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Paradoxical Gaps in Resilient Environmental Governance

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Abstract

Over the last few decades, resilience and its related practices have been at the core of responding challenges in the Global South and North. We should, however, be conscious of its gaps for many reasons. First, environmental plans not attuned to local traditions can create cultural conflicts. Second, the politicised nature of international agreements poses unintended consequences as societies find it hard to engage in such agreements. Third, uncertainties about changes in socio-ecological systems reduce people's adaptive capacity. Without an awareness of these inconsistencies, policymakers risk impeding societies' adaptation to environmental change. By doing a systematic review of articles from academic and policy publications, this paper explores repercussions for environmental governance, illuminating key concerns in protected areas, climate change policy, and hydropower systems.

Keywords: Anthropology, Paradox, Resilience, Environmental Governance, Protected Areas

1. Introduction

Resilience is a concept of many system characteristics, involving varied meanings in diverse disciplines (Hosseini et al. 2016). In the natural sciences, resilience has long existed since the late 1880s as a concept that describes adaptation to challenges posed for engineers in complex sociotechnical systems (De Weck et al. 2011). Since then, other studies in the last third of the twentieth century have adopted resilience as a theory (Smyntyna 2016). Further, the last two decades have seen Anthropologists engage in community resilience to address co-management systems and economic growth in communities (Brockington et al. 2018; Nadasdy 2007). In this paper, however, we focus on the socio-ecological context of resilience and related processes, i.e. the ability of a system to maintain its basic function and structure despite disturbances, and, the challenge of servicing existing system demands without jeopardising the potential to meet future needs (Walker and Salt 2012).

This paper offers a perspective on paradoxical gaps in resilience and related practices of environmental governance, and suggest an anthropological basis for which we can address such outcomes. Consistent with the views of Cunha and Putnam (2019), the ‘paradoxical gap’ refers to cases where practices that should enhance success simultaneously lead to a downfall. Consider the example of governance – a practice that designates norms, rules, and standards for institutions and actors around the globe to negotiate and make decisions about what knowledge can be valid, useful, and applicable to conditions of the society and environment (Chiapella et al. 2019). Instead, the use of resilient action through environmental governance often attempts to propose approaches, models, and predictions about the dynamics of socio-ecological systems with the assumption that changes in these systems are similar (Cote and Nightingale 2012), and consequently, some communities face difficulties acculturating with environmental plans (Tilt and Gerkey 2016; West et al. 2006). We discuss examples of the above gaps under three shortcomings:

First, the use of environmental plans not attuned to local traditions and its impact on cultural conflicts. Here, resilient approaches of responding to challenges in current systems through large scale agreements/programs/policies on regional or local conditions may lead to unintended consequences that contradict the very notion of resilience. For example, a number of scholars debating the impact of conservation plans for protected areas have shown how local people become victims of policies that were initially meant to enhance their knowledge and rights to land use (Goldman 2011; Massé 2018; West et al. 2006). Similarly, studies have observed undesirable impacts of environmental plans on local people where controversial hydro-power projects involuntarily displace minority groups (Moreira et al. 2019; Tilt and Gerkey 2016) while distorting water access for irrigation (Hennig and Harlan 2018).

Second, the politicized nature of international agreements have at times, reduced the political will for local people to engage in environmental action. One explanation to this claim is that while examining the political dimension of resilience through governance helps provide coping strategies for socio-ecological systems, it offers long-term actions that are hard to attain. This problem intensifies, along with the lengthy time intervals between human action and environmental effects that often extend beyond a single generation (Underdal 2010). Another cause for the politicized nature of agreements comes from the allegation that various actors legitimize their activities by using different metrics in decision-making which inherently ignores some risks factors and favours others through temporal and spatial scales (Rozance et al. 2019).

