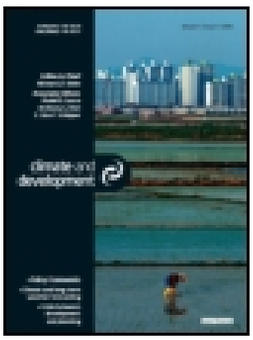

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VIEWPOINT

The 'boomerang effect': insights for improved climate action

Larry A. Swatuk [a,b], Bejoy K. Thomas [c*], Lars Wirkus [d], Florian Krampe [e] and Luis Paulo Batista da Silva [f**]

[a]School of Environment Enterprise and Development, University of Waterloo, Waterloo, Ontario, Canada; [b]Institute for Water Studies, University of the Western Cape, Bellville, South Africa; [c]ATREE, Bengaluru, India; [d]BICC, Bonn, Germany; [e]SIPRI, Stockholm, Sweden; [f]University of Sao Paulo, Sao Paulo, Brazil

ABSTRACT

States have been negotiating climate mitigation actions centred around greenhouse gas emissions for several decades. In the wake of the Paris Agreement, a significant body of research has emerged reflecting on the unintended negative consequences of climate mitigation action. More recently, this research includes a focus on climate adaptation actions. The negative impacts have, together, been labelled 'maladaptation'. Maladaptation as articulated in the literature takes many forms: e.g. displacement of communities from traditional lands such as forests and pasture, violent conflict at different scales, resource capture by elites. In this article, we argue in support of a careful delineation between local-level side effects of climate action and negative effects reaching back to the state (through different pathways and at different levels). The latter we label 'boomerang effects'. We illustrate, through several examples, the pathways leading from climate action to local impact to boomerang effect, arguing that careful articulation of policy and program decisions, actions and effects upon the state provide support for improved policy making. Climate action is necessary, and necessarily must be better informed in order to achieve the broadest socio-ecological benefits possible.

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Adaptation; mitigation; climate change; boomerang effect; maladaptation; climate policy; NDCs

1. Introduction

The escalating climate emergency demands an effective, coordinated global response to mitigate anticipated negative impacts. For more than two decades, policy response in relation to effective mitigation has been guided by three interrelated global and country targets: maintaining global mean temperature below 1.5°C; reducing global greenhouse gas (GHG) concentration below 350 ppm; and achieving significant national emissions reductions either set against a base year such as 1990 or indexed in relation to carbon intensity of the economy per unit of GDP (Björnberg, 2013; Hansen et al., 2008). Actions taken in support of these targets draw together states, international organizations, the private sector and civil society in a wide array of efforts: e.g. incentivizing low-carbon development through taxes and credits; pursuing renewable (wind, water, solar, biomass, geothermal) energy and biofuels development; promoting afforestation and forest conservation programmes such as REDD+ and other forms of carbon trading in support of carbon sequestration.

We view climate security as an outcome of improved climate action, where the referent objects of security are the biosphere (at macro scale) and the individual (as part of a sustainable socio-ecological system at the micro and meso scale) (McDonald, 2013). If the implementation of mitigation measures achieves the targets listed above, then the climate emergency will have abated and climate security at the level of the biosphere will have been achieved. Securing the biosphere, however, must not come at the expense of individuals and communities. Thus, before state-initiated, biosphere-oriented climate actions are taken, policy makers must be able to answer the following question: what will be the impacts of these actions at the point of intervention? In this viewpoint, we present the concept 'the boomerang effect'. The boomerang effect is defined as 'the emergence of unintended negative consequences of state-initiated climate action on domestic non-state actors that result in negative feedbacks on the state' (Swatuk, Wirkus, Krampe, Thomas, & Batista da Silva, 2018, p. 2). It is this negative feedback loop impacting the state that constitutes the boomerang effect. Ours is a normative argument: Might states reconsider their practices if boomerang effects can be demonstrated? If research can empirically demonstrate that state actors are as equally harmed by ill-considered policy, programmes and practice as are those at the point of intervention, might they reconsider their methods?

The balance of this viewpoint proceeds as follows: the second section briefly describes state-initiated climate action and its relation to development. Section three examines the local level side effects of climate action, situating our approach therein. Section four presents the boomerang effect in some detail. The final section reflects on lessons learned and directions for future research.

