODUCTION

The discourse on exploitation of natural capital is closely related with property rights and access. In the seminal paper of Garrett Hardin, the general notion of inexhaustibility of natural resources was broken. Tragedy of the commons put forth the argument by pointing out inability of the society to govern a complex, crowded and changing world due to ancient ethics (Hardin, 1968:1243-1248). Another landmark study done by Elinor Ostrom criticized Hardin's projection of inevitable overexploitation and eventual destruction of the commons by citing sustainable management of common pool resources by communities and the traditional knowledge systems that enabled them to survive (Ostrom, 2010).

Despite the differences, studies by Hardin and Ostrom converged on the difficulties of managing large scale resources at global scale driven by complex nonlinear variations. In this context, climate change

and biodiversity loss due to anthropogenic drivers have emerged as global crisis that require synergy between stakeholders at multiple levels. The resources or areas in question with regard to the issues such as climate change doesn't come under the purview of one nation state and therefore, the concept of global commons become an obvious go to metaphor. The idea can be traced back to Hugo Grotius's concept of common goods in his seminal book *Marie Liberum* which opposed sovereign claims over oceans by several countries (Grotius, 1609). The term 'global commons' is used precisely to denote natural resources and areas that are subject to shared ownership between several nation states (Buck, 1998). In the modern world, the foundation of sustainable management of global commons has been multilateral negotiations and treaties that attempt to promote collective actions and also derive individual targets for the member states (Barrett, 2018; Falkner, 2016). Montreal protocol is one such example of an

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international treaty regime that helped to regenerate stratospheric ozone layer by restricting specific GHG emissions (Dietz *et al.*, 2003). However, similar progress is not observed in controlling the anthropogenic drivers that are causing climate change and mass scale biodiversity loss. Three major factors need a relook (Figure 2) in order to tackle these issues successfully, namely 1) Frame the legal principle to manage the global commons, 2) Recognize the political drivers that influence environmental policy regimes, and 3) Utilize the economic levers to disrupt environmentally harmful practices.

PRINCIPLE OF NATURAL ORDER

The contradiction between the concepts of national sovereignty and global commons pose major challenges in sustainable management of resources at a global scale. The idea of common heritage of humankind principle stemmed from this crisis where ownership of common heritage spaces, territory or conceptual area is not appropriated to any member state by international law in order to restrict resource depletion. Since climate change and biodiversity loss are global phenomena that cannot be clearly defined by demarcated territory, international laws like common heritage of humankind doesn't apply in these cases. In that regard, attempts to apply the principles of common heritage of humankind to ecologically sensitive areas like tropical rainforest have not been possible due to the scepticism over dilution of national sovereignty.

To tackle the complications associated with trans-boundary environmental issues like climate change the Climate Change Convention has recognized the phenomenon as 'common concern of humankind'. There have been instances of referring to the concept in case of biodiversity also. The issue however is lack of regulatory or legal framework in support of the idea. Although, several principles like common but differentiated responsibilities, principle of integration and interrelatedness, precautionary principle, sustainable use of natural resources have been established in modern international law, but the effort still remains incoherent (Schrijver, 2016).

Integration of resource depletion, climate change and biodiversity loss requires a policy regime that is cross-sectoral and can be replicated at multiple levels.

Therefore, considering planetary health as a shared responsibility of humankind is a necessity in order to design a resilient and effective strategy to restrict anthropogenic impacts on nature. The concept of planetary health was formulated by Rockefeller Foundation-Lancet Commission on Planetary Health and refers to the health of human civilization and the state of natural systems on which it depends (Whitmee *et al.*, 2015). In order to substantiate the idea of state of natural systems and its relationship with growth and development of human species we can refer to the following concept. According to planetary boundaries framework, the changes in biophysical processes of earth's global systems affect human wellbeing by having an impact on the "safe operating space". The framework identifies nine global or regional pressures that influence Earth's biophysical systems (Figure 1). Changes in the system are manifested either at the global or regional scale (e.g. climate change) or at a local scale (biodiversity loss). The combined effect of these manifestations can generate rapid, non-linear and arguably irreversible changes in the global environment that can hamper human health and wellbeing (Steffen *et al.*, 2015).