Further evidence suggest that unequal forms of decision-making are largely responsible for the inequalities in the social power of urban communities and their vulnerability to climate change (Grabowski et al. 2019). An example of this decision-making follows in the recent UN Intergovernmental Panel on Climate Change (IPCC) special report that calls on nations to limit temperature rise at 1.5°C by 2030. It proposes a scientific method (Carbon budget) for nations

to use in reducing non CO₂ gasses (such as nitrous oxide and methane) to CO₂ equivalents, without a proper consideration of the distinct mitigation pathways that non CO₂ gasses have (Steffen 2018). See also Australia's policy on greenhouse emissions (Kousser and Tranter 2018), political scepticisms about mainstream climate science in USA (Mooney 2012), and practices of 'green grabbing' (Batterbury and Ndi 2018). This adds complexity to agreements on climate change mitigation.

Third, there are uncertainties about changes in socio-ecological systems which in effect, decreases people's adaptive capacity. Recent evidence suggests that rapid changes in ecosystems are reducing the adaptive capacity of humans (Fernandez-Llamazares et al. 2015). In this situation, environmental action might not completely remedy human-induced environmental problems because the speed of change makes it hard for knowledge systems to adjust. Without a critical understanding of these consequences, we risk applying resilient measures that perpetuate problems in communities (Weichselgartner 2015).

Therefore, our premise is that, knowledge about the above unintended consequences of environmental action will enable researchers, advocates and specialists to rethink alternative options for adaptation and sustainability in a world of change. The subsequent paragraphs examines how resilient action can be contradictory. We support our arguments using case-specific examples including; protected areas, climate change, and hydropower systems.

The later part of this paper revisits a number of studies in order to propose an anthropological direction for sustaining the resilience of knowledge systems. In doing so, we incorporate scholarship on anthropocentrism (Fellows 2019; Jennings and Hoffman 2019) – for recognizing the constructive role of social sciences in transforming knowledge systems. Further, we borrow ideas from recent literature on urban resilience (Feagan et al. 2019; Grabowski et al. 2019), adaptation planning (Rozance et al. 2019), and governance (Chiapella

et al. 2019). We make three suggestions for this anthropological direction: (a) improving the effectiveness of international frameworks, (b) balancing between science and public opinion through decision-making, and (c) incorporating social aspects of knowledge towards adaptive development.

2. Resilient environmental governance and the paradoxical shortcomings

Over the last few decades, the world has experienced environmental change at many levels, involving biodiversity, climate, and landscape transformation, although widely contested in a recent study that indicates anthropogenic factors having been influential thousands of years ago (Roberts 2019). However, since the 1980s there has been an increasing awareness for the need to address environmental problems. In 1981, the Food and Agricultural Organisation (FAO), International Union for the Conservation of Nature (IUCN), World Wildlife Fund (WWF), and United Nations Environmental Programme (UNEP), initiated the World Conservation Strategy (WCS), to ensure that humans sustainably use ecosystems (MacKinnon 1986). Other agreements exist to cope with environmental change, from the 1992 UN Convention on Biological Diversity (CBD), the 1992 UN Framework Convention on Climate Change (UNFCCC), to the 2015 Paris Agreement aimed at reducing greenhouse gases. Although these platforms have become instrumental for societies recovering from challenges, they inadvertently produce avenues that limit the adaptive capacity of communities around the world.

In other words, while international agreements adopt governance approaches from global to national and sub-national levels as a way to cope with environmental variability, they indirectly create cross-level power imbalances (Gregorioa 2019). Coupled with the fact that industrialized and emerging economies (G20 States) are at the forefront of global decision-making, a less commitment among these States paradoxically reduces the coping ability of less industrialized countries. See for instance, the U.S. president, Donald Trump's formal

declaration of withdrawal from the Paris Agreement (Zhang 2017): a political move that arguably affects budget cuts in American climate change research, environmental and humanitarian foreign aid, and the cancellation of donations from the U.S. multilateral environmental fund, just to name a few.