2. Climate action

Mitigation activities are guided by global governance processes through the UNFCCC COP. At COP16 in Bali, parties to the

CONTACT Larry A. Swatuk lswatuk@uwaterloo.ca
*Present address: Indian Institute of Science Education and Research (IISER), Pune, India.
**Present address: Department of Geography, Federal University of Bahia (UFBA), Salvador, Brazil.

convention agreed to NAMAs (Nationally Appropriate Mitigation Actions) and at COP21 in Paris states committed to the development and pursuit of Nationally Determined Contributions (NDCs) to emissions reduction. Article 4.2 of the Paris Agreement states 'Each Party shall prepare, communicate and maintain successive nationally determined contributions that it intends to achieve. Parties shall pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions' (Paris Agreement, available at: https://unfccc.int/files/meetings/paris_nov_2015/application/pdf/paris_agreement_english_.pdf. Accessed 26 November 2019). These mechanisms are non-binding, though the NDCs require regular reporting of activities and progress toward goals.

Given the targets set and agreed to by states through the COP processes, states are eager to show compliance. For many states, compliance means taking a fresh look at existing programmes, practices and environmental conditions (e.g. the extent of forests, wetlands, soil moisture and so on). Across much of the Global South, this might involve relabeling a wide variety of development programmes and projects as 'climate action' (Atkins, 2018; Dubash, 2019; Metz & Kok, 2008). According to Bapna (2013),

> The links between poverty, development and climate change are clear and unavoidable. Achievement of development goals will be fleeting if climate change is ignored. When done right, investments in infrastructure, agriculture and energy – traditional development issues – are among the most effective ways to reduce emissions. However, these topics tend to be negotiated in separate rooms, while on-the-ground responses are uncoordinated

To assist countries to determine whether development actions count toward NDCs, Rio Markers were created by the OECD Development Assistance Committee (DAC).[1]

Indeed, all developing countries state unequivocally that mitigation and adaptation actions must adhere to the primary developmental goal of poverty alleviation, hence drawing climate action directly into the ambit of development practice (Antwi-Agyei, Dougill, Stringer, & Codjoe, 2018; Dubash, 2019; Gilmore, Herzer Risi, Tennant, & Buhaug, 2018; Lakhanpal, 2019; Metz & Kok, 2008; Work, Rong, Song, & Scheidel, 2018). For example, 'the Indian National Action Plan on Climate Change, formally at least, calls for a co-benefits approach where the linkages with development and the environment are explicitly considered' (Dubash, Khosla, Kelkar, & Lele, 2018, p. 404).

3. Local level side effects of low carbon development

While most mitigation actions build in what might be termed 'developmental' safeguards,[2] many studies show that the consequences for people at the point of intervention are overwhelmingly negative. Mirumachi, Sawas, and Workman (2019) 'present critical analysis of the ways low carbon development yields new security concerns as well as entrench existing concerns with problematic effects'. The authors 'present five key dimensions of security for a critical examination of low carbon development', i.e. (p.2): (i) The spatially uneven effects of low carbon development; (ii) Violent imaginaries of the Global South and the production of 'ungoverned spaces' demarcating spaces of insecurity; (iii) Non-violent yet harmful instances of conflict, mediated through political control; (iv) Marginalization and dispossession of groups within society; and (v) Depoliticized, techno-managerial effects of resilience that evade addressing sources of contention.

Mirumachi et al. (2019) thus speak to a vast literature on climate change and security (e.g. Barnett & Adger, 2007; Gemenne, Barnett, Adger, & Dabelko, 2014; Gleditsch, 2012; Gleick, 2014; McDonald, 2013) now an established sub-field of environmental security (see, e.g. Detraz & Betsill, 2009; Homer-Dixon, 1999; Swatuk, 2014). This literature has mainstream elements, meaning fundamentally that security sector organizations have approached climate change as a threat to the sovereign state requiring not only mitigation measures but adaptation actions (German Advisory Council on Global Change, 2007; Hsiang & Burke, 2014; Koubi, Bernauer, Kalbhenn, & Spilker, 2012; Moran, 2011; Nordas & Gleditsch, 2007; Salehyan, 2008; Scheffran, Brzoska, Kominek, Link, & Schilling, 2012; Schwartz & Randall, 2003; Theisen, 2012; UNEP, 2009; United States Department of State, 2014). Mirumachi et al. (2019) come at the topic from a different, critical and reflective perspective. Much of this literature directly challenges mainstream policy recommendations and actions regarding the necessary preparations to be taken to ensure (state, regional, resource) security in the face of the worst aspects of a changing climate (e.g. Corbera, Hunsberger, & Vaddhanaphuti, 2017; Hunsberger et al., 2017; Ingalls, Meyfroidt, To, Kenney-Lazar, & Epprecht, 2018; Magnan, 2014; Scheidel & Work, 2018). Some of the critiques are designed to encourage policy makers to think more carefully about the assumptions underpinning proposed actions; others are designed to motivate policy makers to take meaningful action; still others are designed to directly confront proposed and ongoing actions and interventions taken in the name of climate security (see, e.g. Adger, Brown, & Surminski, 2018; Barnett, 2007; Barnett & O'Neill, 2013; Birkmann & Mechler, 2015; Brown et al., 2018; Magnan, 2014).

