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A bright side of natural resource governance in drylands

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Introduction

Community-based governance of natural resources in the drylands has often been studied from the perspective of failure. Using simplistic neo-Malthusian world-views supported by the Hardinian school of thought, it was argued that due to demographic growth and backwardness of dryland populations, the lands' carrying capacity is unavoidably reached at some point, leading to resource degradation, scarcity, and conflict, especially when resources are held in common (Boyd et al. 2018; Boles et al. 2019; see also Herskovits 1926; Hardin 1968). Even more, with current narratives around ongoing land degradation in the context of climate change, the scientific understanding of the governance of natural resources in the drylands is often framed through somewhat dystopian visions of the socio-ecological future (Swart et al. 2004; Reed and Stringer 2015 (UNCCD); IPBES; IPCC).¹ In contrast, large-scale projects such as the Great Green Wall² exemplify a counternarrative presenting an extremely optimistic but often simplistic vision of how to address degradation (following the negative colonial paradigm of the UNCCD, see also Davis 2016), climate change, conflict, and more (see also Chapter 7, this volume). Such visions, and related practices, are often insufficiently rooted in a proper understanding of the needs of heterogeneous local resource users and how to engage them in order to 'succeed'. In other words, initiatives such as the Great Green Wall are promising but probably slightly naïve and likely to fail if not building on participatory institution-building processes among multiple interest groups, as we show in this chapter.

More generally, such simplified paradigms have an enormous influence on donor- and government-driven development and policy interventions for the drylands, impacting people and nature, as became clear from other chapters in this volume. While it is important to critically understand the effects of such top-down development and policy interventions, it is equally important to show how people locally create, resist, craft, and negotiate towards outcomes that are beneficial to the governance of common-pool resources. Existing scientific insights, challenging hegemonic discourses of the drylands, have already shown how cooperative local communities can create rules and regulations that govern common-pool resources in a meaningful way (Berkes 1989; Ostrom 1990; Tiffen

and Mortimore 1992; Fairhead and Leach 1996). More recently, a growing body of literature has started to explore stories of ‘success’ in relation to community-based governance of natural resources (e.g. Mortimore 2005; Galvin et al. 2018; Haller and Merten 2018; Sirimorok and Rusdianto 2020). Beyond questioning the prevailing narrative of degradation and conflict, this literature also proposes ways forward through identifying means to catalyze change towards more positive outcomes and showing that alternative futures are possible (Bennett et al. 2016). The positive elements of such examples can broaden the creative imagination of participants to move towards a ‘future beyond dystopia’ and thus be transformative (Slaughter 1998; Bennett et al. 2016; Pereira et al. 2018a, b; Scoones et al. 2020).

In this chapter, we contribute to the discussion on alternative perspectives to natural resources management in the drylands. We do so by presenting four cases of institutional (re)configuration of common-pool resource governance in dryland contexts that are viewed by the current resource users as positive, in the sense that these users agree with either the current set of institutions or agree with the planned course of action in order to reach a desired set of institutions. Using these cases, we investigate both the process of change as well as the outcomes, in order to understand under which conditions the different institutional (re)configurations took place (Galvin et al. 2018). We then unpack these conditions according to the six elements of the constitutionality approach, which focuses on the analysis of institution-building processes in common-pool resource management by local actors (Haller et al. 2016a, 2018). This approach to study bottom-up institution building through local agency and local perceptions was developed as a critique on top-down approaches to natural resource governance. Haller et al. (2016a) compared four case studies from Africa, Latin America, and Asia, where, despite high power asymmetries among different local interest groups, a process to create new institutions for resource governance was initiated. During the different processes, all interest groups were involved and got a feeling of ownership over the institution-building process, which resulted in perceiving the institutions as their own. From each case described in Haller et al. (2016a), six elements stood out to create such a process: (1) Emic problem perception, (2) Participatory processes addressing power asymmetries, (3) Pre-existing institutions, (4) External catalyzing agents, (5) Recognition of local knowledge/innovations, and (6) Higher-level authority recognition. In each case, there were clear power asymmetries between the participants, but these were balanced out through basic rules that provided a neutral platform for discussions. The different actors gained the feeling that they were part of a collective crafting process, which also created an understanding of a fair distribution of rightful shares (see also Ferguson 2015). Further cases using this approach confirmed the importance of these elements (see Haller et al. 2018) but also highlighted that such an emically shaped bottom-up process depends on the bargaining power of local actors and the economic context related, for example, to the rise of the value of a resource or a resource area.

While presenting the cases in this chapter, we maintain that the explicit factors and elements contributing to such positive pathways are highly context-specific and might differ radically in terms of process and outcome, but we nevertheless

aim to identify similar underlying elements of (fragments of) the positive perspectives on institutional change and resource governance in the drylands. The cases include elements of local reactions, visions, and enactments as ways to reach more locally desired presents and futures. The cases range from situations where people were forced by the State to propose new institutions, to contexts where the State shows failure and leaves room for local collective action.

Spain: crafting own rules for sustainable groundwater management

The Eastern La Mancha aquifer is the largest aquifer in the Iberian Peninsula and one of the largest aquifers in southern Europe. The aquifer is located in the Upper Júcar River Basin. It extends over 7,200 sq km, covering the easternmost part of La Mancha region, a relatively flat area in the southern highlands of central Spain (CHJ 2021). The area has a Mediterranean climate, characterized by hot arid summers and seasonally restricted precipitation. Rainfall is low, around 350 mm/year (Recio et al. 2005).

