



Inter-Agency Task Force on
Social and Solidarity Economy

Community-led Initiatives and the Social Solidarity Economy

Commons Ecologies for Delivering and Re-Imagining the Sustainable Development Goals

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**Implementing the Sustainable Development Goals:
What Role for Social and Solidarity Economy?**

Abstract

This paper examines how community-led initiatives are deploying social solidarity economy in distinctive ways as a vehicle for local action consistent with delivery of the Sustainable Development Goals. It employs the concept of commons ecologies to capture how such activities restructure relationships and interactions among SSE actors and organisations. Such interactions characterise both local and regional commons ecologies and participation of local and regional actors in wider networks at national, international and global levels. Case studies from UK, Portugal, Brazil and Senegal each illuminate different qualities of local/regional commons ecologies and their forms of engagement with wider networks. In each case, SSE acts as a vehicle for expressing participants' values and principles consistent with those underlying the SDGs. Local implementation of SDGs is thus an inbuilt feature of these commons ecologies. Their participation in international and global networks offers opportunities for more mainstream processes to learn from local level experiences and successes, potentially strengthening SDG implementation more generally.

Keywords

Community-led initiatives, commons ecologies, grassroots innovation, transformative action, cross-scale collaboration.

Bios

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Introduction

According to a recent OECD report, most countries covered are closer to achieving Sustainable Development Goals (SDGs) concerned with ecological sustainability (SDGs 6, 7, 11, 12, 13 and 15) than those related to social justice (SDGs 2, 5, 10 and 16). This paper examines the scope for balancing the implementation of these differently-oriented SDGs through SSE-based strategies that combine regenerative ecology with the promotion of post-growth livelihoods based on cooperative approaches to production, commercialisation and consumption.

Our empirical focus is the achievements and potential of particular forms of social and solidarity economy (SSE) arising within movements of community-led initiatives for sustainability and social justice (CLIs). Our analysis employs the concept of **commons ecologies**, emphasising the self-organised and highly democratic nature of CLIs and the conceptual and practical interdependency among social and ecological outcomes that characterises their work.

The lens of common ecologies brings into focus distinctive features of the ways CLIs mobilise SSE as a vehicle for action. This highlights both enabling factors that help them to achieve impacts consistent with the SDGs and structural and cultural factors that limit these impacts. This supports the central argument of this paper: CLIs and their SSE activities are not just powerful vehicles for SDG implementation but also offer alternative framings and understandings that can enable improvements in SDG conceptualisation and implementation more widely.

CLIs are self-organised initiatives of people working together towards some defined set of environmental and/or social goals. Most identify with defined localities or communities of place. Many also form part of translocal movements that seek to strengthen local action via networking, collective learning, pooling and sharing resources, and mutual support (Avelino et al 2019). CLIs arise and operate independently of government, but often seek to collaborate with local government and/or seek to influence policy.

The creation of the SDGs has provided new possibilities for linking the aspirations and activities of CLIs with those of governments and intergovernmental bodies. Based on long-term experience of practical action towards linked environmental and social goals, in some cases over several decades, the actions and achievements of CLIs prefigure, at local and/or regional scales, wider SDG implementation (Penha-Lopes and Henfrey 2019). Some CLIs have adopted the SDGs as an explicit framework to advance and evaluate pre-existing work.

However, CLIs often question key structural conditions that are taken for granted in the SDGs as currently articulated and framed. In particular, the pervasive and growing influence of post-growth thinking (Jackson 2017; Kallis 2018; Raworth 2017), leads many CLIs to problematise the position of economic growth, both as a goal in itself (SDG8) and as a framing condition for achieving other goals. SSE thus becomes a vehicle through which CLIs seek to explore approaches framed within different social, economic and political assumptions (Asara et al 2013; Fullerton 2015). They bring to this great depth of hands-on practical experience developed largely outside in isolation from conventional institutions. Accordingly, the alternative forms of thinking, organising and acting deployed by CLIs, through SSE, in working towards the SDGs, can be a great source of insights for wider SDG implementation.