Mirumachi et al. (2019) are representative of a strand of critique designed to do all three: question assumptions; encourage action; challenge planned interventions. Quite rightly, they highlight the increasing tendency to elide security and development under the mantle of planned mitigation and adaptation interventions. Increasingly, policy makers and scholars are exploring ways to link mitigation and adaptation actions, hypothesizing compound successes (Hennessey, Pittman, Morand, & Douglas, 2017; Parker-Flynn, 2018). These approaches focus on how to minimize the likelihood and/or onset of climate-changed risks (i.e. mitigation) and, increasingly, how to maximize resilience of (individuals, communities, states, regions, resources) in the face of climate-induced threats (i.e. adaptation). The bulk of these approaches are the purview of technocrats, economists and development practitioners (USAID, 2016; also, see Widerberg & Pattberg, 2017 for a survey of the institutional landscape). In contrast, while Mirumachi et al. (2019) are generally interested in climate change, security and the threat of violence, their primary objective is to challenge the assumptions underpinning overwhelmingly techno-managerial interventions that construct the Global South as the source of climate insecurity. These interventions, they argue, too often lead to the creation of winners and losers

at local level with marginalization and dispossession of the most vulnerable being a too common outcome. In their view, actions taken in the name of enhancing climate security through low carbon development are deeply political and, as such, are as fraught with contradiction and contestation as are most development interventions.

Thus, their critique joins an increasingly broad chorus of argument centred on 'maladaptation', defined as 'action taken ostensibly to avoid or reduce vulnerability to climate change that impacts adversely on, or increases the vulnerability of other systems, sectors or social groups' (Barnett & O'Neill, 2010, p. 211; also, Juhola, Glaas, Linnér, & Neset, 2016; Magnan et al., 2016). 'Backdraft' has also entered the climate and conflict lexicon with a view toward lowering the chances that 'efforts to reduce our carbon footprint and lower our vulnerability to climate change inadvertently exacerbate existing conflicts – or create new ones' (Dabelko, Herzer, Null, Parker, & Sticklor, 2013; Ruttinger, Smith, Stang, Tänzler, & Vivekananda, 2015). In this vein, Mirumachi et al. (2019) cite Haldén (2007) and Swatuk et al. (2018) in their use of the 'boomerang effect'.

In the remainder of this viewpoint, we demonstrate the value of 'the boomerang effect' as we conceptualize it, differentiating it from maladaptation, backdraft, and other articulations of boomerang effects[3] common to other discourses and disciplines (Haldén, 2007; Hart & Nisbet, 2012).

4. The boomerang effect

To elaborate on the definition provided in Section 1 above, the implementation of state-initiated climate action interventions (through state or state-authorized private actors) often has unanticipated and unintended negative social, political, economic and ecological effects that impact on local communities on various spatial and temporal scales. We label these 'local level side effects' (LLSEs) which we regard as more specific in time and space than Barnett and O'Neill's wide-ranging – i.e. 'systems, sectors or social groups' – definition of negative impacts cited above. These observed impacts of the intervention in turn negatively feed back to the state on multiple levels (e.g. local, regional, national), at various scales (e.g. watershed, forest, landscape, ecosystem), thereby creating (economic, political, societal, environmental) risks to state sustainability (Swatuk et al., 2018, p. 3). We label these consequences, 'state level boomerang effects' (SLBEs) or 'the boomerang effect' in short. Given that states are eligible to claim NDCs for actions taken in other states (e.g. through carbon trading) it is also possible that state-level boomerang effects may impact the state where the intervention takes place, but not impact the initiating state (See Figure 1).