Irrigated agriculture is the most important water use sector, accounting for about 90% of the annual water withdrawals. It is also a major source of income in this area, still predominantly rural, where the working population engaged in farming is 30% (Esteban and Albiac 2012). The aquifer supports irrigated agriculture, with a large land area, close to 120,000 ha, which yields around 350 million Euros of annual revenue (JCRMO 2018). Agricultural production is based on the cultivation of cereals (wheat, barley, corn), which accounts for almost 50% of the cultivated area, permanent crops (vineyards and almonds) (30%), and highly profitable horticultural crops (garlic, onion, lettuce, broccoli) (20%) (JCRMO 2018). Crops are watered with modern irrigation techniques (mainly sprinkler and centre pivot systems) on 80% of the irrigated land (De Santa Olalla et al. 2007).

The socioeconomic development of the region over the last 40 years was a result of the increasing use of groundwater for irrigation (Recio et al. 2005). Intensive development of irrigated agriculture started in the late 1970s and led to significant exploitation of the aquifer (Reig et al. 2018). Aquifer exploitation grew from 140 hm³ in 1982 to 377 hm³ in 1996 and to 433 mm³ in 2000, largely exceeding the estimated renewable resources (320 hm³ per year of water allocated to the area by the Júcar River Basin Plan) (Custodio et al. 2019). This resulted in a continuous drop of the groundwater level and a reduction of discharge to the Júcar River. Considerable damage was inflicted on the aquatic ecosystems of the Upper Júcar and downstream users in the Lower Júcar because of the reduced river flows (Custodio et al. 2019).

In view of this situation, the central government of Madrid threatened to declare the aquifer as overexploited and establish a far more restrictive system of water entitlements (as in the neighbouring Western La Mancha aquifer). This, along with other factors such as the pressure from downstream users to maintain river flows and the increase in pumping costs because of the fall of the aquifer water table, motivated the cooperation efforts by farmers to engage in active

negotiation (Esteban and Albiac 2012; Domínguez et al. 2017; Custodio et al. 2019). In addition, the relatively small number of farmers involved (around 1,500), the creation of social capital, successful leadership, and the high self-esteem and self-determination of farmers in the aquifer fostered collective action (López-Gunn 2012).

In 1995, farmers organized themselves into the Central Irrigation Board of La Mancha Oriental (JCRMO, a Spanish acronym), to collectively manage local water bodies and achieve a sustainable use of their resources (JCRMO 2018). The farmers were involved in the institution-building process, with an active role in enforcement and control, resulting in active and conscious cooperation in the management of the aquifer. Joining efforts with the state administration, the regional government, the local university (Universidad de Castilla-La Mancha), and local research institutes, the JCRMO was able to manage, control, and coordinate irrigation uses.

Irrigators agreed to reduce water extractions and established advanced technological mechanisms to control and monitor groundwater use (Custodio et al. 2019). The volume of water that can be used for irrigation in the aquifer is variable every year and is subjected to an 'Exploitation Plan'. The Júcar River Basin Authority establishes the maximum quantity of water to pump according to the progression of the groundwater levels. Then, the JCRMO distributes this quantity of water among its members and monitors the use of the allocated resources (Domínguez et al. 2017). The JCRMO uses multi-temporal satellite imagery and field data to map land uses and estimate irrigation water needs of cultivated crops. This information is then used by the JCRMO to assign water exploitation rights to farmers, according to their cropping pattern and farm size, and to monitor water consumption and the enforcement of the Exploitation Plan. Moreover, the JCRMO conducts regular field inspections and surveillance of the water quality and quantity, and sanctions are applied when water usage exceeds given water rights (JCRMO 2018).

This water management system, developed in partnership with the other actors, has been key to the decrease of groundwater extraction in the Eastern La Mancha aquifer. In the 2010s, extractions stabilized at around 300 hm³ per year and the aquifer levels have returned to their sustainable levels (Ortega-Reig et al. 2018). The average overdraft (100 hm³) in previous decades has been eliminated. As a result, farmers have recovered their historical water rights on 95% of the territory, and they have regained confidence in the distribution system, which discourages new, non-authorized cultivation (JCRMO 2018).

The Spanish case study supports the idea that adequate groundwater management can be achieved by the cooperation of local actors through active engagement with processes of institution building as well as control and enforcement, as ways to generate a feeling of ownership of the institution to make it legitimate (Saleth and Dinar 2004; Esteban and Albiac 2012; López-Gunn 2012). The Eastern La Mancha aquifer is an exceptional example of successful collective action for sustainable management of a common-pool resource. It proves that achieving cooperation and engagement of farmers is a realistic and feasible alternative that

could be valid for promoting sustainable management of other large aquifer systems worldwide.

Mali: challenging the discourse of deforestation with local integrative conventions

Benjamin (2008) presents a case from the Tarabé River area in Mali, describing the example of a village called Senoré, which is located on the western bank of the Tarabé River and is part of a large commune called Dioptodji (encompassing 61 villages). Different ethnic groups living in Senoré (Bambara, Rimaybé, and Bella) had developed institutions in precolonial times to govern flooded pasture areas and an adjacent gallery forest as a complex 'cultural landscape' (Haller 2019), which was intensively secured and sanctioned. Farmers and pastoralists from neighbouring villages were allowed to use the forest for collecting gum and leaves, and people from Senoré were allowed to reciprocally use other pastures in times of need; fishing communities (Rimaybé and Bella) of the village also fished collectively with fishermen from other villages (Benjamin 2008: 2266).