There has been less desire for some nations to maintain their commitments in combating climate change, in spite of G20 countries' pledge to reduce emissions in greenhouse gases below the 2°C target by 2030, as demonstrated by a recent report showing that global emissions are at a historic level of 53.5 GtCO₂e (UNEP 2018). Accordingly, only 57 countries representing 60% of global emissions are on track to meeting the 2°C target. Some of the countries not on track include Canada, Australia, USA, Republic of Korea, South Africa, among others (UNEP 2018). This might be due to geopolitical circumstances.

China, for instance, a G20 member with more than 1.40 billion people is creating resilience plans to strengthen both its industrial base and global economic power. In recent decades, we have witnessed the intensification of Chinese investments on natural resources in Africa. China exploits domestic resources from Africa to fuel industrial development at home. While China experienced between 8% and 12% of stable economic growth in the last two decades, it has rapidly negotiated investments on Africa's natural resources (Mol 2011). In 2006, petroleum alone accounted for 62% of Chinese imports from Sub-Saharan Africa, including countries like Sudan, Angola, Equatorial Guinea, and Nigeria.

In addition, agricultural raw materials such as wood, cotton, oil seeds, and tobacco comprised 7% of Chinese imports, from Cameroon, Gabon, Equatorial Guinea, and Congo DR. On the other hand, Africa is embarking on expanding trade relations with foreign countries. Ironically, the African continent gets 85% of imports from Chinese manufactured goods, including textile, machinery, and consumer products, which are often of low-quality standards

(Mol 2011). We see here that while resilient environmental governance at a global level aims at strengthening coping strategies for communities, it does so at the detriment of other nations.

2.1. Protected areas and people

In November 1988, UNEP's Ad Hoc Working Group of Experts on Biological Diversity introduced the idea to have an international convention on biodiversity. This became official at the 1992 Earth Summit in Rio de Janeiro, Brazil, when the UN Convention on Biological Diversity received 168 signatories from member States which entered into force in 1993. Since then, there have been supplementary agreements like the 2010 Nagoya Protocol to promote conservation and sustainable use of biodiversity through fair and equitable sharing of genetic resources. The Conference of the Parties (from COP1, 1994 in Bahamas, to COP14, 2018 in Egypt) is also accelerating actions to reduce global destruction of biodiversity.

What seems peculiar to the above efforts is that, at regional, national, and subnational levels, environmental plans for protected areas, are often at odds with the traditions of local people. This has recreated new controversies. Over 105, 000 protected areas around the world covering 20.3-21.5 million km₂, of which about 16.8 million km₂ of global terrestrial land, and 6.4 million km₂ of marine areas are protected (West et al. 2006). The former category of protected areas imposes restrictions on human use and occupancy. These restrictions affect people living in and around protected areas, and persons displaced by the management of these areas, raising conflicts and tensions of land use rights.

For instance, Guatemalan's Maya Biosphere Reserve adopted IUCN guidelines with plans for displacement and land use restrictions between 1993 and 2003, for persons living in its Core and Multiple-use zones (McNab and Ramos 2007). This led to resistances among 'illegal colonists' who re-colonized areas against the Guatemalan government. In the meantime, conservation needs are lost to the benefit of wealthy landowners with commercial interest on

using the land for cattle production void of biodiversity protection. Similarly, the rhino poaching hotspot in Mozambique-South Africa borderlands shows the politics of ‘anti-poaching’ having negative social implications that alienate people living around protected areas (Massé 2018). Moreover, anti-poaching has been criticized for its use of militarized response on local people and for jeopardizing ecological management activities. The Maasai of the Manyara Ranch in Monduli, northern Tanzania, after being excluded as knowledgeable participants in decision-making about conserving land that ‘belongs’ to them on which they depend for livelihoods, have come to strongly resent conservation status of the area (Goldman 2011).