Commons Ecologies

An understudied dimension of the SDGs is the interrelationships of their social and ecological dimensions and the implications for implementation. Our argument here, based on diverse case studies presented in later sections of the paper, is that integration of social and ecological aspects can be improved through systemic approaches based on creating synergies among commons-based practices of provision at different scales. In making this argument we deploy commons ecologies as a holding concept that captures the essential general features of CLIs, their distinctive approaches to SSE, and the constructive critique of the SDGs these approaches enact.

The basic premises of the argument are twofold. First that commons provide a necessary complement to market-based and state-led action towards the SDGs because, by nature, they integrate environmental and social concerns. Second, that SSE's potential to contribute to delivery

of the SDGs arises largely because it can help commons to exist and flourish despite the predominance, and favouring by governments, of capitalist organisations with limited potential to deliver beneficial social and environmental outcomes.

Commons, a form of socio-economic organisation in which users self-organise for collective management of shared resources, take diverse forms and are an accepted alternative to market, state and their various hybrids (Ostrom 1990, 2005). Extensive empirical research has shown traditional commons, which still support the livelihoods of the majority of the world's population, to be a necessary (but not sufficient) feature of all documented cases of sustainability and resilience in social-ecological systems (Berkes 1990; Berkes & Folke 1998). Community-led initiatives for sustainability have, through conscious imitation or convergence based on the structural limitations of both state-led and market-led approaches, widely adopted commons as a medium of organisation and action (Henfrey & Kenrick 2017). Commons ecologies are interconnected local networks of commons that emphasise the inter-relationships (social and ecological) necessary for positive environmental and social outcomes (de Angelis 2017: 22). In our view, this focus on relationships, both within and between commons, is the distinctive feature that enables CLIs to deploy SSE as an effective vehicle for realising outcomes consistent with the SDGs.

Commons ecologies demonstrate this focus on relationships in two key ways. First, they prioritise local and regional (especially bioregional) level organisation of production and consumption. Such 'short circuit' approaches seek to structure chains of production, supply, consumption and disposal on a human scale, maximising use of local resources (natural and human) and ensuring the impacts (positive and negative) of production and consumption are experienced by those directly involved (Douthwaite 1996). From the point of view of specific projects and enterprises, this means the effects on SDG implementation (whether activities enhance or conflict with delivery of one or more SDGs) are visible, creating feedback loops through which enterprises can modify their activities in order better to serve the SDGs. At the level of the regional economy, the effect is to reconfigure the societal metabolism in ways that are more amenable to SDG delivery (Cato 2013). Second, they place greater emphasis on non-material (and non-marketised) assets, and in particular nurture and making effective use of social, human and (renewable and/or regenerated) natural capital in order to support high quality of life on the basis of relatively low levels of material consumption (Hall 2015). This creates many natural synergies among different SDGs, more difficult to achieve in socio-economic models that assume correlation between wellbeing and material affluence.

Commons ecologies are a necessary feature of the solidarity economy, whose organisations and practices are in isolation vulnerable to market forces and regulatory pressures forcing enterprises to prioritise market over social and environmental concerns (Estivil 2018). This can be overcome through forms of 'boundary commoning' (de Angelis 2017): synergistic relationships among commons-based enterprises, and between commons-based and profit-led enterprises, that maximise their autonomy in relation to capitalism's isomorphic pressures. Preponderance of such interrelationships among commons in a single locality leads to a form of social power that instead subverts and constrains traditional business models (Bauwens and Niaros 2017; Esteves 2019).

Our central argument in this paper is that the formation of commons ecologies through such deliberate processes of boundary commoning is the central mechanism by which CLIs successfully deploy SSE as a vehicle for effective action towards the SDGs. In this way, we suggest, SSE itself becomes a form of boundary commoning that expands the potential scope and extent of commons-based action of the kinds inherently compatible with the aims of the SDGs. In very simple terms, the social economy mitigates the damaging effects of profit-led activity and government action to support it on commons of all kinds, and the drive to enclose them in market-based or otherwise formally regulated organisational forms. The solidarity economy complements this inward buffering effect with a centrifugal dynamic, pushing outwards the possible boundaries of commons-based action. The following sections illustrate this in practice with reference to contrasting case studies from Europe, South America and Africa.

