Abstract
This article analyzes the international biodiversity complex. It argues that structural power imbalances lead to an inconsistent implementation of the international framework. As industrialized countries refuse to connect environmental and intellectual property laws to human rights regulations, emerging countries are under pressure to ignore the rights of their indigenous peoples. From the perspective of the negatively affected groups, this might be experienced as a move from liberal environmentalism towards environmental authoritarianism.

Key words: biodiversity, intellectual property, indigenous rights, regime complex

Resumo
O artigo analisa o complexo dos regimes internacionais de biodiversidade. Argumenta que os desequilíbrios estruturais de poder levam a incoerências na implementação do sistema internacional. Os países emergentes são pressionados a ignorar os direitos das populações indígenas, visto que os países industrializados não aceitam incluir os direitos indígenas nas regulações da propriedade intelectual. Sob a perspectiva dos grupos afetados, o ambientalismo neoliberal resulta em autoritarismo ambiental.

Palavras chaves: biodiversidade, propriedade intelectual, direitos indígenas, complexo dos regimes
1 Introduction

Complex questions demand for comprehensive answers. During the last decades, decision-makers have increasingly become aware of an exponentially rising interdependency in a globalized world. The most pressing political issues do not only exceed the regulatory capacities of the nation state but also transcend the boundaries of their original definition. As a reaction to globalization, numerous institutions have been devised and linked with each other in an attempt to cope with the cross-cutting nature of intrinsically interrelated, transnational problems.

The proliferation of interconnected forums has been most prominently reflected in the academic literature on “regime complexes” which are defined as “an array of partially overlapping and non-hierarchical institutions governing a particular issue-area”. Based on the preceding regime literature, regime complexity is frequently portrayed as an institutional answer to problems which are characterized by the intersection of various transnational issues with competing rationales and trajectories (e.g. trade, environment, human rights). While most scholars start from functionalist premises, they are well aware that the interplay of various international institutions in the absence of a “shadow of hierarchy” implies organizational rivalries and intrinsic tensions, which can be exploited by the opportunistic behavior of state and non-state actors alike. Nevertheless, they suppose that these effects can be mitigated by countervailing mechanisms and motivations such as policy learning, mutually exchanged benefits, and the desire to avoid reputational damages. Most particularly, the flexible malleability of regime complexes is assumed to induce an incremental convergence of expectations among the participating states, which eventually leads to commonly agreed rules and compliant behavior on the domestic level.

As yet, however, empirical accounts have shown a rather mixed balance. Although the literature frequently cites successful examples of inter- and transnational institutionalization, many regime complexes appear to remain rather fragmentary. While in some cases the tensions between contradictory rationales cannot be resolved on the international level, other studies hint to significantly diverging compliance patterns in the domestic sphere. Why do at least some regime complexes not live up to the high expectations of liberal optimism? Most scholars tend to answer this question by functionalist arguments, claiming that the observed inconsistencies result from a lack of leadership and/or capacities within the participating states.

In this article, however, it is suggested that there may be deeper underlying reasons for the underperformance or even dysfunctionality of regime complexes. Drawing back on
the criticism which was already raised against the preceding regime literature, it is arg-
gued that the configuration of regime complexes is strongly affected by structural im-
balances among the participating states and societal actors. The selective regime adap-
tation among the more powerful members discourages or even prevents less powerful
countries from aspiring more comprehensive compliance, which eventually destabilizes
the regime complex as a whole. At worst, increasing convergence within certain areas
of a regime complex may even contribute to a “race to the bottom” with regard to its
disregarded elements.

To illustrate these claims, this article analyzes the regime complex on biodiversity and
associated traditional knowledge, which is commonly presented as a prototypical case
in the literature. It shows that the biodiversity regime complex is characterized by a
loose coupling of environmental goals, intellectual property rules, and indigenous
rights. While the compatibility of these elements has been reached on the international
level, the neglect of indigenous rights issues in industrialized countries endangers their
recognition in the southern periphery, which in turn leads to a creeping decomposition
of the biodiversity regime complex as a whole.

The article is organized as follows. Section 2 critically reviews the literature on regimes
and regime complexes and connects these readings to the caveats of international political
economy scholars. Section 3 sketches the emergence of the international biodiversity
complex, its selective implementation on the domestic level, and the repercussions of
this selectivity for the future development of global institutionalization. In section 4, the
empirical findings are discussed against the background of the theoretical literature. The
article concludes with a brief summary of the major results and some suggestions for
further research.

2 Regimes, complexity, and structural power
This section starts with a brief overview on the regime literature of the 1980s and
1990s. It subsequently shows that scholars of regime complexity strongly build on this
literature to adapt it to new problem definitions and a changing institutional environ-
ment on the international level. However, as it will be argued in the third part of this
section, the literature on regime complexity has so far failed to address the more funda-
mental criticisms which have already been raised against the preceding regime litera-
ture.

The early regime literature of the 1980s and 1990s is mainly inspired by the perceived
relative decline of U.S. hegemony, technological change, and the increased density of
cross-border transactions mainly in finance and trade.\textsuperscript{23, 24} To many observers, it seemed that the “negative externalities” of these trends (e.g., with regard to environmental degradation) could no longer be absorbed by the national states alone.\textsuperscript{25, 26} Against the backdrop of the prevailing realist and mercantilist perspectives, liberal scholars argued that an institutionalization of interactions between states would (and should) entail a large potential for cooperation and commonly agreed solutions. In the introduction to a special issue of International Organization, Stephen Krasner famously defined international regimes as “principles, norms, rules and decision-making procedures around which actor expectations converge in a given issue-area”.\textsuperscript{27}

Regime scholars assume that the institutionalization of cooperation provides an incentive for states to sacrifice their short-term interests in defection, if they anticipate a net profit from compliance with the commonly agreed rules in the long run.\textsuperscript{28} In this context, regimes are portrayed as a means to solve coordination problems in the anarchic structure of international society even in the absence of hegemonic stabilization.\textsuperscript{29} Due to iterated games in multiple arenas, states can overcome the classical “prisoner dilemma” of international cooperation.\textsuperscript{30} The reduction of transaction and monitoring costs as well as the accumulation of policy-relevant knowledge within an established regime should make it less attractive for states to free-ride either by non-adherence or by defection.\textsuperscript{31}