Distinguishing between the two effects differentiates our approach from the maladaptation literature. Local level and state level effects are distinguished from each other for two specific reasons. One reason is policy-oriented: like much of the maladaptation literature we wish to encourage state actors to reconsider the assumptions underpinning actions. This is most relevant in terms of states' NDCs to lessening their carbon footprints. Decisions taken at high political levels regarding how to achieve a global target of <2° C are often poorly rendered into action at the point of the intervention (Ahmed, Ayeb-Karlsson, van der Geest, Huq, & Jordan, 2019; Gilmore et al., 2018; Paprocki & Huq, 2018; Sovacool, 2018).

The second reason for delineating between LLSEs and SLBEs is to introduce more precision to the analysis. Across the literature, almost everything with a negative impact – from millions of people displaced by a dam to a policy-pathway leading toward geo-engineering of the climate – is regarded as maladaptation or backdraft (Dabelko et al., 2013). Thus, if every negative impact is maladaptation, then determining action pathways toward better practice is virtually impossible. Importantly, the lack of specificity regarding cause and effect risks rendering the concept dismissible as simply the externalities of policy action. Hence our desire to trace policies and practices from their origins to their effects both upon local level actors at the point of intervention and upon decision-making authorities wherever they may reside. Determining boomerang effects requires research that traces the decision-making process backward from impact to design to decision and forward from LLSEs to SLBEs.

There are significant lessons for climate action to be learned from development practice and, indeed, the rich findings of the maladaptation literature. Critical scholarship has clearly, carefully and comprehensively illustrated the complexity and often contradictory nature of both development practice and adaptation interventions. We should expect no less from climate mitigation action. Through a set of case studies (da Silva & Swatuk, 2019; da Silva, Swatuk, & Wirkus, 2019; Swatuk & Wirkus, 2018), we explored the 'boomerang effect'. Research was guided by five questions:

- What are the (social/economic/ecological/political) drivers behind a particular development or climate intervention?
- What was the decision-making process that led to this specific climate action or development intervention?
- What are the LLSEs (social/economic/ecological/political) of the action?
- What are the boomerang effects felt by the state?
- Recognizing that there will always be uneven outcomes and maladaptive practices, what are better processes to minimize negative impacts?

Case studies focused on two kinds of interventions: those that travelled along 'green water pathways' (e.g. biofuels development; REDD+) and those that travelled along 'blue water pathways' (e.g. dam building for 'green' energy). The research showed that LLSEs vary in intensity with the scale of the project – hydropower/multi-purpose dams, biofuel plantations. The intervention's physical distance from the capital city also insulated national level decision-makers from SLBEs, but exposed local authorities to protests, often violent. The Belo Monte dam in Brazil is the dominant case in this regard. SLBEs are often significant, for example the delay and loss of funding for the Ilisu Dam by policy makers in Turkey. Yet, as with the Gigel Gibe III in Ethiopia, Three Gorges in China, Belo Monte and Ilisu, policy makers at national level rarely suffer the consequences of their decisions and are willing to tolerate a high degree of conflict and disruption in support of mega-projects.[4]

