**Energy Commons and Alternatives to Enclosures of Sunshine and Wind**

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# Introduction

Energy democracy opens the possibility for breaking from the conventional social construction of energy-as-commodity, reenvisioning and reconstructing energy systems as energy commons. This chapter aims to support the agenda to democratize energy systems by examining and understanding energy commons and commoning as alternative modes of governance to dominant state-led and especially market-based approaches.

A layered term, the “commons” refers simultaneously to “shared resources, a discourse, a new/old property framework, social processes, an ethic, a set of policies or, in other words, to a paradigm of a pragmatic new societal vision beyond the dominant capitalist system” (Kostakis & Bauwens, 2014, p. 38). In this sense, elements of energy commons include 1) a biophysical resource or process (e.g., sunshine and wind); 2) a community of people having the responsibility to share, manage, sustain, restore, and generally interrelate with this process; 3) the value created through relationships between the biophysical process and the community of people; and 4) the collective rules and property regimes that govern these relationships and collective actions to ensure their ongoing reproduction and defense from enclosure and commodification (Harvey, 2011; Kostakis & Bauwens, 2014; Mattei, 2012; Melville et al., 2017). While histories of the commons extend back to antiquity, recent interest in the commons as an agenda beyond market and state is often traced to the work of Elinor Ostrom (1990) and others on enduring real-world models of collective governance of common-pool resources, and to the autonomous movement of the Zapatistas protesting the dissolution of communal lands in Mexico (Federici, 2012; Linebaugh, 2008). These experiences and modes of scholarship and practice inform the understanding of energy commons as taken up here.

The present moment is pivotal for energy commons and energy democracy. Expectations for the future of solar and wind energy are high, yet these sources currently account for a low proportion of total primary energy conversion. Similarly, while use of renewables has increased, this upward trend holds true for nearly all energy sources, hardly resulting in an energy transition. This failure leaves open the possibility for fundamentally different approaches to energy governance.

The following section reviews the patterns of flows of earthly sunlight and wind and explores conventional modes of their enclosure. Section 3 then provides an overview of the approach of energy commons as a unique paradigm for shifting energy governance. Section 4 addresses practices of energy commons, first by examining specific applications, then by highlighting the barriers that must be confronted in the context of renewable energy transition. Drawing from but not bound to the lessons of traditional commons and common-pool resources[[1]](#endnote-1) (Melville et al., 2017; Ostrom, 2010), section 5 suggests a set of design principles for creating and sustaining solar and wind energy commons. Together, this chapter contributes conceptually, theoretically, and practically to alternative discourses, projects, and modes of action of energy democracy as described in this volume.

# Grabbing the Flows: Modes of Enclosure

In conventional understandings, energy refers to a wide variety of phenomena or processes including heat, motion, light, electricity, and chemical energies, often defined in terms of a capacity to do work (Heinberg & Fridley, 2016a; Smil, 2009, 2017; Stephenson, 2017). However, “energy” is a notoriously slippery term across disciplines including the physical sciences, raising several key problems with this understanding (Burke, 2019, p. 18). Broadening the perspective, modern human energy systems include several of countless ways that life on Earth has developed to capture, make use of, and dissipate low-entropy matter-energy. The concept of energy as a universal currency and the standardization of its measurement can minimize important qualitative differences among these diverse phenomena. These differences are increasingly important when understanding the possibilities for renewable energy to substitute conventional fuels.