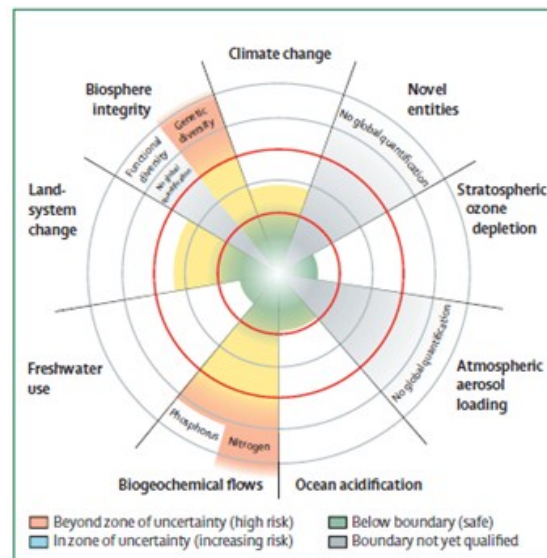


Figure 1: The status of control variables of seven of the nine planetary boundaries.

(Source: Diagram taken from Whitmee *et al.*, 2015)

From the above figure, the planetary boundary is represented by the inner red circle. The area between the planetary boundary and outer red circle is referred

to as ‘zone of uncertainty’. The area outside the outer red circle is termed as high risk zone. The planetary boundary of fresh water use has high spatial variation that is breaching the threshold regionally in areas of high consumption and low water availability. So, aggregated global data may not represent the true picture.

Concepts like planetary boundary and planetary health systems signifies the thresholds of different components of nature and their interactions with human wellbeing. Innovative policy and regulatory principle is required on this topic to redefine the concept of commons that accepts these thresholds as shared responsibility or concerns of the member states. The abstract nature of the concept calls for constant revisions through rigorous scientific research. Therefore, modern international law should take into account, ‘principle of natural order’ as applicable at local, regional and global level that encompasses interdependent economic, political and technological influences.

THE COMMONS POLITICS

Designing policy to maintain balance of the natural systems through technical solutions only may not be adequate without smooth governance and political support. Studies have found that reputation and authority of policymakers often influence key decisions and priorities. Reputation management of political leaders, governments or organisations from threats to their legitimacy may put up road blocks to sustainable practices (Brown *et al.*, 2019). The wettest winter of United Kingdom in 2013-14 caused severe damage due to storms and was a result of climatic changes (Schaller *et al.*, 2015), yet there was significant pressure on the government to rebuild coastal defences rather than investing in relatively long term adaptation strategies (Brown *et al.*, 2017). Similarly, in Indian Sundarban there has been disparity in terms of government actions to adapt to climate change based on various influencing factors (Mortreux *et al.*, 2018) that have resulted in worsening of the natural and socio-economic condition of the islands and the affected population respectively (Guha, 2020). Further evidence of lack of synergy and concrete strategy to effectively tackle climate change and natural capital depletion is observed from election manifestos of

political parties in India at both regional and national levels (Guha and Joe, 2019).

The design of climate policy has to be done in a way to make it attractive for majority of citizens and avoid impacts concentrated towards a specific group or sector since that can be perceived as unfair (Fay *et al.*, 2015). Achieving this balance is particularly difficult due to the fact that climate policy gains are most often intangible in conventional sense and not immediate, whereas the costs are immediate, clearly visible and concentrated to specific groups (Olson, 1977). Therefore, the difficulty to create vocal group of policy supporters and presence of well-defined affected interest groups add further complicity to reputation management of the policy makers and governments. This issue becomes a source of uncertainty for sustainable resource management and climate change policy making which was reflected from events like the US pulling out of Paris climate accord under Trump administration.

In this context, it is important to highlight the co-benefits associated with climate and environmental preservation policies. Several studies have stated that targeted policy making can enable a smooth transition into a low carbon economy with inclusive growth and economic development (Zhenmin and Espinosa, 2019; High-Level Commission on Carbon Prices, 2017).

Despite mounting evidence in favour of pro environmental policies, in reality actions are often lacking as discussed in the above section of the paper. Two aspects are important in this regard; firstly disseminate scientific information in a popularized manner through environmental education and public awareness, secondly approach the morality of people in environmental conservation. In order to realize environmental conservation and climate change, mitigation as moral obligation is a need to understand and utilize the perceptions of fairness in both the conservatives and progressives. According to Brown, the emphasis on impacts of climate change on Earth’s biodiversity or the poor fail to catch the attention of the conservatives due to their perception with regard to moral hierarchy places rich above poor and human above nature (Brown *et al.*, 2019). Therefore, the narrative in appealing to the diverse moral values need to be substantiated in order to reduce opposition to climate change science and environmental policy

making. The approach can identify and bring forth areas where co-benefits of sustainable development exceeds its immediate cost and how destabilization of earth's natural system can affect rich and poor alike. The reduction in forces opposing environmental policies can enable the political leaderships to take pro-environmental steps at multiple levels.