Case Study 1: Permaculture Enterprise

Permaculture is a design system based on observation of natural systems and rooted in overlapping ethics of ‘earth care’, ‘people care’ and ‘fair shares’ (Burnett 2001; Mollison and Slay 1994). Its core methodology is to apply principles observed to promote self-organisation and resilience in ‘natural’ ecosystems in the deliberate design of social and social-ecological systems (Holmgren 2002). The aim is that these designed systems support people's needs in ways that maximise their ecological value and require minimal ongoing maintenance. This is achieved by deliberately fostering mutually beneficial relationships among elements in the system, maximising alignment between the needs of each and design goals for the system itself. This emphasis on maximising self-generative potentially through appropriate interrelationship makes permaculture an exemplary strategy for promotion of commons ecologies.

Permaculture has an inherent connection with the SDGs, at multiple levels (Henfrey & Penha-Lopes 2015). The permaculture ethics anticipate six ‘essential elements’ of the SDGs identified by former UN Secretary General Ban Ki-moon: dignity, prosperity, justice, partnership, planet and people (Henfrey & Penha-Lopes 2015: 34). Permaculture design offers a tested methodology for creating practical solutions that reflect these ethics. Specific fields of application of permaculture design – and of operation of permaculture enterprises – are diverse, including both material and social applications. They include many areas covered by the SDGs, including food production (SDG2); sustainable livelihoods (SDG1, SDG8), water management (

6), land restoration (SDG15), climate change (SDG13), and conflict transformation (SDG16).

The relationship between permaculture and enterprise is two-way: enterprise is both an organisational vehicle for permaculture projects and supporting the livelihoods of permaculture practitioners, and one of many fields of application of permaculture design. Permaculture enterprises thus build in, as inherent features, the three core ethics of sustainability, social justice and equity: and, by extension, the essential elements of the SDGs.

The link between SDG delivery and commons ecologies expressed by permaculture enterprises is captured in the concept of Regenerative Enterprise, in which businesses exist in order to create, and make available for social use, one or more of eight different forms of capital: financial, material, living, social, cultural, experiential, living and spiritual. Businesses in any locality interact as enterprise ecologies, specialising in producing different forms of capital and redistributing these in line with the ‘fair shares’ principle so that, for example, a highly financially productive enterprise might redirect fiscal surpluses to others generative of living, cultural or other capitals (Roland and Landua 2013). Such enterprise ecologies, in line with other commons ecologies, embed ethics conducive to SDG delivery as their essential nature, not a secondary add-on or correction to market pressures. Consistent with these ethics, and favourable to both SDG delivery and working within commons ecologies, the financial motivation of permaculture activists tends to be weak compared with social and environmental concerns (c.f. McMullen and Warnick, 2016).

Recent research on permaculture and enterprise shows that permaculture increasingly forms the basis of SSE initiatives that both directly enable SDG implementation and integrate it into broader fields of practice. The ‘Knowledge Exchange for Entrepreneurship in Permaculture’ (KEEP) project, a 2016 research collaboration between Kingston University Business School and the Permaculture Association (Britain), mapped permaculture enterprises in Great Britain using data provided by the Permaculture Association and its 1500 members. From these data over 150 permaculture enterprises were identified. Owner/founders of twenty of these enterprises subsequently took part in interviews, one or two hours in length.

Results of the KEEP Project show that permaculture enterprises are spread over the whole country, with notably high numbers in Leeds in northern England (where the Permaculture Association’s head office is located), London and Southwest England. They are found in both rural and urban locations, with rural locations over-represented compared to the overall UK population distribution. Three business types predominate: teaching, food growing, and garden design and maintenance. However, permaculture entrepreneurs are also working in fields as diverse as publishing, cosmetics, tourism, IT, jewellery making, community development, holistic therapies, writing and construction.