The early regime literature mainly focuses on states, but scholars quickly realized that international organizations are an important factor at least with regard to the sustainability of cooperation. Initially, it was assumed that international organizations would only serve as a facilitator for intergovernmental negotiations\textsuperscript{32}, but liberal scholars have become increasingly willing to concede a larger role to international organizations and their secretariats.\textsuperscript{33} They still assume that international organizations are mainly responsible for the collection of data and the preparation of negotiable working packages, but they emphasize that these activities make it possible for international bureaucracies to shape the expectations of negotiators and broaden the agenda of discussable issues.\textsuperscript{34} At least implicitly, scholars have hereby shifted from a purely interest-based interpretation towards a more reflectivist perspective, in which ideas, norms, and values play a more important or even a constitutive role.\textsuperscript{35}

The constructivist turn allows for an increased attention to non-state actors as possible contributors to the formation and maintenance of regimes. Beginning with the notion of epistemic communities\textsuperscript{36}, many scholars have shown that societal actors (both business representatives and civil society) can play an important role.\textsuperscript{37} Especially since the late
1990s, the regime literature has departed from the previously prevailing conceptualization of regime formation as a result of a “two-level game” in which societal actors only contribute to the preference formulation on the domestic level. Instead, it is argued that societal actors directly address the international level of negotiations. Drawing on neo-functionalist explanations of European integration, it is assumed that the secretariats of international organizations proactively use the support of societal actors to legitimate their own claims even against the preferences of states. Perhaps even more importantly, transnationally operating civil societal groups and corporate actors are interpreted as a means to facilitate the implementation of internationally agreed regimes on the domestic level.

Since the very beginning, however, the regime literature has been subject to several critical objections. Essentially, three points are raised. First, it is argued that the literature tends to ignore the already existing environment of international institutions which is claimed to impact the formation of new regimes. Second, both realists and (Marxist) structuralists criticize that regime scholars underestimate the role of power relations for the establishment and the operationalization of regimes. Instead of voluntary cooperation, regimes should be understood as a means of “non-territorial imperialism” by the most powerful states to protect domestic corporate interests. Based on their structural position in the global economy, they are able to pre-define the range policy options for all countries involved. Even if they do not directly draw on coercive means, they “shape [the] frameworks within which states relate to each other, relate to people, or relate to corporate enterprises”. Third, the regime literature is criticized for its functionalist bias which tends to reproduce the problem definitions of dominant powers. In the words of Susan Strange, regime scholars “exclude hidden agendas and (…) leave unheard or unheeded complaints, whether they come from the underprivileged, the disfranchised or the unborn, about the way the system works”. As yet, regime scholars have mainly reacted to the first and partially to the second criticism, while the last point remains largely ignored.

In the literature, it was easily admitted that new regimes do not emerge in institutional voids. Meanwhile, it has become commonplace to acknowledge that new forms of international coordination are strongly influenced by pre-existing structures. Linkages between different regimes can be intentionally devised, but they also result from the interrelatedness of the addressed policy issues. The constellation of varying regimes can be hierarchically organized (“nested regimes”) or display a rather ambiguous relation-
ship of mutual interdependence (“overlapping regimes”) with competing and potentially contradictory rules and procedures. Empirically, however, a clear distinction is difficult to maintain. That is why Raustiala and Victor introduce the overarching notion of “regime complexes”, by which they mean “an array of partially overlapping and nonhierarchical institutions governing a particular issue-area”. Meanwhile, their definition has been significantly refined. In a more recent version, regime complexes are described as “a network of three or more international regimes that relate to a common subject matter; exhibit overlapping membership; and generate substantive, normative, or operative interactions recognized as potentially problematic whether or not they are managed effectively”.

The second definition already indicates that the relationship between the different regimes is one of the most strongly discussed issues in the burgeoning literature on regime complexity. Due to diverging (yet overlapping) memberships and constituencies, different regimes may embrace varying principles, rules and procedures. When dealing with the same policy questions, several regimes within a given complex can come to contrary or even contradictory solutions. The problem of inconsistency can be reinforced by bureaucratic self-interests and institutional rivalries among the involved international organizations. At the same time, the availability of different forums enables states to opt for those institutions which are deemed to be most favorable to their own preferences.

The problem of “regime shifting” illustrates the recursive relationship between actors and institutions within regime complexes. While initially even small differences between the approaches of several institutions invite a cherry-picking attitude, this behavior may further widen the discrepancies between the international institutions. Most scholars assume that especially powerful states tend to benefit from such moves, because they can draw on sufficient resources to shift from one forum to the other. In the end, they will succeed in establishing more binding rules if they are in line with their preferences while only accepting weak statements with regard to more disadvantageous aspects. But it is also frequently claimed that weaker countries may exploit the diversity of international institutions to bring their preferences to the agenda. The relative disadvantage in terms of negotiation resources (mainly skilled negotiators) can at least partially be compensated by an alliance with civil society groups. In each case, however, regime shifting is likely to aggravate the inconsistency within a given regime complex.
On the other hand, it is argued that the specific structure of regime complexes also entails several characteristics which may immunize the system against at least the worst forms of inconsistency. Scholars frequently interpret the relative vagueness of internationally agreed rules as a major advantage of nascent regime complexes, because the low entry costs make it easy for states to participate at least on a tentative basis. Once they are involved, it becomes difficult for them to withdraw from their rhetorical commitments. Even powerful states, so the logic goes, try to eschew reputational losses. That is why they avoid the impression of sheer opportunism, which in turn leads to an incremental approximation of preferences within the different regimes in a given complex. These effects can be reinforced by social learning which takes place during the course of ongoing deliberations within and across the different institutional forums.

Although most scholars of regime complexity consider states to be at the driving seat, they assume that the secretariats of the involved international organizations may contribute to an increasingly synergistic approach. Despite bureaucratic rivalries, public officials know that antagonistic and thus dysfunctional policies may seriously damage the reputation of their organizations. That is why they tend towards a differentiation of tasks. If state officials agree with the international bureaucrats’ perspectives, the work sharing eventually becomes codified in the formulation of “saving clauses” and mutual references within the conventions and treaties of the involved organizations. Civil society actors, epistemic communities, and business groups are particularly relevant in these processes, because they act as a “transmission belt” between different forums and thus enhance policy transfers.