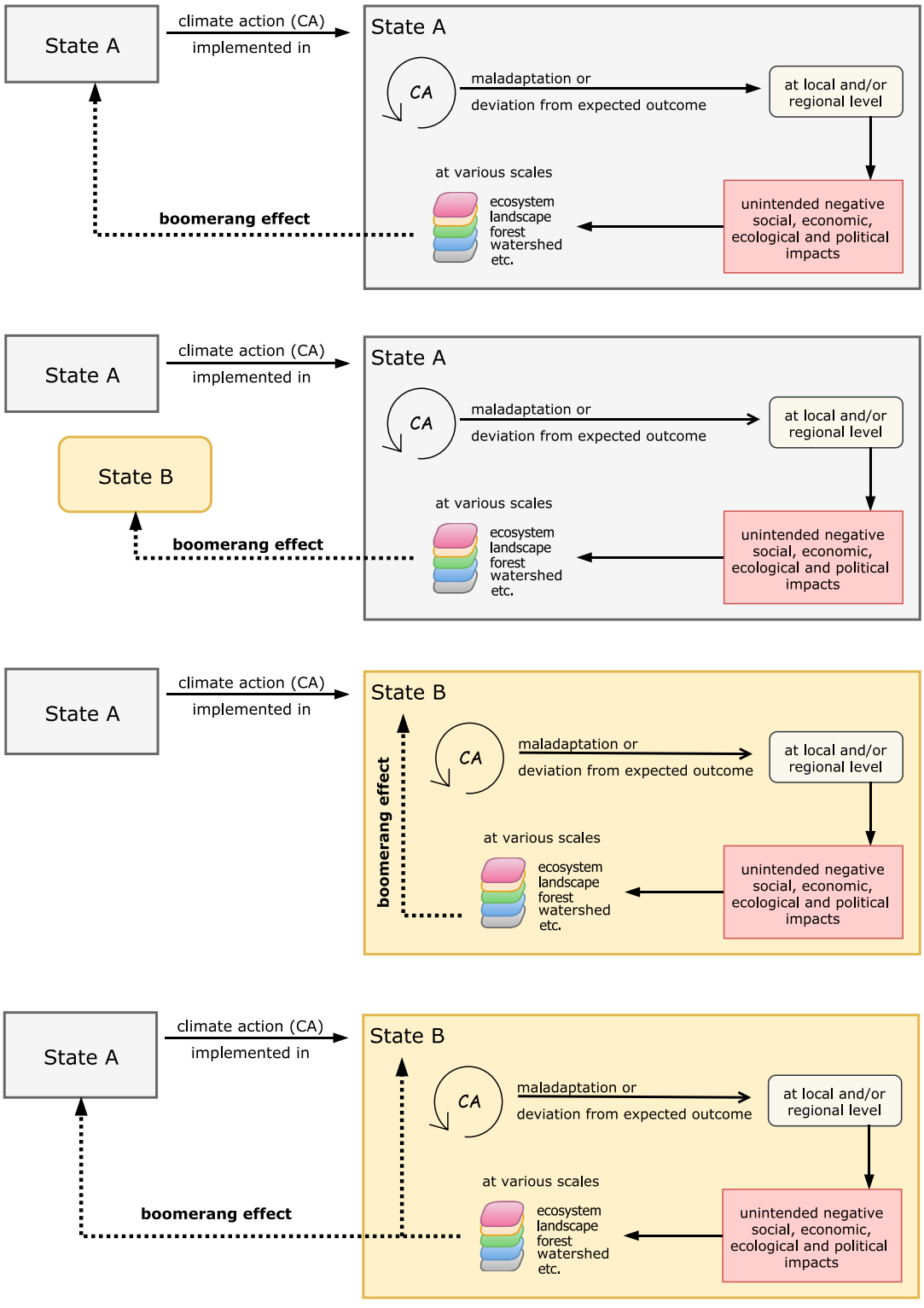

Figure 1. The boomerang effect.

South Africa provided different lessons in relation to its attempt to get biofuels development off the ground. Unlike unified elites driving bureaucratic practice in Brazil, Turkey, Ethiopia and China, South Africa's decision-making landscape is more fragmented, fractious, democratic and transparent. Concerns regarding biofuel development's impact on water resources and poverty alleviation, as well as unconvincing evidence of its likely return on investment led to the shelving of an idea that looked very promising only a short time ago (da Silva & Swatuk, 2019).

5. Lessons and directions for future research

The implications for improved climate action, therefore, are mixed. Self-reflection and enlightenment are not characteristics widely shared among the politicians, planners, financiers and developers involved in large scale interventions. The lesson in this case is equally obvious to critical scholars: in most instances, improved climate action will be heavily dependent upon concerted (local, regional, global) civil society mobilization. At the same time, there seems to be much promise in opening up the black box of the state in order to understand how decisions are made and what the drivers are behind these decisions. Isolating the policy pathway in explication of demonstrable SLBEs holds promise for more nuanced understanding of climate action planning and practice as well as for offering improved policy advice (Adger et al., 2018; Mundaca, Sonnenschein, Steg, Höhne, & Ürge-Vorsatz, 2019). As stated at the outset, we view climate security as an outcome of improved climate action. In showing governments not only the likely negative local level side effects but, importantly, the possible boomerang effects to be derived from proposed climate actions, we aim to encourage more carefully considered policies that result in more widely realized climate security.