The survey identified some detailed characteristics of permaculture-inspired enterprises. About one-third of responding businesses were community or social enterprises or charities. These enterprises are durable; more than half of businesses in the survey had been in operation for five years or longer and more than a quarter for over ten years. In relation to gender equality and female empowerment (SDG5), nearly half (45%) are owned by women, consistent with relatively high female representation in leadership positions in the UK permaculture movement as a whole (see Henfrey 2014). 25% employed more than one member of the same family. However, in keeping with findings from other research that show low ethnic diversity in many segments of the permaculture movement (Ferguson & Lovell 2015), only two businesses (about 5%) were owned by someone from a minority ethnic background.

The KEEP interviews show that permaculture enterprises may be started up at low cost, thus lowering one barrier – the need for financial capital – which commonly inhibits people from setting up their own firm. Further, those involved in teaching permaculture mainly teach at venues that supply all required equipment, an example of how material capital is shared within a commons ecology. The Permaculture Association Britain itself was a source of funding for new enterprises, and some permaculture entrepreneurs were able to access the fiscal and/or material capacity necessary to start their business through ownership of private property, donations of land and/or cash, other paid work or family savings. Those needing external funding obtained it from a variety of sources, including community funding and crowdsourcing (redistribution of financial capital in the commons ecology), government or local authority grants, charities and bank loans. A couple of interviewees reported having received European Union funding, including a three-year Children in Permaculture project supported by an Erasmus+ grant.

Permaculture generates and distributes cultural, intellectual and experiential capitals through academic and professional qualifications such as the Permaculture Design Certificate and Diploma in Applied Permaculture Design (SDG4). Training for these qualifications emphasises the acquisition and sharing of knowledge for sustainable production and consumption (SDG12) and establishment of sustainable communities (SDG11). Most permaculture entrepreneurs surveyed in the KEEP project reported having taken such courses.

In relation to social capital, interviewees emphasised the importance of being part of a network of permaculture activists and having representative organisations. The various training courses, gatherings and workshops are sites at which interviewees build the networks through which ideas diffuse and are consolidated (also see Henfrey 2017). They take place in locations across the UK, and interviewees also mentioned international partnerships, such as with an olive oil grower in southern Italy and project collaborators in Sao Paulo and Hong Kong. Network formation and maintenance seem to rely largely on individuals being proactive in organising meetings (e.g. of permaculture teachers) or assuming committee roles with the Permaculture Association or other organisations. Respondents typically work in teams with others in the international permaculture movement – a common phrase used to describe collaboration therein is ‘cooperation not competition’. Through such processes, permaculture has created collaborative partnerships within the movement at local, regional, national and international scales, and played an integral part in establishing international cross-movement networks such as ECOLISE (the European network of community-led Initiatives on sustainability and climate change),¹ CASA (the Latin American Council of Sustainable Settlements)² and the Thriving Resilient Communities Network in the USA³ (SDG17).

The essential elements of the SDGs thus appear to be well served by the application of permaculture design thinking to SSE. Its integration within new enterprises, social organisation and business models enables the generation and sharing of multiple forms of capital. This in turn establishes commons ecologies in many ways better suited than capitalist economies to the realisation of the SDGs.

¹www.ecolise.eu

²<https://redcasalatina.org/>

³<https://thrivingresilience.org/>

Case Study 2: Tamera Ecovillage

Tamera is an ecovillage in Southern Portugal that was founded in 1978 and currently has around 200 residents. Tamera developed the "Healing Biotope" model as the result of a deliberate strategy to establish a regional level commons ecology that integrates SSE enterprises into self-regenerative economic and ecological circuits of value via strategic promotion of water, energy and food autonomy (SDG16). This happens through ecosystem management strategies based on permaculture (SDG15), use of renewable energy technologies (SDG7) and development of a regional food autonomy network (SDG2) (Esteves 2017). Tamera residents share water and energy produced within the community's boundaries and organic food grown either on the community's own land or within an emerging regional food autonomy network based on exchanges between intentional communities and small- and medium-sized organic and biodynamic producers in the region. This is supported by use of permaculture for ecological regeneration, low carbon architecture and use of off-grid renewable energy sources (Esteves 2017).