The amalgamation of diverse processes under a singular and novel abstraction of energy emerged from within a particular capitalist-colonialist historical context, wherein the overriding concern with energy involved its application to certain ends. The problem was to understand how to efficiently convert energy resources into so-called productive work for a developing industrial society, largely to the benefit of those who owned the means of conversion. This conceptualization of energy is associated with the social construction of industrialized sense of time and labor-as-work (Lohmann & Hildyard, 2014). These understandings have further enabled the enclosure, commodification, and control of these physical phenomena, put to use for processes of accumulation and dispossession, while increasing societal dependence on high levels of use of finite energy resources (Foxon, 2018; Illich, 2009; Lohmann & Hildyard, 2014). Moreover, this perspective has obstructed and minimized other views of energies, as ecological and social necessities (National Research Council, 1984), bases of social power and power relations (Adams, 1975), or threads of interconnected relationships among living and nonliving phenomena (Frigo, 2017). It is therefore practically and politically relevant to acknowledge that different views on energy carry very different implications for decision-making about energy and technologies (Burke, 2019, p. 19).

This same problematic historical and political context frames current understandings of renewables (Burke, 2019, p. 19). The concept of “renewable energy” typically refers to inexhaustible flows of energy, those that the natural environment continuously replenishes on a human timescale. These include primary sources derived from the sun either directly, including thermal and photo-electric energy, or indirectly, such as wind and biomass, or from other natural movements and cycles (Ellabban et al., 2014). As with energy more broadly, a singular definition of renewables minimizes important differences among various sources and their enabling technologies, differences evident when comparing the most mundane bioenergy sources used worldwide with technologically complex, modern systems including wind power, solar photovoltaics, and hydroelectricity (Chatti et al., 2017).

Even their very renewability is debatable and context dependent (Burke, 2019, p. 19). While the flows of these sources may be continuously replenished, the renewability of a host of processes requires consideration in the context of large-scale development designed to meet the demands of industrial societies. These processes, including capture, conversion, storage, movement, use, maintenance, and reproduction, clearly require energy and material inputs at each step. Further, despite the abundance of many of these sources, their uneven distribution in space and time can lead to scarcity, while scarcity can also be created through exclusions that support the profits needed to sustain private investments. Thus, beyond the widely discussed technical challenges of variable energy systems, the idea of renewability is more fundamentally complicated by the ongoing dependence of these technologies on unsustainable systems including fossil fuel infrastructure, industrial production, material extraction and throughput, long-distance supply chains, spatial expansion and enclosures, environmental degradation, continued economic growth and accumulation, and expectations of high levels of financial investment (Foxon, 2018; Georgescu-Roegen, 1984; Heinberg & Fridley, 2016b; Huber & McCarthy, 2017; Raman, 2013).

A troubling inheritance from the fossil fuel era is the primacy of energy as a commodity to be bought and sold on the market. The associated legal and regulatory frameworks allow investors and speculators to buy up locations useful for capturing wind and solar flux, and lay claim to these sources as private property, a form of enclosure of the commons and energy colonialism (Bellamy & Thomas, 2015; Brunette et al., 2013; Martinez, 2017; Vermeylen, 2010). Commodification of renewable energy allows returns and surpluses to concentrate in private hands, while ensuring that development proceeds according to logics of financialization and profit rather than genuine human and nonhuman needs (Blanchet, 2019). Even as electrification is increasingly viewed as an essential public good, the scope of public policy often remains confined to facilitation of energy markets. Property rights for energy systems are largely based on ownership of land and access to the grid, which can be regulated to limit rights of access and use by other possible producers (van der Horst & Vermeylen, 2008). This mode of energy development enables green grabbing, or the appropriation of rights of use and control of land and resources, typically to the powerful, for allegedly pro-environmental purposes (Corson & MacDonald, 2012; Fairhead et al., 2012).