However, challenges to this system of reciprocity grew after colonial times, because local Bambara as well as external timber businessmen became interested in cutting *doum* trees (palm) in the forest close to the river. Although people from Senoré, mainly from the Bambara ethnic group, could be stopped from cutting the trees by existing institutions (which they respected), traders from outside of the area claimed that they had the right to the forest based on their national identity as citizens and that they had obtained permits from the government to gain access to the forest. Frustrated with this situation, the inhabitants from Senoré stopped protecting the forest, which attracted the American NGO New East Foundation (NEF) to launch an initiative for a local convention (called Waldé Nema Tarabé) to protect the forest. This was made possible because of the decentralization process allowed by the Malian government at that time. Besides the role of this NGO in trying to bring the different ethnic groups into a negotiation process, reciprocal rights already present in local common-property institutions played an important role in this process of constitutionality. NEF initiated meetings in several villages to discuss the way the forest should be managed according to local people, while being consistent with formal legal frameworks. It became obvious from this consultation process that forest protection goes hand in hand with the management of other resources. As only a small number of villages in the commune had *doum* forests, and other villages that did not have *doum* were still dependent on its products, institutional arrangements based on an exchange of other resources, such as access to fisheries and pastures in return for *doum* products, had already been installed in precolonial times. Therefore, it was clear from a local perspective that forest protection would entail taking into account all the resources in the area: fisheries, gallery forests, wetland pastures, and agricultural land. Based on

this insight, an association was formed to discuss the joint management of all these resources. In addition, a convention for the management of all common-pool resources in this area was prepared. NEF facilitated the meetings of this association, as well as meetings with local government and technical agents. On the basis of a rather slow process, NEF helped the involved communities in the area to reach a consensus for the governance of the cultural landscape ecosystem and sign a written agreement. This agreement was based on the previously developed institution of reciprocity among the villagers and different ethnic groups. The agreement, overseen by the Forest Service, included the negotiated and locally accepted five-year restriction of parts of the *doum* forests and the right of the water shaman to close and open the fisheries, as well as indicating important breeding grounds for fish and banning certain seine net techniques. Flooded pastures were zoned for local cattle and managed by village chiefs, who were held accountable during public meetings after prayers in front of the mosques. This convention worked because the diverse local stakeholders were involved in the negotiation process and could provide inputs to the convention. Problems were openly debated, including those concerning the legitimacy of rule-making—for example, with regard to the first-come rule (i.e. ownership rules are justified with the discourse of being the first ones in an area). The NGO was perceived by the different interest groups, who wanted to have a new institutional setting, as a neutral actor that facilitated the discussion and the decision-making process. Despite having little if any real influence on the content of the institutional design, this NGO provided an important common good: a secure framework for negotiations and, after a halt to negotiations due to conflicts, helping to bring the people back to the negotiation table.

Several aspects underlie the perceived success and fairness of the institution-building process in this case. First, the process of negotiating this convention was successful in part due to the presence of a mediating body, the NGO NEF, who also had good contact with the state forestry service, which facilitated bringing all local actors to the table and sent a signal out to external actors (such as traders) that they needed to accept local rules. Also crucial to the process was the way in which a larger group of villages, of which Senoré was part, joined forces and increased their bargaining power vis-à-vis State authorities, which were then forced to participate and listen to local voices. It is also clear that the existence of pre-existing institutions based upon reciprocity was helpful in this process. This was a point of reference on how to deal with complex resource governance and also included ways of negotiating these institutions. In addition, it seems that despite the hierarchical nature of village societies in Mali, the accountability and transparent nature of the negotiations helped in the institution-building process by creating a sense of ownership over the process. However, it has yet to be seen whether and how the convention will remain as the basis for further discussions, and how further interactions with more powerful groups and with the State will unfold. In addition, the case study is silent with regard to gender issues and socio-political differences among villages.

Israel: halting degradation of forestry by shaping UNESCO rules in Mount Carmel

Eid and Haller (2018) describe how, in present-day Israel, the Druz ethnic and Islamic religious groups in the Mount Carmel dryland area were maintaining and using the commons of this area for silvo-pastoral use for centuries. In fact, the area has developed into a cultural landscape because of olive tree farming and forest-pasture management based on local common-property institutions that ruled the sustainable use of these common-pool resources. A central feature was that undergrowth was reduced in this way, and fire, as an important threat in dryland ecosystems, was therefore reduced. However, with the building of the Israeli State these communal property rights were not acknowledged and the State declared the area to be state property. The area was later privatized and came to be owned by Israeli investors for fast-growing eucalyptus plantations, so the silvo-pastures in the forests could no longer be used. This process of commons grabbing was combined with the forced inclusion of Druz men into the Israeli army, using the argument that they should not complain since they were being given Israeli citizenship. Thus, the state argued that the Druz had to surrender these territories as a way to receive recognition as Israeli citizens. External control of the area was further entrenched in the 1990s as Mount Carmel became a protected area under the direction of the UNESCO Biosphere programme under the control of the State. Local people were not consulted and were overridden by this decision, which again reduced the use of the former commons drastically with new conservation measures, akin to a 'green grabbing' intervention (see Fairhead et al. 2012; Gargallo et al. in this volume). The lack of local ecological knowledge as well as the undermining of the common property of the forest area led to the poor maintenance of the forest, as it was no longer used as a silvo-pasture. In consequence, too many dry leaves and branches were left lying on the forest floor, increasing the danger of a large fire and hence an environmental crisis. In addition, some areas covered with olive trees formally belonging to the Druz were given to Israeli farmers who planted eucalyptus trees, which burn much faster than olive trees. On 2 December 2010, a huge wildfire devastated a large part of the Mount Carmel forests. Apart from the non-removal of the undergrowth in the forest because it was no longer being used as silvo-pasture, the extension of flammable eucalyptus plantations exacerbated these fires.