During the last years, scholars of regime complexity have collected substantial empirical evidence in various fields which confirms the assumed synergistic tendencies. However, they also acknowledge that the threat of inconsistency still remains a crucial issue, both with regard to the interaction of various international institutions and in respect of selective compliance on the national level. However, it is assumed that the persisting problems mainly result from a lack of leadership and administrative resources to integrate the contributions and commitments to several regimes at the same time.

At this very moment, it becomes evident that the literature on regime complexity has not overcome the functionalist bias which has already been raised against the preceding regime theory. Although scholars acknowledge (and indeed work with) the notion of power imbalances between states, they still seem to assume that the definition of political problems and the configuration of the hereto-related regime complexes can be ob-
served from a quasi-objective perspective. In the long run, they are confident that “co-
operation induces further cooperation”.76

However, these basic assumptions become questionable when structural power differentials are seriously taken into account.77 It is certainly plausible to expect that the global interrelatedness motivates even powerful states to cooperate with weaker countries, e.g. in order to ensure the benefits of societal (corporate) actors abroad.78 In this logic, it moreover appears very probable that regime complexes may give an additional incentive for concessions, provided that powerful states still can anticipate a net benefit from their participation.79 80 Nevertheless, it appears very unlikely that they should be willing to agree on a problem definition which might eventually question their hegemonic position.81 82 Given that weaker negotiating partners (states) are structurally more dependent on collaboration,83 it appears plausible to assume that the configuration of at least the more binding parts of a regime complex are mainly determined by the preferences and implementation patterns of its most powerful member states.

For sure, this does not preclude a rhetorical recognition of the interests of weaker states and societal actors. However, it is easier for the more powerful states to opt for selecting those regimes which are in line with their interests.84 85 Weaker states can hardly impede the cherry-picking behavior of their stronger “partners” because this might endanger the small, but indispensible concessions they can derive from the status quo.86 For similar reasons, international organizations and civil society actors will choose their words carefully when criticizing the behavior of powerful states, because their possible withdrawal is considered to be even less desirable.87

When structural power is taken into account, it seems that the consistency and comprehensiveness of regime complexes crucially depends on factors which have remained rather underestimated for the time being. At least in a mid-term perspective, it can be assumed that the selective adaptation of regime complexes by powerful states will also impact the behavior of weaker states, at least if they economically depend on the transactions which are facilitated by the internationally institutionalized cooperation. Eventually, the collective adaptation to the preferences of the most powerful states can plausibly be expected to alter the problem definition, scope and broader orientation of the regime complex as a whole.

3 Living complexity: Global biodiversity regimes reexamined

To illustrate the relationship between the coherence of regime complexes and structural power, this article draws on the biodiversity regime complex. The institutionalized in-
ter-linkage between environmental, agricultural, and trade-related intellectual property issues had been the starting point of the nascent literature on regime complexity and still enjoys considerable academic attention. This article, however, deviates from the previous literature to the extent that it considers indigenous rights as a constitutive element of this regime complex. Empirical evidence for this article has been obtained by document tracing and interviews with different stakeholders (business and civil society representatives, officials from governments and international organizations, indigenous representatives) in Geneva, Munich, India, and Brazil between 2010 and 2014. All interview partners were ensured confidentiality by not revealing their individual names and positions.

While the first part of this section describes the emergence of the regime complex on biodiversity (3.1), the second part gives an overview on its implementation in industrialized countries and emerging economies with a particular focus on India and Brazil (3.2). The section concludes with a short outlook on the current and probable future development of the biodiversity regime complex on a global level (3.3).

3.1 Complexity in the making
As early as in the colonial era, European natural scientists had become fascinated by the abundance of biodiversity in the newly discovered territories. When joining expeditions and conquests, they entered into contact with the indigenous population in order to learn more on the local flora and fauna. With the help of indigenous knowledge, many scholars (e.g. Alexander von Humboldt) became famous because they “discovered” numerous species in the New World and established scientifically renowned collections in their European motherlands. The Linnaean taxonomy, for example, is substantially based on the insights of indigenous peoples.

By and large, the exchange between natural scientists and indigenous communities was based on the “terra nullius” doctrine which frequently served as a legalistic justification for the entire colonial enterprise. Since neither the biological resources themselves nor the hereto-related knowledge was used on a larger economic scale, scholars felt under no obligation to compensate indigenous groups for their contributions to the scientific progress of the (European) modern ages. Although the “terra nullius” doctrine became increasingly obsolete after decolonization, the subsequently applied “common heritage of mankind” principle was inspired by the same logic. As before independence, genetic resources and indigenous knowledge of the Southern periphery were perceived as a public good free to be accessed without further obligations.
This perspective became challenged for the first time in the 1970s, when developing countries established a link between trade and development in their proposals for a “New International Economic Order”. In 1972, Brazil and India argued at the Stockholm Conference that environmental issues would have to be taken into account for developmental concerns. Their claims, however, remained largely unheard by industrialized countries. It took another ten years until biodiversity issues received a more prominent place on the global agenda. When biotechnological research was spurred by a decision of the U.S. Supreme Court to grant patents on biological material, governments in developing countries insisted on a financial compensation for the use the “green gold” of their hinterlands. Towards the end of the 1980s, they gained support from transnational environmental organizations who hoped for a more sustainable use of natural resources if their conservation became financially rewarded. This idea corresponded well with the major conclusions of the Brundtland Report (1978), in which the U.N. Commission on Environment and Development recommended a holistic approach to reconcile economic, developmental, social, and environmental policies on a global scale.