DEPLOYING ECONOMIC LEVERS

Wide range of fiscal, financial and monetary policy tools are available in the domain of climate mitigation. They include taxes, subsidies, public-private partnerships, corporate governance reforms, green bonds, credit guarantee etc. The uptake of such tools and its outreach can be gauged at global, regional and local levels. Globally, treaty regimes attempt to provide a platform to functionalize the economic instruments for mitigating anthropogenic impacts on natural systems. One major issue with such strategy is free riding i.e. lack of cooperation in collective actions.

Climate clubs is one solution to avoid the free riding problem where a group of countries agree on emission reduction plan and sanction the non-participants through low and uniformed tariffs on exports to other member countries. The issue however remains as implementation of macroeconomic and fiscal policy instruments require coordination at multiple levels and sectors. The need for coordination in the policy mix has been highlighted by several studies with regard to climate change (Fay *et al.*, 2015; High-Level Commission on Carbon Prices, 2017). Similarly, the interactions and possible overlaps between international, national and regional policies related to climate change, social equity, environmental justice, conservation and sustainability require coordination to ensure efficacy and effectiveness.

In case of nations with federal government structure the model of climate clubs can be replicated between states or provinces in order to find more synergy in implementation on ground. The success of climate and sustainability policies will depend heavily on its ability to be applicable on ground and also to learn from local communities. In relation to that, the acceptability of the market and policy tools amongst individuals will be governed by its connection to creation of jobs and improvement of

standard of living. It is observable from the current context of the pandemic that, environmental conservation and climate policies have to be resilient to emergency situations or shock events and therefore, require visible connection with job creation and inclusive economic growth to effectively garner support from various quarters.

NECESSITY OF A HOLISTIC VIEW

An Anthropological Approach to Tackle Climate Emergency

Mitigation and adaptation strategies to phenomena like climate change and global biodiversity loss suffer from the dichotomy of collective endeavours and individual responsibility. While the advocates of 'global solutions' look at treaty regimes like the Paris climate accord from the angle of reciprocity in global climate action, there has been evidence that member states and individuals do not necessarily operate in that fashion (Beiser and Bernauer, 2019). Thus it can be argued that, if defection of one country to meet its target doesn't affect public opinion on international policy design of other countries then the basic premises of a reciprocal collective global action to mitigate climate change becomes diluted (Bernstein and Hoffmann, 2019). From this perspective, the popularity of unilateral climate reforms can therefore, overcome collective actions (Mildenberger, 2019). Although, declaration of net zero emission target of major GHG polluters like US and China can bring a silver lining to the issue of tackling climate change this cannot be termed as a silver bullet to tackle issues relate to climate change and natural resource management. The definition of net zero differs by a large extent. Some targets aim to reduce carbon dioxide, some consider all greenhouse gases. In some cases targets don't talk about reducing emission directly but through compensation with offsets. Compensating emission through offset essentially means purchased reduction or carbon removals fulfilled by someone else in geographically distant location. The question remains on uncertainty and risks of those solutions:

For example, some solutions require a lot of land. This can have knock-on impacts on biodiversity, and the security of food and water

supplies. Planting a forest, for example, might displace agriculture; planting monoculture energy crops could reduce species diversity. The permanence of such biological removals remains uncertain. The long-term carbon-storage capacity of forests and soils is not well known, and there can be no guarantee that a forest won't later be logged, devastated by a forest fire or altered by climate change' (Rogelj *et al.*, 2021).

Fairness and ethical concerns regarding net zero targets and the distribution of scope regarding resources, finance and opportunities vary across different countries, communities and sectors.

'Singapore is a small, densely populated country with limited potential to deploy renewable, but is rich and has high capacity to finance action. The EU has

been contributing to global warming for more than a century and was heavily deforested in the past, which means it now has significant potential for reforestation. Yemen has some of the best solar-energy resources in the world, but, as a least-developed country experiencing continuing unrest, it has little access to the necessary investments. Similar diversity applies to economic sectors. The agriculture and forestry sector has clear opportunities for CO₂ removal; aviation and metals industries don't, Rogelj *et al.* (2021)'.