As protected areas expand we see other paradoxical gaps. About 32.8% of protected areas globally are under intense human pressure, of which 55% were designated prior to the 1992 UN Convention on Biological Diversity are undesirably affected (Jones et al. 2018). So called ‘paper parks’ are of particular interest to our argument. In Doñana National Park, a Natura 2000 site, in Andalusia, southern Spain, there are constant environmental plans diverting water from the Guadalquivir River to enhance agricultural production. This area represents one of Europe’s most important wetlands and home to millions of migratory birds. This ecosystem is under significant threat from dredging the riverbed, intensive agriculture, and illegal strawberry farming, causing water pollution and fragmentation. Environmental governance is equally threatening the Białowieża forest: A Biosphere Reserve and UNESCO World Heritage Site at the border between Poland and Belarus. In 2016, the Polish environment minister approved plans to provide wood for local people, by increasing logging in the Białowieża forest – a plan that led to endangering valuable species and habitats (Leemans 2017). These examples show how plans to govern protected areas produce unintended consequences which are unsustainable to the natural environment.

2.2. The politicalize context of climate change

To an extent, the political setting of resilience through environmental governance, introduces goals that are hard to achieve due to the politicized nature of climate change. For example, from the influence of political leaders, human uncertainty about environmental change, credibility problems in global policies, to public opinions about climate change mitigation (Kousser and Tranter 2018; Nemet et al. 2017; West et al. 2006). This situation distorts the substantial focus of sustainability.

For instance, renewable energy reforms and emission trading plans have been at the centre of Australian politics in recent years. Based on scientific evidence, the Climate Change Authority proposed a target of 45-65% emissions reduction for 2030, in the best interest of Australia and comparable to other countries. Yet, recent analysis show that Australia's Federal Government ignored expert advice and will unfortunately not meet its target (Steffen et al., 2018). With divisiveness among members of major parties, Australia's emissions continue to rise in the absence of a credible climate policy (Steffen et al. 2018; Kousser and Tranter 2018).

Moreover, in leading industrialized nations like USA, we see political polarizations over the accuracy of human induced climate change between Republicans who are skeptical of mainstream climate science, and Democrats who embrace scientific reports (Mooney 2012). This questions the extent to which nations get convinced of anthropogenic factors in global warming and are willing to support climate action. In February 2019, Congresswoman Ocasio-Cortez introduced the Green New Deal (GND) to address long-term decarbonisation plans to transform 100% of the U.S. economy's power demand to clean, renewable, and zero-emission sources of energy (Friedman and Thrush 2019). Indecisiveness about the deal's 'workability', politically and economically, is polarized among Congressional Democrats and Republicans. From an institutional perspective, while the deal looks into minorities and economically challenged communities, it poses difficulties for States like West Virginia, Pennsylvania,

Kentucky and Ohio that heavily rely on fossil fuel-based industries, i.e. heavy manufacturing and coal, for jobs and tax revenue - although recent years have seen the rise of grass roots engagement in protest against climate change laws, such as, the *Sunrise Movement* in USA (Nayeri 2019).

2.3. *Uncertainties surrounding hydropower projects*

Rapid socio-ecological changes in societies make it harder for people to adapt to environmental change (Fernandez-Llamazares et al. 2015). At multiple-levels of governance, adaptation to new information and natural events requires credibility of long lifetime plans, future commitments, and incentives for investment in innovations (Nemet 2017). Paradoxically, resilient plans to reduce CO₂ emissions through investment in low Carbon energy infrastructure increases weather variability with growing safety concerns, as was the case of post Japan's Fukushima disaster in 2011 (Ranzani et al. 2018). Consequently, nations are adopting economic policies towards other renewable sources of energy, such as hydropower, particularly towards a low carbon footprint (Degefu et al. 2015) – a view, however, contested in the work of Barros et al. (2011) regarding the tendency for hydroelectric reservoirs to emit CO₂ and methane.