In the context of dominant capitalist and colonialist political economies and market societies, rights of access, withdrawal, management, exclusion, and alienation (rights to sell, lease, or transfer) are thus linked and concentrated. What might be first considered as multitudes of commons are in practice treated primarily as open access regimes. Open access leads to new modes of privatization in terms of rights to wind and sunlight, applying to these renewable flows a poorly adapted legacy of “underground logics” associated with non-renewable rights of extraction (Hughes, 2017) and expansion of commodity frontiers (Moore, 2000). With increasing conflict over (horizontal, expansive) access to wind and (vertical, localized) access to sunlight across a range of uses and jurisdictions (van der Horst & Vermeylen, 2010; Vermeylen, 2010), the question of who owns the wind and sunlight becomes absurdly more salient. The unfortunate answer increasingly appears to be those with the power to first legitimate their claim (Hughes, 2017). Thus, renewable energy risks reproducing social and ecological harms of the present energy system (Bellamy & Thomas, 2015). These harms include concentration of wealth and means of production, rising levels of inequality, governance by capital, and exclusion of local communities and a broader public (Byrne & Taminiau, 2016; Feola, 2019; Harvey, 2018; Taylor, 2019). This mode of development can further yield large-scale and poorly sited technologies and grid development, constructed in the pursuit of endless economic growth (Byrne et al., 2009; York & Bell, 2019). Ultimately, this open-access and privatized approach not only risks undermining a genuine energy transition. From an energy democracy perspective, this pattern of renewable energy development also pre-empts commons-based approaches to using wind and solar fluxes, based on deeper forms of social agency and active citizen and indigenous participation and control (Kunze & Becker, 2015; Platform, 2015).

# Recognizing the Energy Commons

Transitions to renewable energy present an opportunity if not a necessity to view sunlight and wind as energy commons, broadly reinterpreted as shared flows of energy for all living beings, existing prior to and outside of conventional systems of private property. Energy commons allows for diverse and contextually relevant modes of governance, while new material artefacts such as photovoltaic panels can encourage greater participation and energy citizenship and sovereignty (Ryghaug et al., 2018). In a commons-based approach, the value of renewable energy is derived primarily from use rather than exchange (Brunette et al., 2013; Martinez, 2017; Platform, 2015). The commons paradigm sees sharing as the means to ensure resources are adequate for supporting sustainable livelihoods and genuine needs. In other words, energy and energy provision are common goods controlled by the people of a community and oriented toward collective democratic governance, ecological sustainability, and social justice (Becker et al., 2017). There is, therefore, a need to strongly, democratically, and equitably regulate energy use for the purpose of securing sufficient levels of sustenance for human and nonhuman life, satisfying basic social needs while respecting ecological limits.

Commoning (Linebaugh, 2008) is thus about both re-establishing earlier traditions as well as reinventing and creating new commons-based modes of relations in the context of existing struggles (Federici, 2012). At once assertive and defensive, collective acts of commoning include various processes of reproduction of the commons, using democratic, horizontal, collaborative, participatory, and locally relevant means (Federici, 2012; Platform, 2015). In contrast to decision-making organized around market-values and economization of the decision arena, the relevant criteria for determining energy pathways first prioritize justice, equity, and sustainability (Byrne & Mun, 2003). More fundamentally, the material and symbolic institutional logics and universalizing ontologies of markets, commodification, and accumulation are kept subordinate to the logics, ontologies, and end goals of diverse modes of the commons (Escobar, 2015; Taylor, 2019), wherein energy systems (constituted of nonhuman and human elements) are viewed as non-commodified means to fulfill social and ecological needs. As with Polanyi’s (2001) fictitious commodities of land and labor, renewable energy sources refer to human and nonhuman activities that are inseparable from life itself, not “produced” in a conventional sense, nor produced for sale. From this relational ontology, as Escobar (2015) asserts, “the defense of territory, life and the commons are one and the same” (para. 15).

The core strategy of commoning is one of strengthening social relations based on cooperation, collaboration, and co-responsibility, powers-with and -to rather than power-over (De Angelis, 2012). Key agents of change include networks of diverse and often marginalized communities of resource users, organized through similarly diverse and shared ownership models. Counter-movements for energy commons likely require a combination of strategies, including public sector reforms, socially embedded market models, non-market and non-state systems. Commons governance favours decentralized or polycentric modes, bottom-up decision-making, self-organization, and self-defined rules of access and rights of use (Bauwens, 2017; Helfrich, 2012b). Public investment and ownership may play a key role, with a stronger shift toward localization (Hammerstein, 2019). Rights of use are tied to individual and collective responsibility to sustainably use resources and protect ecosystem health (Brunette et al., 2013), reversing the invisibility of harms of the existing energy systems, reducing the distance between actions and social and environmental consequences, and thus overcoming patterns of collective separation and irresponsibility (Federici, 2012; Platform, 2015).