The broad alliance of governments from developing countries, transnational environmental groups, international organizations, and scientists lead to the negotiation of a new umbrella treaty for global environmental policies. The “donor states” of genetic resources (mainly from the South) and the (industrialized) “user countries” finally agreed on the Convention on Biodiversity (CBD) at the 1992 “Earth Summit” in Rio de Janeiro. While still in rather vague terms, the CBD initiated a new approach to the exchange of biological resources and the hereto-related traditional knowledge. Departing from the “common heritage of mankind” principle, the convention stipulates that biological resources fall under the sovereign rights of the states of origin. Any extraction and subsequent scientific and commercial exploitation becomes subject to “fair and equitable access and benefit sharing” (ABS) among bio-prospecting institutions and state authorities (CBD, Art. 8). While the practical implications of the “propertization” of biodiversity were left open for further concretization, the convention remained even more ambiguous with regard to the rights of the indigenous groups and local communities, although they had strongly participated at the conference. The convention briefly mentions that their customary practices must be taken into account (Art. 10), but it makes it only mandatory to obtain the “prior informed consent” (PIC) of the competent governmental authorities (Art. 15).
Despite these shortcomings, the CBD was hailed as a landmark victory for “liberal environmentalism” both by environmental groups and within academia. Spurred by non-governmental organizations and the “biodiplomacy” of developing countries, the basic principles of the CBD spilled over to the negotiations within adjacent fields. Most notably, the FAO negotiations on seed varieties, which had been stalled throughout the 1980s, gained new momentum. After protracted negotiations, the FAO International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA, 2002) adopted the concepts of state sovereignty on biological material and the protection of farmers’ rights with regard to their cultivations. Its lengthy negotiation phase, however, already indicates that industrialized countries remained very reluctant to subscribe to potentially costly commitments. The U.S., for example, signed both the CBD and the ITPGRFA but has never become a party to these treaties.

The reluctance of industrialized countries reflects the concerns of major transnational companies (TNC) which were afraid of additional costs for their bio-explorations in the Global South. At the same time, however, the corporate sector fought for a stricter protection of its own innovations in developing and emerging countries. Lobbied by a broad range of industries, the U.S. Trade Representative decided to push for the global adoption of rigorous intellectual property standards in order to prevent “piracy” in the developing world. U.S. companies convinced their European counterparts to support this move. Together, the U.S. and the European Union bypassed the World Intellectual Property Organization (WIPO), which was traditionally concerned with the negotiations on patents, copyrights and other protective measures for intangible goods. Instead, the largest trade powers of the 1990s added intellectual property issues to the negotiation package of the GATT Uruguay round, which ultimately led to the foundation of the World Trade Organization (WTO) in 1994.

Pressured by the threat of trade sanctions and attracted by the (never fully realized) promise of a facilitated access to the U.S. and European agricultural and textile markets, developing countries ultimately subscribed to the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). While the agreement significantly limits the possibilities to reproduce the inventions from industrialized countries, it remains remarkably vague with regard to the protection of genetic resources and completely neglects indigenous knowledge. In the late 1990s, when developing countries became increasingly aware of what they had signed, they strongly criticized the unfairness of the WTO agreement. Supported by prominent activists like
Vandana Shiva and vociferous civil society groups, they contrasted their own severe obligations to the allegedly rampant “biopiracy” of TNCs in their own countries. While even benevolent observers remarked that at least the vehemence of developing countries’ protests seemed rather motivated by an attempt to delay the implementation of their TRIPS commitments, the international debate did not remain without consequences, especially after the disaster of the WTO meeting in Seattle. Within the WTO itself, industrialized countries rejected developing countries’ claims to amend TRIPS, but nevertheless instructed a working group to “to examine (...) the relationship between the TRIPS Agreement and the Convention on Biological Diversity, the protection of traditional knowledge and folklore, and other relevant new developments raised by members”. U.S. diplomats obstructed the grant of observer status to the CBD in the WTO, but this would not prevent the discussion from spilling over to other international organizations.

Most notably, the WIPO, which still felt snubbed by its ignorance during the Uruguay Round, perceived the debate on biodiversity as an opportunity to put itself back into play. Under the aegis of its new secretary-general, it initiated several fact-finding missions together with the CBD. Based on this input, the WIPO took several measures. On a technical level, it pushed for a reform of the international patent classification system, which made it possible for patent offices to recognize documented biological resources and traditional knowledge during the examination of patent applications. Politically, the WIPO secretariat successfully proposed the establishment of the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore. The initiatives of the WIPO secretariat coincided with an increased attention of developing and emerging countries to the potential role of this forum. Led by Brazil and Argentina and supported by developmentally oriented NGOs, southern countries formed the “Group of Friends of Development” which vociferously claimed for a recalibration of the international intellectual property architecture to make it more compatible with the needs of the Southern periphery.

The debate on genetic resources and traditional knowledge became a focal point of the WIPO debates during the mid and end 2000s. When industrialized countries effectively blocked any legally binding connection between the international patent law and the prevention of illicit bio-exploration, the “Friends of Development” successfully stalled negotiations on a Substantive Patent Law Treaty (SPLT) to harmonize patent eligibility standards. Within this debate, WIPO officials found themselves between a rock and a hard place. On the one hand, they attempted to regain international weight by the in-
ducement of new intellectual property standards, while on the other hand the conflicts between industrialized and developing countries appeared insurmountable.\textsuperscript{128} To moderate the sharp stance of developing countries, the WIPO developed a two-pronged strategy. It improved its contacts with the WTO and tried to present the joint technical assistance initiatives as a development-friendly measure. At the same time, it increasingly tried to integrate indigenous groups into the debates on genetic resources and traditional knowledge.\textsuperscript{129}

However, indigenous groups quickly recognized that their limited participation within the WIPO discussion rounds rather obscured the lack of any meaningful involvement.\textsuperscript{130} Most importantly, their insistence on the right not to disclose their knowledge was met with reluctance, because it seemed at odds with the economic rationales of the intellectual property regime. That is why they made use of their comparably stronger position within the U.N. human rights system in order to make themselves heard.\textsuperscript{131, 132} Against the fierce resistance not only from industrialized countries\textsuperscript{133}, they achieved that the U.N. Declaration on the Rights of Indigenous Peoples (2007) explicitly confers them “the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions” (Art. 31.1). Although not directly enforceable, the U.N. Declaration, which is backed by similar provisions in the ILO Resolution Nr. 169, significantly strengthened the legitimacy of indigenous positions within the U.N. human rights system.\textsuperscript{134} Since its establishment in 2007, the Expert Mechanism on the Rights of Indigenous Peoples (EMRIP), which is subordinated to the U.N. Office of the High Commissioner for Human Rights (OHCHR), insists on indigenous self-determination with regard to the use of genetic resources and traditional knowledge. Indigenous representatives made use of the EMRIP support during the negotiations on the Nagoya Protocol, which aimed to concretize the repartition of benefits as prescribed by the CBD. Their demands were partially espoused by transnational environmental groups. At least as long as indigenous representatives showed their willingness to share their resources and knowledge with external actors, they could count on the support of powerful NGOs like IUCN and WWF. For obvious reasons, observers from the industry were more critical with regard to indigenous demands. In the end, however, diplomats from developing, emerging, and industrialized countries agreed once again on a compromise formula. While the protocol maintains the sovereignty of donor states over their genetic resources and puts emphasis on the enforcement mechanisms for access and benefit sharing,\textsuperscript{135, 136} it also stipulates that governments “shall (...) take into considera-
tion indigenous and local communities’ customary laws (…) with respect to traditional knowledge associated with genetic resources” (NP, Art. 12).