The failures of the Israeli state, represented by its forest department, to maintain and protect the forest became obvious to different Druz groups and boosted further bargaining power for local successful actions later on. Strategic actions followed when different groups began discussing how to retrieve governance rights using the framework of the UNESCO Biosphere Reserve. The Druz pointed to the devastating outcome of the commons-grabbing process by the State as well as to the State's ignorance of local ecological knowledge. The Druz decided to claim vis-à-vis the State and UNESCO that they are indigenous people, that they have the knowledge to manage the land, and that the UNESCO Biosphere arrangement includes participatory rules stipulating that local inhabitants of an area have to be involved in the design and management of the reserve. This formal institutional option for

local participation in the UNESCO framework, which was previously ignored by the Israeli State, gave the Druz the option to regain control over the Mount Carmel area following the large fire incident. Thus, the failure of the State's forestry department increased the Druz's bargaining power, which the Druz used in a way by jumping scale regarding forestry governance by setting up and negotiating new institutions for the governance of the Mount Carmel area with the State, referring to the UNESCO rules. This meant that the State had to recognize them as legitimate actors managing the Mount Carmel area. They did so by combining old rules to access pasture, but also by replanting olive trees in some of the areas given back to them. In this way, they regained some of their former commons. In addition, the old use rules and new regulations based on the UNESCO scheme were widely discussed and adopted. Thus, in a situation of lower bargaining power, the State could still be challenged, as it was failing to address critical local problems and the Druz are once again able to manage the forest and olive areas.

Kyrgyzstan: halting mining, pressuring the government, and defending pastures

On 5 August 2019, 500 local herders and villagers stormed the Solton Sary mine compound in Naryn Province, Kyrgyzstan (Putz 2019; Moldaliev and Heathershaw 2020). Rocks were thrown, fences breached, vehicles overturned, and 28 Chinese mine workers were hospitalized (Radio Free Europe 2019; SCMP 2019). Captured by smartphone, the video was viewed 95,000 times on YouTube (2019). The army was called in, remaining workers evacuated, the mine closed, and Zhong Ji, the Chinese mining company, demanded reparations from the Kyrgyz government. A series of unresolved disputes with the mining company over land degradation, pasture fragmentation, fencing, and water pollution led to violent protest that sent a message about perceived injustice, exploitation, and degradation at the mine. The residents, herders, and previously artisanal miners were blocked from pastures and land access. This affected community ability to practice livelihoods and increased Sinophobia, with the government viewed as supporting the Chinese over its own citizens. The incident, with a few arrests and a notable media attention, successfully accomplished the local objective of stopping the mine. As if to confirm this, the 'Ambassador Extraordinary and Plenipotentiary of the People's Republic of China to Kyrgyzstan' Du Dewen stated that the incident 'brought huge economic and physical losses to the company', and then demanded that the government 'conduct a thorough investigation of the incident, strictly punish the perpetrators and fairly and appropriately resolve the situation' (24KG 2019: 1). Although the rhetoric was strong, as of 2021 the mine remained closed and protesters were not detained. This single episode showcases the conflict and contestation of Chinese mining infrastructure in Central Asia.

In fact, the violence at Solton Sary mine became a catalyst event for further protest in the province capital. On 17 February 2020, the agreement for a \$275 million Chinese logistics centre in Naryn city was terminated owing to repeated

protests (Shailoobek 2021; Putz 2020). Although agreed with Chinese President Xi Jinping in Bishkek at the June 2019 Shanghai Cooperation Organisation meeting, the Kyrgyz–Chinese Ata-Bashi Free Trade Zone Joint Venture stated that the investment contract had been cancelled because ‘it is not possible to work on a long-term large project under the circumstances’ (Putz 2020: 2).

Here, we see the power of mining protest to morph and mutate into serious public disruption of state-to-state cooperation. Years of efforts at local bargaining or dispute resolution had failed in Solton Sary. Residents saw their livelihoods and environments threatened, while the State was backing both the Chinese mine and logistics centre. Threats and acts of violence became the community’s way to shut down Chinese operations and expose the government’s inability to resolve or control conflict.

Mine closure and termination of foreign investment reflect the importance of scale: if public protest and anger are great enough, the government is forced to acquiesce to citizen demands. Such a test occurred during demonstrations over politics and COVID-19 in the capital in March 2020; these protests were quashed by hundreds of policemen (Reuters 2020). Here, in the locus of government, representatives of the State were able to maintain control at the time. In Naryn, remote from the centres of power, the State had been unable to control local protests or enforce its writ. Rather than protests and resulting processes leading to institutional reconfiguration, a fraudulent election took place in October 2020, which then led to massive street protests as the national government collapsed.

In Naryn, the community viewed the mine closure as a success: mining stopped and the Chinese left. The action was reactive; there was little hope or expectation that a different company or the weak State would improve local conditions. Rather than a vision for the future, the residents returned to the familiar status quo. At least then decisions would be taken locally in customary family-driven processes. As of writing (2022), the mine remains closed.