To bring about these changes, the transition to renewables must be tied to the project of commoning, of decommodification, of reversal of processes of enclosure and colonization, of restoring relationships among people and of people to the rest of nature, of creating a counter-politics to contemporary valuations and appropriations of nature, based in turn on counter-ontologies of interconnected human-ecological relations (Fairhead et al., 2012). Like energy democracy, energy commoning then implies both legal and political claims as well as the necessary institutional, economic, and material foundations (Linebaugh, 2008).

# Claiming and Governing the Energy Commons

## Contemporary Institutions for Collective Renewable Energy

Institutions for energy commons include diverse, integrated, and collectively-organized energy systems that enable a community of users to seek aspirations beyond a renewable energy transition (Acosta et al., 2018; Becker & Kunze, 2014; Brisbois, 2019; Koirala et al., 2016). Several organizational forms and models stand out as most promising.

Renewable energy cooperatives have been widely adopted and viewed as a strong form of energy commons. Cooperatives are embedded, at least potentially, in local communities as well as in the international cooperative movement and its associated principles of solidarity and democratic governance. Through cooperatives, citizens can produce, invest in, and use renewable energy while sharing surplus value (Lambing, 2012; Taylor, 2019). Cooperatives are generally owned and often managed by their members and users rather than investors (Bauwens, 2017). Non-profit consumer-owned electric cooperatives, including distribution, generation, and transmission cooperatives, provide renewable energy or related services to consumer-members, while worker-owned cooperatives provide employment and financial benefits of ownership to worker-owners and various renewable energy services to customers (Burke & Stephens, 2017). Increasingly, cooperative models orient their work toward serving broader public interest goals rather than seeking to accrue benefits solely to members (Bauwens & Defourny, 2017).

New and existing forms of utilities are fitting for energy commons, including municipally owned utilities and sustainable energy utilities. Municipal utilities are owned and controlled by a city or local government, whereas remunicipalization is the now worldwide process of creating or re-establishing public ownership and governance of energy utilities and infrastructures at the municipal level, potentially in the context of an urban commons (Becker et al., 2017; Blanchet, 2019). A sustainable energy utility is a nonprofit organization or community trust purposed to provide energy services and support commons energy development and management for communities of almost any scale, from local groups to broader regions. Key strategies include helping communities reduce overall energy dependence, supporting renewable generation by and for the communities, redirecting finances and deploying self-financing approaches to achieve conservation goals and build new infrastructure, and instituting cooperative systems of use, monitoring, and enforcement (Byrne et al., 2009; Byrne & Taminiau, 2016). Together these institutions serve as key links between conventional public authorities and emerging energy commoners.

Processes for reclaiming the grid within an energy commons approach are also critical in the context of electrification of energy futures. Community microgrids, mini-grids and democratized grid management support small-scale distributed generation of renewable energy within a defined geography. Here, prosumers, producers, and consumers (i.e., sources and loads) can share and exchange community-based electricity production, allowing local prosumers with equitable grid access to allocate surplus energy where it is needed (Wolsink, 2012). Rules of use are shaped and reshaped by the users themselves based on specific needs and local conditions (Gollwitzer et al., 2018; Melville et al., 2017; Wolsink, 2012). These grid systems can be operated autonomously as controllable units and/or interconnected within networks of microgrids and the larger utility grid (Giotitsas et al., 2015; Grimley & Farrell, 2016; Lambing, 2012; Wolsink, 2012). Such systems could also integrate pooled district heating, energy storage, transport systems, and associated information and communication technologies (Bronin, 2010; Hammerstein, 2019; Roberts et al., 2014; Zhang et al., 2018). Micro- and mini-grids offer possibilities for installation in remote areas, and may increase reliability through diversification while reducing long-distance transmission (Giotitsas et al., 2015; Peters et al., 2019).