At least for the moment, the Nagoya Protocol can be perceived as the most important cornerstone of the biodiversity regime complex.\textsuperscript{137} 138 By referring back to the U.N. Declaration on the Rights of Indigenous Peoples (in the preamble) and by emphasizing the relationship with intellectual property rights (Art. 5), it builds a bridge between the CBD / FAO biodiversity regime, the WTO / WIPO intellectual property regime and the EMRIP / OHCHR human rights regime. However, it is important to note that the Nagoya Protocol only provides for a loose coupling between the three different regimes. All signatory states may still chose which parts to adopt, to delay, or to skip. As the following section will show, the flexibility of this approach has a huge impact on how the regime complex is implemented on the domestic level.

3.2 Implementation à la carte
Since the mid 1990s, both the user states and the donor countries of biological resources have adapted their national legislation and regulatory practices to the evolving biodiversity regime complex. The implementation process cannot be understood as a simple “download” of internationally agreed obligations. Rather, it is characterized by various interdependencies, by which the less powerful donor states are under pressure to orient their own policy choices towards the preferences in the economically strong user countries.

Due do their different degree of commitments, one might expect that the U.S. and the EU should have developed diverging approaches. However, although the U.S. has never ratified neither the ITPGRFA nor the CBD, its regulations do not substantially deviate from the obligations which have been accepted by the EU, whose member states are parties to both treaties. Societal pressures may explain the convergence among the most important user states of biological resources. In both trading blocs, public decision-makers are strongly lobbied by the biotechnological industries.\textsuperscript{139} Since biological resources and traditional knowledge play an important role for their research strategies, transnational corporations are eager to make sure that they have access to the biodiversity hotspots of the Global South. Given that some smaller states (Norway, Switzerland) have enacted quite strict regulations for their own industries,\textsuperscript{140} 141 both U.S. and EU-based companies must avoid the impression of “stealing” indigenous resources. To ensure their access to the donor countries’ wealth of resources, TNC want to show that they play a “fair game” by abiding by the internationally recognized standards. At the
same time, however, it is of utmost importance for them to prevent any legislation which might jeopardize their access or which would challenge the commercial exploitation of biological resources and knowledge assets.142

At the bottom line, transnational environmental groups concur with the position of the industry, although for different reasons. Organizations like the International Union for Conservation of Nature (IUCN) usually “draw upon an ecocentric morality they seek to base in science”.143 They are not fundamentally opposed to bio-prospecting, as long as preservationist priorities are taken into account. Quite to the contrary, they expect that the disclosure and documentation of biological resources frequently makes it possible to integrate them into more far-reaching programs in which economic incentives can be used for their conservation. Although transnational environmental groups are financially weaker than the corporate sector, their influence should not be underestimated. During the course of the last decades, environmental groups have found many communication channels to spread the idea of market-based sustainability in the political arenas on both sides of the Atlantic.

The common perspective of transnational business and environmental groups has significantly shaped the implementation of the biodiversity complex in both trading blocs. While subtle differences remain, both the U.S. and the EU have enacted regulations by which the import of illegally obtained species is at least restricted. Moreover, both economic regions promote the application of access and benefit sharing schemes, be it on a contractual basis (U.S.) or by precautionary measures and guidelines (EU). Even more important, both the U.S. and the EU have established a link between the patent system and the commercial exploitation of foreign biodiversity assets. Drawing on the amended WIPO patent classification system (see section 3.1), patent examiners are requested to take documented traditional knowledge into consideration when determining the state of “prior art” with regard to the claimed invention. Both the U.S. Patent and Trademark Office and the European Patent Office have concluded numerous memoranda of understanding in order to facilitate the effective use of the available documentation within the donor countries of biological resources and traditional knowledge.

However, neither the U.S. nor the EU is willing to enact any effective enforcement mechanisms which would ensure that their corporations (or NGOs) refrain from an unsolicited access to the resources and knowledge in the Southern periphery. Even after the ratification of the Nagoya Protocol, the European legislation remains very vague with as regards the establishment of check points to control the entry of illegally obtained resources. What is more important, both the U.S. and the EU reject any amendment of
their respective patent regulations with regard to the mandatory disclosure of origin of genetic resources.\textsuperscript{144} This, however, would be necessary to examine whether bioprospectors have met their obligations under international law and the regulations of the donor countries. The lack of a mandatory disclosure requirement makes it impossible to check whether patent applicants have respected the customary rights of indigenous groups with regard to traditional knowledge, since patent offices have no possibility to assess whether their prior informed consent has been obtained.\textsuperscript{145, 146}

Industrialized countries’ resistance against a meaningful enforcement mechanism of the indigenous rights regime is mainly fuelled by the objections from the side of the life science industry and the patent offices. Both sides shy away from additional administrative burdens. Moreover, they are afraid that a patent becomes challenged on the base of international human rights laws even if the applicant has complied with the regulations of the donor state itself.\textsuperscript{147} Although rarely overtly expressed, environmental NGOs at least implicitly subscribe to this view, because a tougher recognition of human rights standards would endanger their own preservationist goals whose fulfillment depends on the propertization of indigenous resources and knowledge.