In spite of this move, there are several contradictions of hydropower, ranging from environmental disasters, clashes over nature conservation areas, to the displacement of people. Natura 2000 sites cover about 18% of European Union (EU) territory, and strictly protected by the European Commission. As countries continue to strive at meeting their emission reduction targets, an increase in renewable energy projects tend to threaten conservation areas (Jackson 2011). At the Tarcu Mountains in Romania, a local environment agency issued permits to NGOs for three hydropower projects, violating measures adopted in an assessment report of the National Energy Strategy prohibiting the development of hydropower projects in Natural 2000 sites (Leemans 2017). WWF officials strongly denounced these projects.

Furthermore, the construction of Sabor dam for generating hydroelectric power, northeast Portugal, is located in Natura 2000 sites. The European Commission condemns this project for risking critical habitats of endangered bird species like the Bonelli eagle, black stork and golden eagle (Jackson 2011). Likewise, plans for the Cardiff-Weston Barrage in UK's Severn estuary, a potential source of renewable energy, came under critique from the European Commission for reasons of risking valuable ecosystems (Jackson 2011).

We also see a paradox in the displacement of people from their land to create hydropower dams. China, one of the world's most populated country witnessing rapid growth in energy demand, has close to half of the world's over 90 000 large dams (Grabowski et al. 2018), some of which are vital for flood protection, irrigation, and hydroelectric energy (Tilt and Gerkey 2016). With the construction of dams, significant amounts of social capital get lost by displacing minority groups. For instance, at the Mekong River, southwester province, Yunnan, is one of China's thirteen fundamental hydropower bases. The area represents a strategic location: having a rich biodiversity; home to about 20 of China's ethnic groups; its lower and middle segment at Mekong support agriculture and fishing for several people, including persons in Southeast Asia's downstream countries of Vietnam, Thailand, Myanmar, Cambodia, and Laos.

In 2010, about 50 000 people were resettled in the area following the completion of four dams (Tilt and Gerkey 2016). Some of the outcomes relate to what Hennig and Harlan (2018) call 'over-development of small hydropower', i.e. where reduced streamflow and unstable electricity generation triggers an increase in environmentally destructive mineral processing and reductions in irrigation water access. In the same way, Tilt and Gerkey (2016) observed displaced farmers who lost farmlands, with difficulties of building replacement houses, and an increase in the cost of building materials. This reduces the robust nature of networks farmers relied on for labour tasks, crop production and marketing.

Along similar lines, the World Commission on Dams, under the umbrella of the World Conservation Union and the World Bank, emphasizes that despite the contribution of dams to human development, they have brought negative effects on people (Tilt and Gerkey 2016). On the case of disasters, corporations and governments face the difficulty of inadequate life cycle cost assessments of dams, and the difficulty to accurately prevent the collapse of dams, despite mechanisms for cost efficient means of long-term infrastructural development (Grabowski et al. 2018). This problem might be based on little understandings about complex systems (Underdal 2010), and the contested situation between the rights of indigenous people on the land and the commercial interest of hydro-power dam companies (Moreira et al. 2019). Brazil in January 2019 witnessed one of its most catastrophic mining accident in history, when a dam in Brumadinho, in the southeast of Brazil, collapsed killing at least 157 people (Zimmermann 2019). Earlier in 2015, a similar incident occurred. The mine-tailing dam owned by Samarco Corporation, collapsed producing a wave of toxic mud across the Doce River in Brazil, killing 20 people, and damaging biodiversity (Garcia 2016).

3. Rethinking anthropological options as a way forward

There is therefore a need to think more carefully about environmental governance and to reconsider culturally appropriate ways to sustain the knowledge systems of societies. A few suggestions come into mind:

3.1. Improving the effectiveness of international frameworks

Firstly, the effective realisation of international guidelines for climate change adaptation will entail embracing grass roots values for transferring knowledge and interpreting laws, i.e. a contextual basis of what anthropologists see as the materiality and symbolic meanings of space, through social practices, planning, and science (West et al. 2006). We further contend that the effectiveness of international frameworks necessitates what Chiapella et al. (2019) propose as addressing ‘bias’ in the knowledge base.