Several other institutional reforms can enable energy commoning. These efforts would include democratization of the technologies themselves, including their manufacture, through models of worker and community ownership, open source technology transfer, and socially responsible and non-commercial licensing of technologies and energy use data (Hammerstein, 2019). Non-profit green public service banks and related community development financial institutions can be directed to offer grants, loans, and low-cost credit to community-based renewable energy projects, while improving accountability to local communities for decisions over public financing (Burke & Stephens, 2017). More generally, to advance energy commons, governments at all levels would provide financial and technical support, enable community-based energy planning (Baker, 2017), and ensure at least partial community ownership (Roberts et al., 2014). These actions can be taken to scale, nested within broader networks and institutions, as in energy regions (Späth & Rohracher, 2010). Together, these networks can then challenge over-centralization and private appropriation of wealth and power (Platform, 2015) and integrate resources and users across borders (van der Horst & Vermeylen, 2010).

Indigenous modes of energy governance and experiences with sustaining commons beyond energy provide important practical examples of collective institutions (Martinez, 2017). Tribal nations and tribally-controlled utilities and business entities may prioritize tribal sovereignty, intergenerational social-environmental values, and cultural and spiritual connections to land above purely economic considerations, inspiring a considered and distributed pattern of renewable energy development (MacArthur & Matthewman, 2018; Necefer et al., 2015). Indigenous claims to sunshine and wind demand the agency of indigenous peoples to transform these energy systems on their own land and on their own terms, through recognition of treaty rights and reconstruction of native nations (Byrd, 2011). Relatedly, energy commoning also requires land reforms. Reparations, usufruct, periodic redistributions, and the like are needed to ensure that renewable systems continuously resist processes of land concentration through speculation and profit-seeking. These reforms aim to reverse ongoing enclosures of common lands while ensuring a greater role for indigenous communities, minorities, labor, and women in the governance of renewable energy commons (Linebaugh, 2008; Platform, 2015). In this way, energy commons can work in support of indigenous energy sovereignty and rights of indigenous peoples to self-determination, to prevent and redress the removal from and dispossession of lands and territories (UNDRIP, 2007).

At the level of constitutional rules, renewable energy commoning requires establishing these sources and systems as human rights and basic collective needs, while recognizing energy as a relationship to nonhuman nature and interdependent dynamic living systems (Martinez, 2017). Social charters and diverse cultural customs for renewable commons can provide the necessary legal and cultural basis for establishing and defending energy commons. These charters can be operationalized through the formalization of constitutional rules and commons trusts, for example (Linebaugh, 2008; Quilligan, 2012). Without shifts in these fundamental enabling conditions, it is difficult to imagine how commons-based approaches can be recreated and preserved as diverse and durable modes of energy governance, given the rampant patterns of enclosure worldwide.

## Obstacles to Energy Commoning in Theory and Practice

Broadly, there are challenges internal and external to commoning. Experience indicates a strength in overcoming endogenous challenges over time, yet significant vulnerabilities to exogenous factors exist (Dell’Angelo et al., 2017; Wall, 2017). Empirically, it appears that the actual tragedy is less about misuse or failure of the commons and more about the regularity and brutality of enclosures (Wall, 2017).

Any process of governing the energy commons must nevertheless address widely acknowledged challenges for collective action. These challenges follow from the diversity and unevenness of energy sources and technologies (van der Horst & Vermeylen, 2008), the limited experience and engagement of citizens and non-experts with energy systems (Bauwens, 2017), and the difficulty of broadening and sustaining involvement (Hoffman & High-Pippert, 2005). As placed-based systems, the way energy is accessed and used will depend upon where the users live. However, the need to accelerate an energy transition away from fossil fuels can too often drive greater centralization (Bollier, 2016). Additionally, energy commoning must confront large capital and upfront investment costs and insufficient financial and technical supports (Gui & MacGill, 2018; Hammerstein, 2019). Self-organization and diverse modes of governance take time to develop and test (Acosta et al., 2018; Lambing, 2012; Melville et al., 2017; Peters et al., 2019). This situation points to a need for experimentation and learning among commoners, and a sharper focus on improving the practices of commoning among advocates of renewables.