Catalysing agents, institutional memory, and self-determination

While the cases and their related understanding of being a success are highly context-dependent, each case provided in this chapter has interpreted successful processes of institution building as (re)gaining control over the governance of resources, providing the ability to craft local rules—in line with the six elements of the constitutionality approach—and as such to stop or invert negative social-environmental impacts. In Spain, the weak enforcement of existing top-down rules resulted in aquifer exploitation and damage to the associated aquatic ecosystems. Local farmers, committed to saving their livelihoods, looked for cooperative solutions and organized themselves in an irrigation board to collectively manage water bodies and achieve sustainable use. Supported by external actors (the State administration, the regional government, the local university, and local research institutes), irrigation and water usage are currently controlled by the irrigation board. Using advanced technological mechanisms, the board distributes available water among its members and monitors the suitable use of the allocated resources,

with active support in the process of management and control by the farmers. In Mali, reciprocal rights of access among farming, pastoral, and fishery communities had come to a halt when the resources were opened up by the government for external use. Here, with the support of an NGO, an association was formed to discuss the joint management of fisheries, gallery forests, wetland pastures, and agricultural land to protect the forest. A convention was prepared and a written agreement was signed, based on the institution of reciprocity among the villagers and different ethnic groups to manage *doum* forests, water and fisheries rights, and flooded pastures. In Israel, the failure of the State to comply with UNESCO Biosphere rules of conservation provided space for the Druz to discursively challenge the State and regain control over a privatized space, which was previously part of the commons, through a formal regulation that stipulated the Druz should officially be part of the design and management of the area. They did so by combining old rules to access pasture, but also by replanting olive trees in the area and thereby regaining the commons. In Kyrgyzstan, the local community reasserted control over pasture and water. In rural Naryn, the cessation of large-scale mining created space for customary methods of control based on family and clan ties, with local government acquiescing to community demands.

Table 13.1 summarizes the institution-building processes of each case, using the six elements of the constitutionality approach: (1) Emic problem perception, (2) Participatory processes addressing power asymmetries, (3) Pre-existing institutions, (4) External catalyzing agents, (5) Recognition of local knowledge/innovations, and (6) Higher-level authority recognition (see also Haller et al. 2016a). These elements together pave the way for the (re)configuration of (fragments of) institutional change and resource governance in the drylands.

From each of these cases, the role of an external catalyzing agent either as trigger for change or as mediating or coordinating agent comes strongly to the fore. For example, in Mali, the NGO acted clearly as a mediator, while in Spain the Water User Association became *de facto* an internal mediator and broker for conflict resolution. It is not always necessary to have an active mediator. This is shown in the case with Israel, where UNESCO acts as a catalyzing agent by providing an institutional framework to support local institution building. Such catalyzing actors play an important role in the construction of a 'neutral' field for discussion.

In addition, in most cases, the State was key in triggering the processes of regaining control, followed by legal recognition from the same State. In the Spanish case study, the State threatened, then supported the development of new participatory water institutions. In Mali, the government provided permits to open up the locally managed region for access and use of resources by external parties, which made the NGO step in and assist in the creation of the convention, which in turn was later recognized by the State. In Israel, somewhat similar to the case in Mali, the State changed the property relations of the region, leading to privatization of previously common-used land and resources, with destructive results. This, however, opened up space to challenge the State, which was acting against its own (UNESCO Biosphere) rules. This opening up and use of negotiation space

Table 13.1 Institution-building processes per case using the six elements of the constitutionality approach

	<i>Emic problem perception</i>	<i>Participatory process</i>	<i>Pre-existing institution</i>	<i>External catalyzing agent</i>	<i>Recognition of local knowledge</i>	<i>Higher-level authority recognition</i>
Spain	Restrictions on water entitlements; Need to gain control over water distribution	Collective process of crafting rules	Water entitlements poorly managed and controlled by the State	State; regional government; university; local research institutes; Júcar River Basin Authority	Water users (farmers, municipalities, and industrialists) considered knowledgeable about proper water management	State
Mali	Loss of access to and control over locally used resources	Collective process of crafting rules, ample negotiation space, rise of bargaining power, acknowledgement of existing rules	Reciprocal access	NGO NEF, Forest Service	Clearly in place and acknowledged as part of the local convention, which built in pre-existing rules of reciprocity	State rules (conventions) for own means for recognition by the State; mosque; Forest Service
Israel	Loss of access to and control over locally used resources; State failure in conservation	Collective process of crafting rules and raising bargaining power	Common use	UNESCO with its option for participation, and local leaders realizing this	Druz considered as indigenous people with important local knowledge for proper management and conservation of the area	UNESCO and, after the fire incident, the State
Kyrgyzstan	Mining	Rise in power by collective protest and violence	Local use	Chinese mine	–	State

returned the area to the commons, with an important role for local knowledge in its management, and this was recognized by the State.

Furthermore, what we see from all cases is the importance of a strong institutional memory, which not only includes the use and acknowledgement of pre-existing rules—as in Mali and in Israel where old common rules are recovered or reconstructed to form new institutions—but also encompasses the capacity to reflect and learn from experience, as in Spain, where farmers learnt from the experience of their neighbours (the failed top-down approach in the Western La Mancha aquifer). The Spanish case also illustrates the interaction between institutional change and technological change. Here, the use of advanced technological mechanisms provided new opportunities for institutional improvement.

A final prominent element, which is not explicitly considered within the six elements of the constitutionality approach but which stands out clearly in each case in this chapter, is the role of high self-esteem and self-determination of local agents. These high levels of self-esteem and self-determination seem to be important drivers for claiming space for active engagement towards the co-creation of institution building, as well as for the enforcement of agreed-upon rules. This, then, contributes to the existing six elements of the constitutionality approach with an important additional element: a positive identity process—which together with the six elements ensures a successful process and outcome of institution building.