Notes

1. Projects may be scored on a scale of 0–2: 2 (principal) means 'when the objective (climate change mitigation or adaptation) is explicitly stated as fundamental in the design of, or the motivation for, the activity; 1 (significant) 'when the objective … is explicitly stated but it is not the fundamental driver or motivation for undertaking it'; or 0, 'the activity was examined but found not to target the objective … in any significant way' (OECD DAC, n.d., p. 5). The percentage of the project allowed to be claimed as mitigation and/or adaptation therefore varies from 0% to 100%.
2. For example, 'in the Cancun Agreements of 2010, the UNFCCC adopted seven non-mandatory safeguards for REDD+ activities into Annex 1.' Among other things, 'the safeguards mandate the full and effective participation of relevant stakeholders, in particular indigenous peoples and local communities' (Raftopoulos & Short, 2019, p. 92).
3. Haldén (2007, p. 107) uses the terms 'boomerang effect' and 'double boomerang effect', but in an off-hand way: '[A] risk generated by an activity which in itself not harmful is a kind of boomerang effect … Once we become aware of risks, or preoccupied with them as in contemporary society, we begin to take measures to alleviate risks. However, attempts to do so may in turn create new risks of their own, a double-boomerang effect, as it were'. The paper goes no further in exploring these ideas. In contrast, we believe the term 'boomerang effect' to be an important heuristic device. A boomerang is an aboriginal hunting weapon that when thrown either hits its expected target and is effective, or misses and because of its aerodynamic design returns to the hand of the hunter. In relation to climate policy, a 'boomerang effect' denotes not merely the deviation from an expected policy outcome, but a complete policy 'miss' which results in the unexpected return of the boomerang to the one who threw it. It is unexpected because the policy makers did not anticipate the possibility of policy failure.
4. See the case studies in Swatuk and Wirkus (2018).

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Notes on contributors

Larry A. Swatuk holds a PhD from Dalhousie University in Canada. He is a Professor in the School of Environment, Enterprise and Development (SEED) at the University of Waterloo, Canada. He is also Extraordinary Professor in the Institute for Water Studies at the University of Western Cape, South Africa and External Researcher at the Bonn International Center for Conversion (BICC), Germany.

Dr. Bejoy K. Thomas has a background in Economics and Development Studies. He is Associate Professor of Humanities and Social Sciences in the Indian Institute of Science Education and Research (IISER), Pune, India. His research is problem driven and interdisciplinary, focusing on livelihoods, adaptation and water resources in rural and peri-urban areas.

Lars Wirkus is the Head of Section, Data and GIS and Senior Researcher at the Bonn International Center for Conversion (BICC), Germany. Much of his work focuses on developing data-informed concepts, methods and applications for the assessment, analysis and visualization of the manifestations and dynamics of organized violence at different scales in the context of global environmental and societal change. His academic research interest concerns conflict early warning, natural resources and (violent) conflicts, environmental security, forced migration and climate change.

Dr Florian Krampe is a Senior Researcher in SIPRI's Climate Change and Risk Programme, specializing in peace and conflict research, environmental and climate security, and international security. His current research focuses on climate security and the post-conflict management of natural resources, with a specific interest in the ecological foundations for a socially, economically and politically resilient peace. Dr Krampe is an Affiliated Researcher at the Research School for International Water Cooperation at the Department of Peace and Conflict Research at Uppsala University.

Luis Paulo Batista da Silva is an assistant lecturer at the Department of Geography of Federal University of Bahia (UFBA), and Post-Doctoral Research Fellow at the University of São Paulo, Brazil. His research focuses on multi-level environmental governance strategies to regulate transboundary river basins within La Plata river basin. He is interested in how state, market, NGOs and civil society engage in cooperative or conflictive actions in order to govern transboundary water resources.

ORCID

Larry A. Swatuk http://orcid.org/0000-0002-3066-8090
Bejoy K. Thomas http://orcid.org/0000-0002-5188-0189
Lars Wirkus http://orcid.org/0000-0002-9795-3187
Florian Krampe http://orcid.org/0000-0002-2208-794X
Luis Paulo Batista da Silva http://orcid.org/0000-0003-0010-4216

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