Beyond individual sites of commoning, there remains the difficult work of building intersectional coalitions, social movements, and political agendas for energy commons at local, regional, national, and transnational levels across diverse interests and worldviews (Escobar, 2015; Federici, 2012; Kostakis & Bauwens, 2014). This obstacle relates to the unavoidable scale problem, meaning firstly that what works locally may not work globally, and secondly that larger scales and nested hierarchies of energy commons are required, raising the political challenge of how to bring together many proliferating and necessarily diverse commons within a cohesive whole (Federici, 2012; Harvey, 2011; Platform, 2015).

Even then, commoning as a broadened set of practices must struggle to take hold in a difficult and often hostile environment. In terms of lock-ins and path dependencies, there exist patterns of centralized and hierarchical governance, regulatory and financial regimes, fossil fuel dependence, and interdependence of established firms and governments (Bauwens, 2017; Brisbois, 2019; Koirala et al., 2016). Regarding the contested role of governments and the dependence of many community-based approaches on the state (Creamer et al., 2018), there is frequently a need for government action and public support for collective energy sharing and the energy commons. For example, the public sector may be pushed to favor cooperatives over for-profit developers and investor-owned firms, while building capacity for participatory processes, learning and adaptation, and cooperative self-governance across scales (Burke & Stephens, 2017; Ostrom, 2010; Taylor, 2019). This shift may require a partner state to empower commoning processes, as public-commons partnerships, to build counter-power and legitimation within the commons and advance the commons not as a “third way,” but rather as a means to challenge the alliance between state and private interests (Bollier, 2016; De Angelis, 2012; Kostakis & Bauwens, 2014; Mattei, 2012).

Regarding these incumbent interests, commoners face a host of powerful actors including fossil fuel and nuclear industries, electric utilities, and associated complexes of militarism and industrialism. These interests together hold enormous political influence through regulatory capture, corruption, lobbying, framing of public discourse, dominant decision-making positions, and a merger of state and private interests, all operating within a political economic context that forcibly asserts systems of property rights, large-scale land acquisitions, and inequities of wealth and distribution of capital (Brisbois, 2019; Dell’Angelo et al., 2017; Hammerstein, 2019; Mattei, 2012; Moss et al., 2015). Deeper still are the underlying logics of the commodity form, the orientation toward homogenizing market-based social relations, and the associated capitalistic norms of individualism, competition, profit motive, and economic growth (Bellamy & Thomas, 2015; Feola, 2019; Taylor, 2019). These logics manifest through the development of large-scale, centralized private and public energy systems (Byrne et al., 2009), profit maximizing commercial business models (Brisbois, 2019), appeals to community power that serve to advance private interests (Taylor, 2019), and accelerated enclosures through green grabbing in response to environmental crises (Corson & MacDonald, 2012).

Given the specific and lasting experiences of enclosures of indigenous peoples, the tensions between energy commons and energy decolonization must also be taken seriously. The very notion of commoning cannot easily be disentangled from ongoing processes of forced removal and erasure of indigenous peoples, raising the prospect of incompatibilities between settler and indigenous claims to land and energy flows (Byrd, 2011; Dunbar-Ortiz, 2014; Tuck & Yang, 2012). Energy democracy likewise draws from settler understandings of development and democracy, which in turn have involved destructive patterns of colonialism, genocide, and dispossession. Any calls to reconsider claims to resources as existing prior to and outside of conventional institutions, especially those made by voices from within settler society, must necessarily account for and ultimately recognize the priority of rights against seizures of lands that precede settler colonialism. While this paper seeks a process of commoning that can work in parallel to indigenous programs for decolonization and sovereignty, it remains uncertain whether and how these projects can be linked (See also Whyte; Batel, this volume).