An example of this bias, can be seen in the last three decades, where the focus has been on cementing bilateral agreements through globalized governance, with little attention to culturally appropriate ways of acculturating such agreements at sub-national levels. For instance, the enforcement of the Convention on International Trade in Endangered Species (CITES) in 1973 that began with the signatory of 80 countries and subsequently increased in terms of membership. What we see in common with CITES and other agreements of the UN is that they often do not take the place of national laws. Instead, they provide frameworks for member States who then adopt their own domestic legislations to implement these agreements. Regrettably, UN member States lacking financial and moral means of applying such frameworks in the long-term, as well as, those lacking domestic legislations and compliance often face penalties as in the example of CITES agreements (Sand 2013).

We would like to see States engaging with indigenous groups to improve ‘negotiation strategies’ at subnational levels, recognizing the place of ‘local knowledge’ in policy discourse, and giving space for equal access to collaborative governance processes, i.e. where all stakeholders involved in collaboration share equal power (Brisbois and de Loë 2016; Purdy 2012). One way of achieving this equality can be through governance coalition with other participants and when conveners of the collaborative process share their authority and tasks with other participants (Purdy 2012). For instance, the Torres Strait Island people in northern Australia inhabit one of the country’s most significant reservoir for biodiversity facing environmental threats. To meet international frameworks for conservation, the North Australian Indigenous Land and Sea Management Alliance (NAILSMA) adopted an ‘I-Tracker project’ that engages indigenous rangers with field computers and CyberTracker software, to gather and manage environmental data (Kennett et al. 2010). While, indigenous rights to own and manage traditional land are paramount to the project, it enables data sharing to address

environmental issues at regional, national, and international level. This approach could equally be useful elsewhere.

3.2. Decision-making, science, and public opinion

Secondly, the midpoint between science and public opinions about environmental change is crucial for resilience. From local people, taxpayers, to marginalized groups contributing to upkeep environmental policy, and for whom institutions design frameworks (Cottrell et al. 2016), it is essential that these groups be active in the decision-making and implementation process. Of course, the UN already ratified related principles among others, under the 1948 Universal Declaration of Human Rights (Brown 2016). Yet, humanities' progress remains critical in a changing world, with debates over land use and access to natural resources. See the works of Mercer (2019), Pyhälä et al. (2016), (Amatulli 2015), and (Feiring 2013) for more on the plight of some groups that require improvements in decision-making practices.

It has been observed by scholars of urban resilience that even when decisions on climate change might aim at remedying social challenges, it inherently produces inequalities among city inhabitants due to the legitimacy of actions that favour certain risks and ignore other risks (Rozance et al. 2019). These imbalances in decisions over science induces the vulnerability of communities to climate change (Grabowski et al. 2019). Amidst this problem, anthropological research will be useful to provide insights as to how conflicting knowledge systems come about and how people can wisely make these systems work better.

Already, we see reasonable options emerging from theories of sacred ecology (Berkes 2008), indigenous knowledge (Agrawal 2002; Blaser 2004), and urban resilience (Feagan et al. 2019). These theories pay particular attention to social practices that produce and use information – which anthropological studies can usefully harness in acknowledging the distinctive and culturally-based approaches for which the various knowledge systems of local

people are utilized in efforts/decisions towards adaptation to dynamic environments. A focus on these lines of theory will be useful for advancing knowledge systems.

3.1. Incorporating social knowledge towards adaptive development

Thirdly, we are living at a time when anthropocentric problems require new innovations and knowledge to foster new solutions to current gaps in resilience. This view is particularly shared in the work of Jennings and Hoffman (2019) stressing the paradox of scientists disengaging from social sciences that explain human role as drivers of ecosystems and limiting their focus on justifications of the natural sciences (e.g. biology, climate science, geophysics). This increases the complexity of environmental plans. Fellows (2019), an advocate for a Social Anthropocene, suggests a psychological basis for which understanding the inner self through human behaviour, could help reveal synergies for which we can sustainably live with the natural environment.