Designing the road map of climate action plans keeping these issues into consideration pose challenge in maintaining the effectiveness of global policy making.

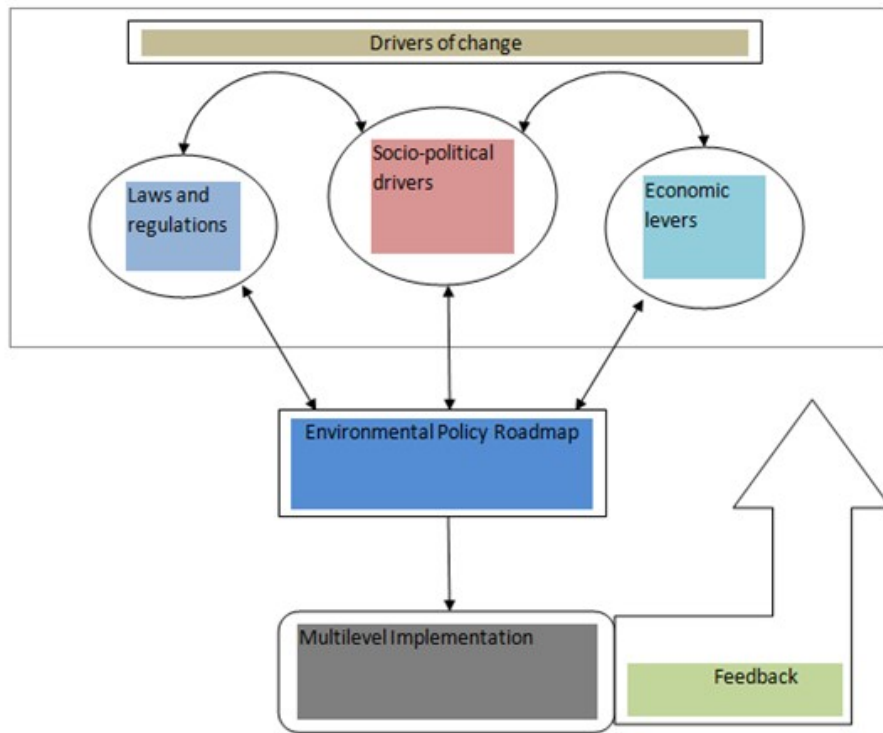


Figure 2: A pluralistic approach in managing commons.

Three major interconnected areas identified as drivers of change. The component of multi-level implementation gives feedback to the overall policy regime in management of commons by inducing learning from the local, regional and global contexts.

COVID-19

Another highlight in this context is how countries are responding to the COVID-19 outbreak. It is interesting to observe certain inconsistencies while tackling the shock event on the grounds of

sustainability despite having evidences of the links between forestland degradation and zoonotic disease spread. Overall, the economic stimulus packages and policies aimed to recover from the pandemic across the globe have fallen short on supporting environmental preservation of protected and conserved areas (PCA), rather in many cases roll back of PCA status has opened up pathways for further conversion of pristine forests (Kroner *et al.*, 2021). It is noteworthy to mention that the severe economic downturn caused by the pandemic may encourage similar actions in future also to meet developmental objectives and short term economic benefits. The challenge of balancing environmental conservation and supporting a large population in this scenario will be more so for the developing nations. Wackernagel *et al.* argues that countries with lower income and higher pressure on natural ecosystems run the risk of getting into an ‘ecological poverty trap’ (Wackernagel *et al.*, 2021). The COVID-19 outbreak is showing evidence of exacerbating this process.

Mitigating and adapting to climate change cannot be done in silos without addressing the anthropogenic impacts on different components of the global ecosystem. The complication lies in identifying these connections and figuring out a holistic policy regime to effectively steer the sustainability agenda at local, regional and global scale. The efficacy and resilience of individual and collective actions in environmental conservation depends on the ability to manage commons from a pluralistic lens. In that context, it is necessary to recognize the regulatory, socio-political and economic drivers along with the learning emanating from different knowledge systems across all the levels of implementation (Figure 2).