Many of these challenges may be specific to the current context, yet from the longer perspective of struggles for the commons, these dynamics are as long-standing as acts of enclosure. While there must be a time beyond fossil fuels, there will likely be no end to the need to assert and defend the commons. One key opportunity and potential advantage available to commoners now and going forward is the ability to learn from real-world experience.

# Elements for Enduring Energy Commons

Design principles serve as a useful diagnostic for communities of energy commoners: For assessing institutional robustness; for organizing internal evaluation or external research; and for sharing and learning from experiences (Melville et al., 2017). The following principles have a strong empirical basis and have been shown to be applicable to many types of social groups and collective action problems (Whyte et al., 2017; Wilson et al., 2013), yet they are not written in stone, nor do they constitute any blueprint for collective action. Principles for energy commons should therefore be approached as dynamic guidelines, elements or conditions to be tested, monitored, adapted, and refined (Taylor, 2019). Here the starting point for design principles for energy commoning are drawn from those of Ostrom and others, as summarized in Table 1. Additionally, experiences of indigenous peoples underscore the importance of related principles of intergenerational involvement, ongoing cross-cultural learning, balance of power and decision-making, and respect for indigenous knowledges and control of knowledge mobilization (Whyte et al., 2017).

Under conditions of collective action, of obvious importance is the development of shared rules or collective-choice arrangements for conversion, distribution, use, and monitoring of renewable energy and electricity among the community of interest, for example, a set of users of a micro- or mini-grid (Gollwitzer et al., 2018). A precondition here is that a group of people recognize a shared relationship to an energy resource and a common goal or purpose (Principle 1). Yet, direct engagement with the energy sector is beyond the experience and daily life of many people, and their entry into this engagement often comes through conflict. There is therefore a need to support the conditions for initiating collective action, for example, recognizing and establishing the potential co-benefits to communities (Principle 2). The rules that such a group develops must be well-adapted to local social, cultural, technological, and ecological conditions (Principle 2), and be seen as fair and legitimate among the users (Principle 3). Commoners must be able to modify, monitor, and enforce rules, while resolving conflicts of interest and minimizing self-serving behavior rapidly and inexpensively through participation of the users themselves (Principles 3-6) (Lambing, 2012; Wilson, 2015; Wolsink, 2012). This set of conditions operates primarily within the bounds of the community of users, and as argued previously, may offer greater potential for success relative to the remaining, essentially exogenous elements.

Recognition of the rights to organize (Principle 7) is arguably the most challenging historically (Dell’Angelo et al., 2017; Wall, 2017). For indigenous peoples, this principle is often expressed as the right to self-determination or sovereignty, involving recognition of treaty rights and autonomy over tribal lands and/or mutual agreement with non-indigenous settler states regarding shared jurisdiction over energy sources (Dunbar-Ortiz, 2014; Whyte et al., 2017). Conventional public authorities are not only unaccustomed to recognizing such rights, autonomy, and effectiveness of self-governing communities (Lambing, 2012), but often play a central role in undermining these efforts and blocking patterns of commoning through active dispossession and enclosure.

*TABLE 18.1* Design principles for long-enduring institutions for the commons (Ostrom, 1990; Wilson et al., 2013)