All in all, it seems fair to say that the implementation of the biodiversity regime complex both in the U.S. and in Europe is focused on those aspects which are in line with the idea of liberal environmentalism. As long as the mutual exchange of assets is facilitated, the major trading powers are willing to create at least an incentive structure for financial remunerations and technology transfer to the donor countries. Any restriction of access, however, is deemed unacceptable even if this means that the indigenous rights regime remains ignored.\textsuperscript{148}

In the developing world, the changes of the regulatory frameworks of the most important user countries have been attentively observed. Spurred by the widely published “success stories” of commercially used traditional knowledge and supported by transnational civil society groups (e.g. with regard to the commercialization of the Hoodia plant in South Africa; see \textsuperscript{149}, developing countries adapted their own regulations to make them compatible with the demands of the transnational life science industry. Many countries (e.g. Thailand, Kenya, Mexico, and China) established databases to catalogue the biological resources and the traditional knowledge of their indigenous peoples. Technically supported and based on the expertise of the WIPO, they enacted intellectual property regulations to facilitate the economic usability of their biodiversity assets.
With regard to the facilitation of commercialization, India can be regarded as an outstanding example. Towards the end of the 1990s, the Indian government started its deliberations on a biological diversity law which was finally enacted in 2002. While not uncontroversial, the law-making process enjoyed the support of Indian scientists, transnational environmental groups, and the internationally oriented sections of the Indian pharmaceutical industry. Indian regulations stipulate a rigorous monitoring of foreign companies’ bio-prospecting activities by the National Biodiversity Authority (NBA). At least officially, the authority has to make sure that the exploration of the domestic biodiversity is financially rewarded. It is requested to observe patent applications throughout the world in order to prevent transnational corporations from applying for intellectual property protection on the base of illegally obtained resources and knowledge. In the same vein, the NBA also cooperates with the Indian Comptroller General of Patents and Trademarks. Although the whole monitoring process is fraught with enforcement problems and allegedly suffers from massive corruption, foreign companies are well advised to abide by the Indian regulations because their activities are closely monitored (and potentially challenged) by many critical NGOs. At the same time, the Indian government has invested considerable resources in the documentation of biological resources and traditional knowledge in order to compete with the Chinese data collections, which often relate to the same or similar resources. In this regard, the Traditional Knowledge Digital Library (TKDL) is the most prestigious project, but there are far more governmental or publicly sponsored initiatives underway to assess the biological wealth of the subcontinent. In the long run, it is planned by the Council of Scientific and Industrial Research (CSIR) that the different projects eventually all feed into the TKDL. The extensive and meticulous archiving serves both defensive and offensive purposes at the same time. First, the documentation can be used to prevent the U.S. and the European patent office (among others) from granting wrongful patents which make illicit use of Indian resources and knowledge. To this end, the CSIR has made sure that the classification system of the TKDL is fully compatible with WIPO standards and can easily be used by the patent officers in the user countries. Second, the data collections can be used to improve the competitiveness of the domestic industry. As the TKDL is controlled by the CSIR, it is easy to favor domestic industries by granting them preferential access economically promising species and the here-to-related indigenous knowledge.

When collecting and documenting biological resources and traditional knowledge, scientists are virtually under no obligation to observe the consent of the indigenous
peoples (Adivasis), since their approval is legally recommended but not required. Thus, it depends on the individual initiative and the benevolence of its founders whether their customary rules are taken into account. While the early initiatives of the 1990s had at least tentatively tried to develop participatory procedures, the projects of the 2000s until today are predominantly focused on economic and (partially) environmental priorities. While Indian scientists are complaining about the “non-cooperative nature of [the] tribal population” 162, indigenous customary rights are frequently simply ignored. Once the knowledge is acquired, domestic firms occasionally use their contacts to the local security forces in order to evict the population, which makes easier to harvest the economically relevant species in order to merchandise them directly or to sell them to transnational corporations.163 164 Transnational environmental groups are frequently involved with similar tactics. Once they have “discovered” rare species with the help of indigenous knowledge, they perceive the further use of these resources by the local population as a threat for its conservation.165

While India can be perceived as an extreme case with regard to the orientation towards the preferences of biodiversity user countries, many Latin American countries (e.g. Peru, Bolivia, and Ecuador) have tried to implement the biodiversity regime complex in a more comprehensive way, including the indigenous rights dimension. Indigenous representatives were directly involved with drafting the Andean Pact Decision No. 391, which can be perceived as the most comprehensive regional adaptation of the biodiversity regime complex, although its enforcement remains very fragile in most of its signatory states. In practice, the Brazilian regulations are far more effective when it come to the connection of environmental, intellectual property, and indigenous rights issues. That is why they are described in more detail.

All in all, it is rather by accident that Brazil decided for a comprehensive implementation of the biodiversity complex.166 At the beginning of the 2000s, a particularly one-sided joint venture between Novartis and a Brazilian public research institute had provoked a public outcry and led to a widespread “bio-paranoia” 167, which put President Cardoso under pressure to act immediately. Due to time constraints, he strongly drew on a legal proposal crafted by Marina Silva, a left-wing congresswomen and iconic figure of the Brazilian rubber-tapper movement. In a slightly modified version, her proposal became the basis of the Decree no. 2.186/2001. During her time as Minister of Environment (in the early 2000s) Marina Silva herself was in a position to carve out the technical regulations which until today are characteristic for the Brazilian approach.
While the Brazilian regulations generally encourage bio-prospections, they prescribe a strict two-step authorization procedure by which the consent of indigenous groups to access their resources and knowledge as well as their approval of the access and benefit sharing conditions is assessed by governmental authorities. Procedural rules and public oversight mechanisms attempt to make sure that the decision-making within the communities meets the conditions of the internationally foreseen prior informed consent, which also means that customary rules must be respected. When requesting a Brazilian patent, applicants have to provide evidence from the competent authorities that they have met all mandatory requirements. While these regulations do not impede bio-explorations as such, they prevent the economic and (to a certain degree) environmental use of indigenous resources and knowledge against their will.

The effectiveness of these regulations, however, is seriously compromised by the lack of their international recognition. In the absence of a disclosure requirement for patent applications in Europe and the U.S., patent authorities in the user countries cannot check whether indigenous consent has been obtained by the applicants. That’s why it is easy for TNCs to circumvent the Brazilian regulations. Unless they also apply for a patent in Brazil, they are practically free to decide by themselves whether they abide by the rules. While the extent of biopiracy is difficult to estimate, this significantly impacts the political debate. Brazilian industry representatives, scientists, and the legal community constantly argue that domestic firms are seriously disadvantaged against their foreign. Since the late 2000s at the latest, they incessantly lobby for a removal of what they consider to be a bureaucratic impediment to the use of the country’s resources. Only recently, they succeeded in stimulating a legal reform, by which the scientific and economic utilization of indigenous knowledge will be significantly facilitated. At the moment, it still remains controversial how the new regulations will exactly deal with the rights of indigenous peoples. In each case, however, state authorities will have less legal possibilities to prevent the unapproved use of their resources. Under these circumstances, it is very likely that the neighboring states will further weaken the protection of indigenous rights, because they have to compete on the same international market as Brazil.