Discussion and conclusion

In this chapter, we took a closer look at four cases where dryland populations found a way to actively and meaningfully engage with the (re)configuration of the institutions of the natural resources they use. The cases we presented include elements of local reactions, visions, and enactments as ways to reach more locally desired presents and futures. In general, we can say that in all these cases the positive perception is related to active participation in institutional development, as well as to active resistance (the basis for claiming space), and to active engagement in institution-building processes. The four cases presented show that the outcome is no longer top-down decided and implemented; instead, they show examples of people claiming and using space for actual and meaningful participation in resource governance. Our findings support the idea that institutions, when adequately designed, enhance community-based natural resource management. In cases where a binding social capital has been created and imbued with a positive collective memory, self-management (as described by Ostrom 1990) has been successfully achieved (López-Gunn 2012). In addition, local power asymmetries also need to be recognized and mediated, which is a central element in the success of bottom-up institution building (see Haller et al. 2016a).

We argue that the explicit factors and elements contributing to successful pathways are highly context-specific. However, we identified similar underlying elements in the (re)configuration of institutions. Applying the constitutionality

approach allowed us to tease out these similar elements, including the bottom-up participation to own the institutional crafting process, while taking into account internal and external agents, their roles and intertwined power asymmetries. In short, our main cross-case findings showed that, in order for institution-building processes to be labelled as positive by local actors, there is a need besides for the support of external catalyzing agents and institutional memory and recognition, and also for self-determination as an important element to claim space to actively engage with the institution-building process.

More importantly, in the drylands, which are known to be unstable, highly variable, and non-equilibrium systems, there is a pressing need to deal with constant uncertainty (Sullivan and Rohde 2002; Haller et al. 2016b; Scoones 2021), not just regarding climate and resources but also regarding power relations with other groups and the State. The recognition of locally developed institutions and generally recognized common property reduces this uncertainty and increases the bargaining power for heterogeneous local actors to propose their own institutional design and increase resilience (see Woodhouse et al. 2000; Homewood 2008; Haller 2019). Local participation in institution-building processes, through recognition of local knowledge and locally defined limits, allows for the incorporation of flexibility and as such the ability to handle uncertainty. Many institutions among pastoralists and farming communities show a more flexible principle of, for example, boundaries or rights to certain resources based on abundance and times of scarcity (Moritz et al. 2013), and on rules of reciprocity (Pas 2018; Haller 2020). This flexibility as well as resilience against internal and external socioeconomic, political, and ecological changes is a central aspect of the governance of resources in drylands (Bollig 2014; Watson et al. 2016). The four cases presented address exactly this issue, while showing how meaningful collective action in a historically, socially, and power-specific multi-complex context has been reached (see also Chapter 2, this volume).

While we argue that the explicit factors and elements contributing to successful pathways is highly context-specific—which makes it not straightforward to foster more of these examples in other places—ensuring the six constitutionality elements are expressed and/or present may be a way forward to promoting processes of successful institution building in other places with different contexts, power relations, and histories. The cases also illustrate the limits of our notion of successful institutional change, beyond their context specificity. First, as the Mali case illustrates, ‘success’ is seen as reflecting the visions of a large range of actors, but some actors may still end up being marginalized or some issues neglected in the institutional change, such as gender inequities or power differentials between villages or more marginalized pastoral groups in a local context (e.g. Fulani in the Mali case). Second, as illustrated by the Kyrgyzstan case, besides showing how conflict can be productive, a success can be only the first step in the institutional reconfiguration and in the way towards more desirable futures. In that case, the ‘success’ was essentially the stopping of undesired changes, but it remains to be seen if this can be turned into a mobilization to define a desired project for livelihoods and natural resource governance. The

way the State intervened was challenged, as in the case of Spain and Israel, but would the outcome be the same without international support and exposure? While internal contradictions and conflicts were temporarily resolved, this does not mean there will be no further contestations. As such, the timing and temporality of successful steps is important to take into account while analysing processes of institution building, since these are processes always in motion and constantly evolving as circumstances change, new challenges arise, and power balances shift; what is successful now may not be useful or considered positive in the future. A positive institutional change is thus best not seen as a complete, exhaustive, and definitive solution but as a movement in a more positive direction, which requires continuous ‘work’ to improve.

Notes

- 1 <https://ipbes.net/assessment-reports/ldr>; <https://www.ipcc.ch/srccl/> [Both accessed 8 May 2021].
- 2 <https://www.greatgreenwall.org/about-great-green-wall> [Accessed 8 May 2021].

References

- 24KG (2019). Solton-Sary conflict. Embassy of China makes statement. [24kg/english/125563_Solton-Sary_conflict_Embassy_of_China_makes_statement/](https://24kg.org/en/125563-Solton-Sary_conflict_Embassy_of_China_makes_statement/) [Accessed 1 May 2020].
- Benjamin, C.E. (2008). Legal pluralism and decentralization: Natural resource management in Mali. *World Development* 36(11): 2255–2276.
- Bennett, E.M., Solan, M., Biggs, R., McPhearson, T., Norström, A.V., Olsson, P., Pereira, L., Peterson, G.D., Raudsepp-Hearne, C., Biermann, F. and Carpenter, S.R. (2016). Bright spots: Seeds of a good Anthropocene. *Frontiers in Ecology and the Environment* 14(8): 441–448.
- Berkes, F. (ed.) (1989). *Common property resources: Ecology and community-based sustainable development*, 302 pages. London: Belhaven Press (Pinter Publishers).
- Boles, O.J., Shoemaker, A., Courtney Mustaphi, C.J., Petek, N., Eklom, A. and Lane, P.J. (2019). Historical ecologies of pastoralist overgrazing in Kenya: Long-term perspectives on cause and effect. *Human Ecology* 47(3): 419–434.
- Bollig, M. (2014). Resilience—Analytical tool, bridging concept or development goal? Anthropological perspectives on the use of a border object. *Zeitschrift für Ethnologie* 139: 253–279.
- Boyd, R., Richerson, P.J., Meinzen-Dick, R., De Moor, T., Jackson, M.O., Gjerde, K.M., Harden-Davies, H., Frischmann, B.M., Madison, M.J., Strandburg, K.J. and McLean, A.R. (2018). Tragedy revisited. *Science* 362(6420): 1236–1241.
- CHJ (Confederación Hidrográfica del Júcar) (2021). Plan Hidrológico de Cuenca de la Demarcación Hidrográfica del Júcar, ciclo 2021–2027 [Water Plan of the Júcar Water District, preliminary document, 2021–2027 cycle]. Júcar River Basin Authority, Valencia. <https://www.chj.es/es-es/medioambiente/planificacionhidrologica/Paginas/PHC-2021-2027-Documentos-iniciales.aspx>. [Accessed February 2021].
- Custodio, E., Sahuquillo, A. and Albiac, J. (2019). Sustainability of intensive groundwater development: Experience in Spain. *Sustainable Water Resources Management* 5(1): 11–26.
- Davis, D. K. (2016). *The arid lands: History, power, knowledge*. MIT Press.