In relation to that, discipline like anthropology can play a vital role in decrypting the traditional knowledge, practices, cultural and religious practices through long term participatory observation. The local impacts of a global problem like resource depletion and climate change becomes a subject of ethnographic enquiry in the area of environmental anthropology. While the domain of anthropology relies heavily on observation studies with regard to environmental issues, there have been studies that advocate capturing the assimilation of climate change

science into the knowledge systems of particular communities. According to Barnes *et al.* (2013), the field of anthropology can be vital in three major areas with regard to climate change. Firstly, ‘*the discipline draws attention to the cultural values and political relations that shape climate-related knowledge creation and interpretation and that form the basis of responses to continuing environmental changes*’. Secondly, it provides ‘*an awareness of the historical context underpinning contemporary climate debates — a result of archaeologists’ and environmental anthropologists’ interest in the history of society–environment interactions*’. Finally, ‘*anthropology’s broad and holistic view of human and natural systems, which highlights the multiple cultural, social, political and economic changes that take place in our societies. Societal dynamics, as drivers of change, always interact with, and often outweigh, climate change — an issue that needs recognition for the success of public policies*’ (Barnes *et al.*, 2013). According to Peter Rudiak-Gould, local observations on environmental changes like land erosion and sea-level rise was correlated with perception of climate change in the communities of Marshall Islands. The findings strongly suggest the need for reception studies in the broad domain of environmental anthropology concerning assimilation of the science of climate change into the local and traditional knowledge systems. This can bridge the gap between local and global issues related to environment, and enrich the discourse on traditional ecological knowledge (Rudiak-Gould, 2011). A similar tone can be found in the charter provided by American Anthropological Association on humanity and climate change published in 2015 based on a 2014 detailed report (Fiske *et al.*, 2014:1-137). The charter brings forth eight major points covering wide range of aspects on impacts of climate change from anthropological perspective. These points deal with climate change as a present reality, a threat multiplier, a phenomenon that will have widespread impact on communities via dislocation and migration, the increased risk on the already vulnerable population and the human actions on land use change and use of fossil fuel creating a cultural of consumerism for the last 100 years causing climate change. The charter recognizes the importance of archaeological findings on adaptation to environmental stress through increased diversity in

the present context. Furthermore, it puts emphasis on local and regional solutions of global problems like climate change and the requirement of knowledge and insights from social sciences in designing the solutions, as climate change is termed by the association as human problem and not a natural one (American Anthropological Association, 2015). However, according to a recent study done by O'Reilly *et al.*, anthropological knowledge is often side lined by organizations like the Intergovernmental Panel on Climate Change (IPCC) and United Nations Framework Convention on Climate Change (UNFCCC) and the authors termed it as a lost opportunity (O'Reilly *et al.*, 2020). The relevance of a holistic view in understanding the complex factors influencing mitigation and adaptation of climate change can be explained by how different governance regimes are reacting to the science and knowledge of the phenomenon. The state of North Carolina, USA has a bill HB819 which forbids a climate scientist to extrapolate data on sea level rise based on their current knowledge for the coastlines of North Carolina whereas, the policymakers of German Baltic Coast take climate science seriously and integrate the knowledge in mitigation, adaptation strategies. The authors drew parallel between two countries' political and socio-cultural condition in order to explain the contrast.

In Germany's rather open, problem-solving societal atmosphere, communicating the climate and appropriate mitigation or adaptation measures can come in many formats (participatory bottom-up, top-down, spontaneous, social-norm campaigns, and others), but certainly is not a matter of a centralized or a decentralized approach. It is rather an issue of fitting the approach into the knowledge and values in the place-based context of a community or institution. In contrast, in the USA, climate change has become a politically charged cleavage between Republicans and/or conservatives and Democrats and/or liberals. On the other hand, at the sub-federal level, many US states have made room for climate policies in the recent past. US scientists also used to be the leaders in the production of climate science information' (Martinez, 2019).