3.3 Expansion and decomposition

As the previous section has shown, the selective adaptation in the user countries of biological resources and traditional knowledge makes it difficult for the donor countries to implement the biodiversity regime complex in its entirety. In this context, the actual
extent of illegal bio-prospecting from the side of TNCs is practically irrelevant. The mere possibility to exchange biodiversity assets without due respect to indigenous rights either prevents the donor countries from implementing the necessary legislation (India) or destabilizes a comprehensive compliance with the international regime complex (Brazil). In each case, the neglect of the indigenous rights regime has important repercussions for the further development of the international institutions, which will be sketched in this section.

From India, several cases are well known in which the disregard for the customary rights of the indigenous populations has led to serious consequences. Due to the propertytization of their resources, indigenous groups have frequently experienced a critical fragmentation of their culturally embedded social practices. In connection to the above-described dynamics of evictions, this has certainly contributed to the ongoing violent conflicts in the Indian “tribal belt”. When losing their culturally defined identity, indigenous groups are also weakened with regard to their potential political mobilization, because collective action becomes seriously impaired. Apart from the impaired self-organization, the shrinking social cohesiveness among indigenous actors makes it less attractive for civil society actors to take up their demands. In the context of many developing and emerging countries (e.g. China, India), any advocacy for human rights issues is already difficult due to governmental repression. But even in the comparably rather democratic atmosphere of the Latin-American continent, civil society actors increasingly shy away from a closer collaboration with indigenous groups. This holds particularly true in the case of biological resources and traditional knowledge, in which the preferences of indigenous groups are not entirely compatible and sometimes completely at odds with the perceptions of environmentally oriented societal actors.

The subtle tensions between indigenous activists and transnational environmental NGOs also become increasingly visible on the international level. This has important consequences for the political strength of the indigenous rights dimension of the biodiversity regime complex. As already briefly sketched for the emergence of this complex, indigenous groups have a tough act to follow in the international arena. Apart from linguistic barriers, they frequently suffer from the necessary financial means to participate at the various conferences across the globe, and in some cases, they are even prevented from participating by their national governments. Under these conditions, it seems rational for environmental groups not to adopt the globally unpopular position that indigenous groups should decide by themselves whether they want to disclose their knowledge. Apart from the fact that the insistence on self-determination at least potentially
endangers the market-based rationales of liberal environmentalism, an open support for indigenous groups inevitably risks to impair the relationship between transnational environmental groups and governmental actors, whose support is eventually needed to induce any meaningful policy changes.

Recent developments within the biodiversity regime complex illustrate that these dynamics are already at play. Within the WIPO, the support for indigenous participation and the secretariat’s attention to indigenous positions has significantly decreased during the last years. The voluntary fund, out of which their travel costs have been financed for a long time, has run dry in 2014, and further donors are out of sight. The remaining civil society actors, however, are neither able nor willing to represent indigenous positions during the meetings on biodiversity and intellectual property. Comparable developments can be observed in other international forums such as the FAO. Ironically enough, the Nagoya Protocol which initially attempted to strengthen the indigenous rights regime has also increased the attention of both industrialized and developing countries to propertize hitherto disregarded resource, e.g. in the aquatic sector. Maybe even more important, the biodiversity regime complex is extending towards further adjacent fields. Both in the World Bank and under the U.N. Framework Convention for Climate Change (UNFCCC), for example the relationship between climate protection, the sustainable use of biological resources, and traditional knowledge is increasingly taken into account.

While still tentatively, it seems very plausible that the climate protection regime will sooner or later be integrated into the biodiversity regime complex (or the other way round). Indigenous voices, however, remain largely unheard during this process. The majority of environmental groups rejects an explicit recognition of indigenous rights and thus lobbies for an increased cooperation with industry players in order to further advance REDD+ (Reducing Emissions from Deforestation and Forest Degradation) and Clean Development Mechanism (CDM) programs. From their perspective, this is a plausible move because corporate actors increasingly replace the (financial) role of governments in the implementation of the regime complex. At the same time, the secretariats of the international organizations tend to disinvite indigenous representatives which are supposed to disagree with the economic utilization of their resources. During working group sessions, critical observations are frequently ignored, even if they are supported by governmental representatives from developing countries. Under these conditions, the requirement of “prior informed consent” becomes increasingly watered
down and is replaced by the more or less rhetorical phrase of “indigenous consulta-

tion”.185 186

While it is certainly impossible to predict the future, it seems that the biodiversity re-
gime complex is currently subject to two secular trends. On the one hand, its subject
matter is significantly broadened by its expansion towards the climate protection re-
gime. On the other hand, however, it tends to push off the indigenous and human rights
regime. At least from the perspective of the negatively affected societal groups, this
shift might be experienced as a move from liberal environmentalism towards environ-
mental authoritarianism.

4 Regime complexity revisited

A closer look at the inner workings of the biodiversity regime complex makes it possi-
ble to reassess the literature on regimes, complexity, and structural power. All in all, it
seems that the dynamics which are described in the liberal literature can be confirmed,
while the caveats of the more critical literature are equally valid. This section connects
the empirical findings to the broader literature on regime complexes and suggests a
more nuanced understanding of structural power.

The genesis of the biodiversity regime complex clearly confirms that the shared percep-
tion of border-crossing problems motivates both public and private actors to look out for
internationally institutionalized “principles, norms, rules and decision-making proce-
dures around which actor expectations converge in a given issue-area”.187 Irrespective
of their individual preferences, both state- and non-state actors may come to the conclu-
sion that the transnational transactions demand for a comprehensive regime. Over time,
they realize that the regulation of these transactions is intrinsically related to other polit-
cical questions 188, e.g. environmental issues and human (indigenous) rights considera-
tions. While making use of the pre-existing institutional structure on the international
level, diplomats and decision-makers connect different forums and organizations and
thereby create a dense network of institutionalized cooperation which covers a broad
spectrum of issues in a multi-layered system, ranging from the global to the local lev-
el.189 Within an emerging regime complex, even the most powerful states shy away
from sheer defection. While all states strategically try to empower those regimes which
best serve their interests, the common aspiration of cooperation gains as well as indi-
vidual reputational considerations indeed seem to mitigate at least the worst forms of
free-riding.190
As described in the literature, these dynamics are not only state-driven. Private actors such as scientists, transnational corporations and civil society groups play a crucial role throughout the entire life cycle of a regime complex. They significantly influence the agenda-setting by bringing forward their own demands. During the course of policy formulation, they transfer both paradigmatic and instrumental knowledge from one institution to the other. Finally, societal actors’ engagement seems prerequisite for the implementation of the agreed regulations, most notably in the context of developing and emerging countries. As many scholars have already observed, the influence of societal actors is significantly enhanced if they enjoy the support of international organizations. International secretariats, for their part, make use of a given problem structure to bring themselves into play. While inter-organizational rivalries as well as institutionally diverging approaches may initially hamper effective collaboration, international bureaucrats at least in the biodiversity regime complex show an impressive degree of subtleness and collegiality when demarcating their respective “spheres of authority” during the course of their ongoing interactions.