- de Santa Olalla, F.M., Dominguez, A., Ortega, F., Artigao, A. and Fabeiro, C. (2007). Bayesian networks in planning a large aquifer in Eastern Mancha, Spain. *Environmental Modelling & Software* 22(8): 1089–1100.
- Domínguez, A., Martínez-Navarro, A., López-Mata, E., Tarjuelo, J.M. and Martínez-Romero, A. (2017). Real farm management depending on the available volume of irrigation water (part I): Financial analysis. *Agricultural Water Management* 192: 71–84.
- Eid, R. and Haller, T. (2018). Burning forests, rising power: Towards a constitutionality process in Mount Carmel Biosphere Reserve. *Human Ecology* 46(1): 41–50.
- Esteban, E. and Albiac, J. (2012). The problem of sustainable groundwater management: The case of La Mancha aquifers, Spain. *Hydrogeology Journal* 20(5): 851–863.
- Fairhead, J. and Leach, M. (1996). *Misreading the African landscape: Society and ecology in a forest-savanna mosaic* (No. 90). Cambridge University Press.
- Fairhead, J., Leach, M. and Scoones, I. (2012). Green grabbing: A new appropriation of nature? *Journal of Peasant Studies* 39(2): 237–261.
- Ferguson, J. (2015). *Give a man a fish*. Durham, NC: Duke University Press.
- Galvin, K.A., Beeton, T.A. and Luizza, M.W. (2018). African community-based conservation. *Ecology and Society* 23(3). <https://doi.org/10.5751/ES-10217-230339>.
- Haller, T. (2019). The different meanings of land in the age of neoliberalism: Theoretical reflections on commons and resilience grabbing from a social anthropological perspective. *Land* 8(7): 104. <https://doi.org/10.3390/land8070104>.
- Haller, T. (2020). Institution shopping and resilience grabbing. *Conservation & Society* 18(3): 252–267.
- Haller, T., Acciaioli, G. and Rist, S. (2016). Constitutionality: Conditions for crafting local ownership of institution-building processes. *Society & Natural Resources* 29(1): 68–87.
- Haller, T., Belsky, J.M. and Rist, S. (2018). The constitutionality approach: Conditions, opportunities, and challenges for bottom-up institution building. *Human Ecology* 46(1): 1–2.
- Haller, T. and Merten, S. (2018). Crafting our own rules: Constitutionality as a bottom-up approach for the development of by-laws in Zambia. *Human ecology* 46(1): 3–13.
- Haller, T., Van Dijk, H., Bollig, M., Greiner, C., Schareika, N. and Gabbert, C. (2016b). Conflicts, security and marginalisation: Institutional change of the pastoral commons in a 'glocal' world. *Revue scientifique et technique (International Office of Epizootics)* 35(2): 405–416.
- Hardin, G. (1968). The tragedy of the commons: The population problem has no technical solution; it requires a fundamental extension in morality. *Science* 162(3859): 1243–1248. <http://www.jstor.org/stable/1724745>.
- Herskovits, M.J. (1926). The cattle complex in East Africa. *American anthropologist* 28(1): 230–272.
- Homewood, K. (2008). *Ecology of African pastoralist societies*. Oxford: James Currey.
- JCRMO (Junta central de regantes de la Mancha Oriental). (2018). Memoria 2018. Retrieved from: https://www.jcrmo.org/wp-content/uploads/2019/03/MEMORIA_JCRMO_2018.pdf.
- López-Gunn, E. (2012). Groundwater governance and social capital. *Geoforum* 43(6): 1140–1151. doi:10.1016/j.geoforum.2012.06.013.
- Moldaliev, J. and Heathershaw, J. (2020). Playing the 'game' of transparency and accountability: Non-elite politics in Kyrgyzstan's natural resource governance. *Post-Soviet Affairs* 36(2): 171–187.