Consistent with the views outlined above, we observe one of such synergies in the case of ‘development’, a concept that has equally been used within the social sciences for studying the Anthropocene (Jennings and Hoffman 2019). Development presents an opportunity we can exploit to enhance the resilience of knowledge systems. Understanding that development as a concept often requires a proper inclusion/participation of several stakeholders (i.e. from State agencies, private institutions, local people, to international bodies) towards achieving certain goals, we emphasize that for attaining such resilience, negotiating environmental plans for adaptive development (renewable energy, conservation, agricultural mechanisation) must extend outside the realm of governments and corporations, to include a broader engagement of the local communities that have often been marginalized in development plans.

For instance, over the last decade, the arrangement of land deals between governments and corporations without comprehensive knowledge inclusion of local people in parts of Africa

led to adverse consequences. For instance, among the rural women in Ghana, Tanzania, and Zambia, regarding the displacement of people, land right concerns, marginalization of women and commercialized pressure on the land (Tandon and Wegerif 2013). Also, the notion of ‘green grabbing’ concerning large-scale land acquisitions by some authorities in the Cameroon government for protecting the environment at the detriment of local people (Batterbury and Ndi 2018). We see similar cases in Cambodia, Laos, Indonesia and Malaysia (Schoenberger et al. 2017).

To our opinion, governmental plans to acquire, use, transform, and evaluate adaptive development projects on land in less industrialized parts of the world, will equally require the knowledge of local people who have long been occupants of the land. Along the views of West et al. (2006), such an approach will help determine evaluation systems most vital in the spatial production of environment. Already, some of these observations exist in the management of sacred forests. For example, the Mijikenda people work along with officials of the Kenya National Museum in maintaining the Kaya sacred forest. While national laws endorse local authorities as trustees for Kaya lands, priorities of Mijikenda are paramount in activities among stakeholders (Githitho 2006).

Therefore, our anthropological view about the future of knowledge systems is that, as bilateral agreements continue to shape relations between emerging, economically advanced, and third world nations, the ‘change’ will be towards environmentally resilient schemes, e.g. Artificial Intelligence (AI), communication technology, renewable energy, cost efficient transportation means, and biodiversity protection, which are avenues for coping with societal challenges. While these schemes necessitate caution through checks, balances and accountability in environmental governance, corporations and governments need to take greater responsibility for the environmental costs and the impacts of projects they invest in

(Garcia et al. 2016). Additionally, they will have to put the growing needs of citizens and indigenous population at the core of resilient policies.

4. Conclusion

This paper explored the unintended consequences of resilient environmental governance from a global perspective, including climate policy and the course of geopolitics which we denote as paradoxical gaps. To support our argument, we examined concerns about protected areas, climate change mitigation, and hydropower investment using case-specific evidence in Canada, South and Central America, Africa, Southeast Asia, Australia and Europe. Our paper showed that, while environmental governance aims at strengthening the adaptive capacity of societies, it does so inconsistently at multinational and sub-national levels of society, i.e. through the displacement of people in and around conservation sites, political divisions in climate change discourse, and crises surrounding hydropower dams.

This perspective paper leaves many open questions that anthropological research, including ethical efforts of transparency, credibility, flexibility and the greater responsibility of governments and corporations, can help to resolve. Along these lines, we maintain that while international frameworks for environmental governance remain crucial for resilience, States need to improve negotiation strategies at sub-national levels too. To do this effectively would entail recognizing a grass roots basis for interpreting laws. Although this might be difficult to achieve where imbalances of power exist, we encourage governments to address public opinions about climate change at the core of resilience policies. This might offer useful insights about evaluating knowledge systems towards adaptive development in today's changing world.

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