Liberal scholars seem to be right when assuming that the evolution of problem perceptions drives the dynamics of regime complexity. At the same time, however, critical scholars have a point when claiming that problems are always formed in the eyes of the beholder. The multiple interpretations of “piracy” nicely illustrate how various actors may understand the same issue in very different ways. This is precisely the moment when structural power imbalances become relevant. More powerful states are strongly advantaged, especially if they hold a monopsonistic position. Under these circumstances, their interpretation and implementation of internationally agreed commitments is likely to prevail on a global scale, because economically more dependent states are encouraged to adapt themselves to the problem definition which is practically applied on the demand side. If they fail to do so, they risk high opportunity costs, because competing states will immediately step in to fill the demand gap.

Any deviant domestic implementation remains intrinsically fragile, even if it makes more comprehensive use of the internationally agreed rules. With this regard, no direct pressure is needed from the side of the more powerful states, because the mere threat of being disadvantaged against foreign competitors mobilizes domestic societal actors to challenge their own government. Due to their structural position within the global political economy, powerful states can thereby not only afford a selective implementation of internationally agreed obligations but also shape the compliance patterns in other regions of the world. The selectively strengthened linkage of certain elements within a
given regime complex can reinforce these tendencies, because it may make it even more attractive to adapt to the preferences of the more powerful states. Arguably, the usability of the international patent classification system for the documentation of traditional knowledge has reinvigorated the pressure on the human rights dimension of the biodiversity regime complex, because it facilitates the economic utilization of indigenous resources. While more research is certainly needed, it seems that an incomplete implementation of regime complexes by the most powerful states may thus induce a race to the bottom which might not have taken place if the regime complex would not have existed at all.

In each case, the findings on the biodiversity regime complex make it possible to further develop the concept of structural power. First of all, the empirical example confirms that it is not necessary for powerful states to use coercive means in order to impose their preferences on other states. While still debatable for the 1990s, it nowadays appears implausible to assume that emerging economies like India and Brazil could actually be forced not to implement the indigenous rights regime. However, the persistent capacities of the U.S. and the EU to “shape the framework” is sufficient to motivate societal actors in both countries to put pressure on their domestic governments to adapt to the regulatory preferences of the user countries (India) or to destabilize alternative approaches (Brazil). It seems that the multi-polar political economy of the 21st century necessitates a revised understanding of structural power, by which the indirect effects of powerful states’ behavior on societal actors in the weaker regions of the world may become more important than direct interstate interactions.

Second, the biodiversity regime complex illustrates that structural power is not necessarily confined to the interplay (in a Marxist perspective: identity) between state and corporate interests. Most notably, civil society groups and scientists can become part of a hegemonic structure which eventually determines the trajectories of regime complexes. Transnational environmental groups are usually dominated by their members within the industrialized world, which makes them adopt the viewpoints of well-meaning middle-class citizens in affluent societies. Scientists and academics, which still enjoy the privilege to develop alternative visions, are less likely to do so if the consideration of marginalized groups’ needs collides with their own interests and values. While the biodiversity regime complex may be an extreme example for the bounded impartiality of academic scrutiny, it cannot be ruled out that similar limitations also occur in other cases. This holds particularly true when research interests interfere with financial considerations.
Third, and related to the two previous points, the biodiversity regime complex shows that structural power also entails an ideational dimension. If domestically already marginalized actors eventually lose their influence and recognition on the international level, their perspectives become ever less likely to be taken into account. Due to the increasing absence of the “forgotten partners” \(198\), it seems conceivable that the prevailing international discourses transmute into more or less single-minded ideologies. By this, structural power can become so deeply institutionalized that any alternatives completely fall into oblivion. As the empirical example of this article has indicated, this may lead to a paradoxical situation where regime complexes expand towards new subject matters but shrink with regard to their regulatory substance. In the end, such a development may pass completely unnoticed, because observers are not anymore aware of possible alternative perspectives.

5 Concluding remarks

The previous reflections have shown that the life-cycles of regime complexes cannot be explained by merely functionalist rationales. Commonly perceived problems may mark the starting point of international institutionalization; and the recognition of intrinsically interconnected policy issues may motivate its further development. However, the specific character of regime complexes both with regard to their priorities and lacunae ultimately depends on the interests and values of various state- and non-state actors. With that said, power constellations come into play. International institutions may moderate the worst effects of muscle-flexing and opportunistic behavior. However, they cannot compensate for structural power imbalances. The genesis and evolution of regime complexes is ultimately shaped by the domestic preferences of those states which are powerful enough to define the framework and thereby delineate the range of politically feasible solutions. Rhetorical commitments notwithstanding, their practical choices both during the negotiation and implementation of internationally binding standards ultimately determine the globally available policy space.

With that having said, it seems that scholars of regime complexity should consider broadening their research agenda. A mere focus on the status quo of existing regime complexes tends to obscure the underlying dynamics of their formation. That is why “non-decisions” \(199\), “non-regimes” \(200\), and the general lack of global institutionalization would deserve far more attention. With this regard, any meaningful analysis of regime complexes must leave the comfort zone of (relatively easily) observable international negotiations. Instead, the local level of should be taken more seriously into ac-
count, especially in the Global South. Only if the internationally neglected demands for international cooperation as well as the unheard reactions to the already existing arrangements are empirically recognized, we can truly assess the driving forces and stumbling blocks of global institution-building. In other words, to fully comprehend complexity, we must also understand its absence.

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