- Moritz, M., Scholte, P., Hamilton, I.M. and Kari, S. (2013). Open access, open systems: Pastoral management of common-pool resources in the Chad Basin. *Human Ecology* 41(3): 351–365.
- Mortimore, M. (2005). Dryland development: Success stories from West Africa. *Environment: Science and Policy for Sustainable Development* 47(1): 8–21. <https://doi.org/10.3200/ENVT.47.1.8-21>.
- Ortega-Reig, M., García-Mollá, M., Sanchis-Ibor, C., Pulido-Velázquez, M., Girard, C., Marcos, P., ... & García-Prats, A. (2018). Adaptation of agriculture to global change scenarios. Application of participatory methods in the Júcar River basin (Spain). *Economía Agraria y Recursos Naturales-Agricultural and Resource Economics* 18(2): 29–51.
- Ostrom, E. (1990). *Governing the commons: The evolution of institutions for collective action*. Cambridge: Cambridge University Press.
- Pas, A. (2018). Governing grazing and mobility in the Samburu lowlands, Kenya. *Land* 7(2): 41. <https://doi.org/10.3390/land7020041>.
- Pereira, L.M., Hichert, T., Hamann, M., Preiser, R. and Biggs, R. (2018a). Using futures methods to create transformative spaces. *Ecology and Society* 23(1). <https://doi.org/10.5751/ES-09907-230119>.
- Pereira, L.M., Karpouzoglou, T., Frantzeskaki, N. and Olsson, P. (2018b). Designing transformative spaces for sustainability in social-ecological systems. *Ecology and Society* 23(4). <https://doi.org/10.5751/ES-10607-230432>.
- Putz, C. (2019). On Xinjiang, Kazakhstan and Kyrgyzstan Bend to Beijing's Will. *The Diplomat* (1 April). <https://thediplomat.com/2019/04/on-xinjiang-kazakhstan-and-kyrgyzstan-bend-to-beijings-will/>.
- Putz, C. (2020). What's in Kyrgyzstan's proposed 'Khanstitution'? *The Diplomat* (20 November). <https://thediplomat.com/2020/11/whats-in-kyrgyzstans-proposed-khanstitution/>.
- Radio Free Europe (2019). Dozens injured as locals clash with Chinese mining company workers in Kyrgyzstan. www.rferl.org/a/dozens-injured-as-locals-clash-with-chinese-mining-company-workers-in-kyrgyzstan/30094924.html [Accessed 5 May 2020].
- Recio, B., Ibáñez, J., Rubio, F. and Criado, J.A. (2005). A decision support system for analysing the impact of water restriction policies. *Decision Support Systems* 39(3): 385–402.
- Reed, M. and Stringer, L.C. (2015). *Climate change and desertification: Anticipating, assessing & adapting to future change in drylands*. Montpellier: Agropolis International. <https://www.idaea.csic.es/sites/default/files/Climate%20change%20and%20desertification.pdf>.
- Reig, M.O., Mollá, M.G., Ibor, C.S., Velázquez, M.P., Girard, C., Marcos, P., Rodríguez, M.R. and Prats, A.G. (2018). Adaptación de la agricultura a escenarios de cambio global. Aplicación de métodos participativos en la cuenca del río Júcar (España). *Economía agraria y recursos naturales* 18(2): 29–51.
- Reuters (2020). Kyrgyz police use tear gas, water cannon to disperse protest. www.reuters.com/article/us-kyrgyzstan-protests-idUSKBN20P2DD [Accessed 2 May 2020].
- Saleth, R.M. and Dinar, A. (2004). *The institutional economics of water: A cross-country analysis of institutions and performance*. New York: World Bank Publications.
- SCMP (South China Morning Post) (2019). Kyrgyzstan halts work at Chinese gold mine after 20 hurt in clashes over toxic spill fears. <https://www.scmp.com/news/china/article/3021886/kyrgyzstan-halts-work-chinese-gold-mine-after-20-hurt-clashes-over-toxic> [Accessed 1 May 2020].
- Scoones, I. (2021). Beyond the 'balance of nature': Pastoralists' alternative perspectives on sustainability. [Blog] *Nomadic Peoples*, 25(1). doi:10.3197/np.2021.250110.
- Scoones, I., Stirling, A., Abrol, D., Atela, J., Charli-Joseph, L., Eakin, H., Ely, A., Olsson, P., Pereira, L., Priya, R. and van Zwanenberg, P. (2020). Transformations to sustainability:

- Combining structural, systemic and enabling approaches. *Current Opinion in Environmental Sustainability* 42: 65–75.
- Shailoobek, A. (2021). Is anti-Chinese sentiment in Kyrgyzstan strong enough to freeze a key Belt and Road Initiative project? <https://globalvoices.org/2021/08/05/is-anti-chinese-sentiment-in-kyrgyzstan-strong-enough-to-freeze-a-key-belt-and-road-initiative-project/> [Accessed 1 March 2022].
- Sirimorok, N. and Rusdianto, E. (2020). Conditions for success in a community-based conservation initiative: An analysis of triggering moments and catalytic elements in Nuha. *Forest and Society*, 127–141.
- Slaughter, R.A. (1998). Futures beyond dystopia. *Futures* 30(10): 993–1002.
- Sullivan, S. and Rohde, R. (2002). Guest editorial: On non-equilibrium in arid and semi-arid grazing systems. *Journal of Biogeography* 29(12): 1595–1618.
- Swart, R.J., Raskin, P. and Robinson, J. (2004). The problem of the future: Sustainability science and scenario analysis. *Global Environmental Change* 14(2): 137–146. <https://doi.org/10.1016/j.gloenvcha.2003.10.002>
- Tiffen, M. and Mortimore, M. (1992). Environment, population growth and productivity in Kenya: A case study of Machakos District. *Development Policy Review* 10(4): 359–387.
- Watson, E.E., Kochore, H.H. and Dabasso, B.H. (2016). Camels and climate resilience: Adaptation in northern Kenya. *Human Ecology* 44(6): 701–713.
- Woodhouse, P., Bernstein, H. and Hulme, D. (2000). *African enclosures? The social dynamics of wetlands in drylands*. Oxford: James Currey.
- YouTube (2019). Solton Sary. (6 August 2019). www.youtube.com/watch?v=o8RsXACIXRc&frags=pl%2Cwn and www.youtube.com/watch?v=vSsg0nLSyHY [Accessed 1 May 2020].