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| --- | --- |
| *Design principle, element, or condition of success* | *Description* |
| 1. Clearly defined boundaries | Both the individuals who have rights of use to the resource and the resource system itself are well-defined. |
| 2. Congruence with local conditions | Appropriation and provision rules are congruent with local social and environmental conditions, and benefits and costs are proportional. |
| 3. Collective choice arrangements | Most individuals affected by the operational rules can participate in modifying the operational rules. |
| 4. Monitoring | Monitors accountable to or consisting of the users actively audit resource conditions and user behaviour. |
| 5. Graduated sanctions | Users who violate operational rules are assessed graduated sanctions proportionate to the seriousness of the offense by other users and/or those accountable to users. |
| 6. Conflict-resolution mechanisms | Users have access to rapid, fair, low-cost arenas to resolve conflicts among users and between users and officials. |
| 7. Minimal recognition of rights to organize | The rights of users to devise their own institutions are recognized by external governmental authorities. |
| 8. Nested enterprises | Appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities are coordinated across multiple layers of nested enterprises. |

A precondition to rights of commoning is that political empowerment not be closed off by privatization. This precondition for recognition means that property or ownership rights must be grounded in a commons perspective and establish a basis for diverse modes of communal rights, broadly recognized to exist prior to and outside of conventional public or private ownership. In other words, *the original claim to flows of sunshine and wind for renewable energy must not be one of accumulation and dispossession, but one of commoning and sharing*. This assertion is not made in a general or universal sense, but rather grounded in relation to specific communities and cultural contexts. Such an assertion may appear unrealistic, yet given the inability to achieve even inadequate goals of transition, coupled with the context of severe social and ecological devastation, the claim that we must either learn to share or die (Gorenflo, 2012) seems soundly based in reality. Ideally, defending the rights of commoning would not simply be minimally recognized but also celebrated and encouraged by established officials, making room for the necessary experimentation and diversity in practice.

Finally, within this currently challenging institutional environment, there is a need for coordinated inter-organizational action among commoning organizations and institutions to support the formation of higher-level networks (Principal 8) (Bauwens et al., 2016). While locally focused, a given initiative will involve a variety of actors working at different levels of governance, bringing different skills and expertise to the local question. Additionally, the interconnectedness of societies and ecosystems means that the scope of energy and sustainability transitions are ultimately planetary. In this sense, a community initiative is never strictly a local concern (Gui & MacGill, 2018). This need to work across scales also means members and users have a right and responsibility to engage in the work of broader networks (Taylor, 2019). Such networks are critical for addressing multiple issues of scale through bottom-up collective actions, including coordination across initiatives, and for not only withstanding inevitable external pressure, but in turn reshaping these exogenous factors and energy regimes.

# Conclusions

This chapter posits the energy commons as a necessary mode of energy governance for solar, wind, and other replenishable sources to facilitate a just and enduring energy transition. Presently, these global commons are approached as open access regimes, enabling new modes of enclosure, extraction, and commodification of sunlight and wind, with the consequence of replicating social and environmental devastation of the fossil fuel era while ultimately failing to transition. Energy commoning supports direct and durable modes of energy democracy, reconceptualizing energy as a commons rather than commodity, owned and managed by communities deploying systems of rules for energy conversion and use. Specific strategies of commoning now in practice can be taken up more broadly by movements seeking to deeply democratize renewable energy systems. These strategies include organizations such as cooperatives and municipal utilities, micro-and mini-grids, reforms of land ownership and constitutional rules, and implementation and experimentation as guided by a diverse set of principles for enduring institutions of the energy commons. This inclusive approach to energy transition must not come by way of ongoing enclosures of indigenous lands, however, and therefore to achieve its potential, energy commoning must be intimately joined to efforts to recognize and redress indigenous rights and sovereignty. While the struggles to create and defend energy and other commons will continue, this transition presents renewable energy advocates with an opportunity to rethink fundamental questions of access, use, value, and relationship, and to put to practice lessons learned from diverse real-world experiences of energy commoning.

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1. An additional strand of research, largely following neoclassical economics, centers on the classification of common-pool resources as distinct from public, private, and toll goods, depending on the combination and degree of characteristics of rivalry and excludability (Ostrom, 2010). Others argue that no fundamental attribute or physical characteristic necessarily distinguishes a common good from other types of goods, rather common goods are socially created. For further discussion on this debate, see Helfrich (2012a). [↑](#endnote-ref-1)