The role of cultural anthropology in climate change research can balance the overemphasis on quantitative data and analysis of interdisciplinary

climate research with cross scale qualitative data. It is in this context, multi sited, critical and collaborative- 'climate ethnographic' approach can shed new lights into the arena of human perceptions, understandings and responses (Crate, 2011). Socio-political, human and cultural constructs cannot be quantified or modelled like sea-level rise or temperature, although they are pivotal in influencing anthropogenic activities that are causing climate change and shaping responsive measures in the form of adaptation and mitigation strategies. The case of Nile Basin underlines the issues regarding policy making based on quantitative analysis:

'Recent years have seen a significant increase in the funding from development agencies for climate change research and adaptation activities in the basin. International concern focuses on how a shift in precipitation patterns in the river's East African source regions under climate change could impact river discharge (at present general circulation models produce conflicting results as to the nature of that impact). Yet for farmers living in Egypt's Nile Valley and Delta, whose livelihoods depend on this water source, the amount of water they receive relates less to changes in precipitation thousands of kilometres away, and more to the engineering technologies and politics of water distribution decisions made in their immediate surroundings. Hence although climate change is a critical issue, focusing on climate change to the exclusion of, and in isolation from, other social, political, cultural and economic processes that shape landscapes and livelihoods is problematic (Barnes et al., 2013).'

The on-going pandemic has shown the importance of human animal interface and its association with zoonotic disease spread. Anthropology's expertise in animal management under changing environmental condition can provide valuable insights into strategizing sustainable pathways where people, animals, weather and climate change are significant aspects (Cassidy, 2012). The island communities are one of the firsts to bear the brunt of climate change with sea level rise, soil erosion and increased frequency of extreme weather events.

Island communities stand to be among the first and most adversely affected by the impacts of global climate change. Rising sea levels, changing

precipitation and storm patterns, and increasing air and sea surface temperatures stress already limited island resources while climate change policies circumscribe local decision making. Anthropologists make important contributions to understanding island-based knowledge, global causes of vulnerability, local perceptions of risk, and islander agency channelled into adaptive capacity and resilience (Lazrus, 2012).

CONCLUSION

The strategy to tackle global environmental problems should be multi-pronged and adaptive to changes. This paper attempts to examine the evolution of the concept of commons in terms of global resource management regime and identifies key areas relevant in the current context. I find legal, political and economic interventions as major tools to achieve a sustainable pathway for human development. It is observed that climate change adaptation, mitigation and natural resource management occupies regulatory, political, moral and economic space and thus, require trans-disciplinary approach at multiple levels for effective implementation. The discipline of anthropology can fill the vacuum by bridging the gap between local and global, national sovereignty and global commons, science and human perception, market mechanisms and culture, policy/politics and practice. A pluralistic approach proposed in this paper can therefore be resilient enough in the wake of events such as the COVID-19 pandemic to drive the environmental agenda at multiple spheres.

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REFERENCES CITED

- American Anthropological Association 2015. AAA Statement on Humanity and Climate Change. <http://s3.amazonaws.com/rdcms-aaa/files/production/public/FileDownloads/pdfs/cmtes/commissions/CCTF/upload/AAA-Statement-on-Humanity-and-Climate-Change.pdf>
- Barnes, J., M. Dove, M. Lahsen, A. Mathews, P. McElwee, R. McIntosh *et al.* 2013. Contribution of anthropology to the study of climate change. *Nature Climate Change*, 3(6): 541-544.
- Barrett, S. 2018. Choices in the climate commons. *Science*, 362 (6420): 1217-1217.
- Beiser-McGrath, L. F. and T. Bernauer 2019. Commitment failures are unlikely to undermine public support for the Paris agreement. *Nat. Clim. Change*, 9: 248.
- Bernstein, S. and M. Hoffmann 2019. Climate politics, metaphors and the fractal carbon trap. *Nature Climate Change*, 9(12): 919-925.
- Brown, K., N. W. Adger and E. J. Cinner 2019. Moving climate change beyond the tragedy of the commons. *Global Environmental Change*, 54: 61-63.
- Brown, K., A. L. Naylor and T. Quinn 2017. Making space for proactive adaptation of rapidly changing coasts: A windows of opportunity approach. *Sustainability*, 9, Art. 1408.
- Buck, Susan J. 1998. *The Global Commons: An Introduction*. Island Press: Washington, DC.
- Cassidy, R. 2012. Lives with others: Climate change and human-animal relations. *Annual Review of Anthropology*, 41: 21-36.
- Crate, S. A. 2011. Climate and culture: Anthropology in the era of contemporary climate change. *Annual Review of Anthropology*, 40: 175-194.
- Dietz, T., E. Ostrom and C.P. Stern 2003. The struggle to govern the commons. *Science*, 302(5652): 1907-1912.
- Falkner, R. 2016. The Paris agreement and the new logic of international climate politics. *Int. Aff.*, 92: 1107-1125.
- Fay, M., S. Hallegatte, A. Vogt-Schilb, J. Rozenberg, U. Narloch, and T. Kerr 2015. *Decarbonizing Development: Three Steps to a Zero-Carbon Future*. World Bank Group: Washington, DC.
- Fiske, S.J., A.S. Crate, L.C. Crumley, K. Galvin, H. Lazrus, L. Lucero, A. Oliver-Smith, B. Orlove, S. Strauss and R. Wilk 2014. *Changing the Atmosphere. Anthropology and Climate Change*. Final Report of the AAA Global Climate Change Task Force, pp.137. American Anthropological Association: Arlington, VA.
- Grotius, Hugo. 1609. Mare Liberum. Lodewijk Elzevir.
- Guha, A. 2020. Environment induced resettlement and profit-sharing model: A case study from Sundarban, West Bengal, India. *Environmental Development*, 35: 100523.
- and E. T. Joe, 2019. 'Environment' in the Election Manifestos. *Economic & Political Weekly*, 54(9): 13.
- Hardin, G. 1968. The Tragedy of the Commons. *Science*, 162(3859): 1243-1248.
- High-Level Commission on Carbon Prices 2017. Report of the High-Level Commission on Carbon Prices, World Bank: Washington DC.
- Kroner, R. G., Edward B. Barbier, Olivier Chassot, Sunita Chaudhary, L. Cordova Jr, Annabelle Cruz-Trinidad, Tracey Cumming *et al.* 2021. COVID-era policies and

- economic recovery plans: Are governments building back better for protected and conserved areas. *Parks*, 27 (Special Issue), p.5.
- Lazrus, H. 2012. Sea change: Island communities and climate change. *Annual Review of Anthropology*, 41, 285-301.
- Martinez, G. 2019. Let's say it in their own words. *RCC Perspectives*, (4), 105-114.
- Mildenberger, M. 2019. Support for climate unilateralism. *Nature Climate Change*, 9, 187-188.
- Mortreux, C., R. S. de Campos, W. N. Adger, T. Ghosh, S. Das, H. Adams, and S. Hazra 2018. Political economy of planned relocation: A model of action and inaction in government responses. *Global Environmental Change*, 50: 123-132.
- Ostrom, E. 2010. Beyond markets and states: Polycentric governance of complex economic systems. *American Economic Review*, 100 (3): 641-672.
- Olson, M., 1977. *The Logic of Collective Action: Public Goods and the Theory of Groups*, (revised ed.). Harvard University Press: Cambridge.
- O'Reilly, J., C. Isenhour, P. McElwee and B. Orlove 2020. Climate change: Expanding anthropological possibilities. *Annual Review of Anthropology*, 49: 13-29.
- Rogelj, J., O.Geden, A. Cowie and A. Reisinger 2021. Net-zero emissions targets are vague: three ways to fix. *Nature*, 591, 365-368.
- Rudiak Gould, P. 2011. Climate change and anthropology: The importance of reception studies. (Respond to this article at <http://www.therai.org.uk/at/debate>). *Anthropology Today*, 27(2): 9-12.
- Schaller, N., L. A. Kay, R. Lamb *et al.* 2016. Human influence on climate in the 2014 Southern England winter floods and their impacts. *Nature Climate Change*, 6: 627-634.
- Schrijver, Nico. 2016. Managing the global commons: Common good or common sink? *Third World Quarterly*, 37:7, 1252-1267, DOI: 10.1080/01436597.2016.1154441
- Steffen, W., K. Richardson, J. Rockström *et al.* 2015. Sustainability 2015 Planetary boundaries: Guiding human development on a changing planet. *Science*, 347: 1259855.
- Wackernagel, M., L. Hanscom, P. Jayasinghe, D. Lin, A. Murthy, E. Neill, and P. Raven 2021. The importance of resource security for poverty eradication. *Nature Sustainability*, 1-8.
- Whitmee, S., A. Haines, C. Beyrer, F. Boltz, G. A. Capon, F. B.de Souza Dias *et al.* 2015. Safeguarding human health in the Anthropocene epoch: Report of The Rockefeller Foundation–Lancet Commission on planetary health. *The lancet*, 386(10007), 1973-2028.
- Zhenmin, L and P. Espinosa 2019. Tackling climate change to accelerate sustainable development. *Nature Climate Change*, 9: 494-496. <https://doi.org/10.1038/s41558-019-0519-4>



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