Tamera started moving towards energy autonomy in 2006 with the creation of Testfield 1 Solar Village, where research in the field of solar energy and biogas is undertaken, assessed and integrated into everyday life (SDG11). Testfield 1 supports experimentation by Sunvention International GmbH, developing and testing an off-grid solar energy system for pumping water, powering greenhouses and processing and storing food, complemented by other experimental technologies like Scheffler mirrors and biogas digesters. The aim is to develop strategies for community living that combine use of these technologies with changing consumption habits to bring them in line with the productive capacity of the regional food autonomy network (SDG12) (Esteves 2017). According to data from the EU-funded ORIGIN research project, over the course of 2015 Tamera produced 45% of its electricity consumption from onsite renewable resources. Its goal is to achieve complete energy autonomy and self-sufficiency during the following decade.

Since 2007 the community has also been moving towards water and food autonomy, developing a regenerative methodology for land management and food production known as a water retention landscape (WRL). A WRL recovers eroded soils for farming through construction of a system of lakes, ponds, terraces and other features that maximise retention of rainwater (Holzer 2011). In Tamera, WRL supports numerous ecological functions that link SSE to various SDGs: autonomous water supply (SDG6); food production (SDG2); regeneration of topsoil, pasture and forest and local enrichment of biodiversity (SDG15) (Anderson 2011). Members of Tamera's Ecology Team reported that through this strategy Tamera became self-sufficient in water supply and management in 2009 (Esteves 2016). External assessment of Tamera's WRL suggests that it can contain or even reverse climate change by increasing the capacity of the soil to return water to the atmosphere through evapotranspiration (SDG13) (Kravick et al 2008).

The activities of the intentional community based at Tamera thus support development of a commons ecology at two nested, interdependent levels. Within the community itself it supports radical innovation for sustainable production and consumption in ways basic to residents' lifestyles and livelihoods. In the wider region, by promoting linkages among enterprises in ecologically and economically regenerative circuits of value that support emergence of a regional SSE it spreads those innovations more widely, contributing in significant ways to multiple SDGs.

Case Study 3: Esperança/Coesperança

An example from Brazil shows how distinct social movements converge through regular solidarity economy markets, generating commons ecologies conducive to SDG delivery. Esperança/Coesperança, a Solidarity Economy network in Rio Grande do Sul, links movements of small-scale farmers, landless workers and a wide range of local coalitions. It organises regular markets at various scales and time intervals, from the weekly Feirão Colonial to annual international thematic fairs.

The markets promoted by Esperança/Coesperança are new urban commons that connect pre-existing commons-based practices of provisioning and are collectively governed by their co-users as venues for solidarity enterprise. These emergent commons include a permanent space, the

Centro de Referência Dom Ivo Lorscheider, where the Feirão Colonial takes place, along with a number of temporary thematic markets held in public spaces around the city. They anticipate the SDGs by enabling the scaling up and adaptation to current social and economic conditions of traditional practices of production and exchange that, although a poor fit with capitalist logics, support subsistence of local communities in ways that are in harmony with the local ecology (SDG15, SDG16).

Participating producers, selected on the basis of these criteria, have access to marketplaces where they can receive financial revenue for goods that can not easily access mainstream markets due to economies of scale and regulatory barriers. This strategy has helped decrease poverty in the region (SDG1) and promote sustainable and inclusive livelihoods (SDG8) by supporting market integration of provisioning practices traditionally undertaken by women, indigenous people and quilombola communities (of African descent) for social reproduction within their families and kinship groups (SDG5, SDG10). It also contributed to reduce hunger and promote food security in the region by enabling small-scale organic farming and creating short production-consumption circuits that do not lose value to middlemen (SDG2).

This project is a source of best practices that have become a template for similar initiatives worldwide, especially in Latin America and Europe. One of the most notable cases is the yearly Solidarity Economy Fair organised by Xarxa d'Economia Solidària de Catalunya (Catalan Network of Solidarity Economy), supported both directly by the Barcelona municipality and via regional-level public policies promoted by the Catalan government (*Generalitat*).⁴ These markets use public spaces to commercialise the products of organised groups of small-scale farmers and artisans who were previously largely isolated from markets by a combination of globalised supply chains and regulatory requirements that restrict their access to commercial licences. Such strategies do far more than provide a source of income for participants: they also create commons ecologies that support forms of mobilisational citizenship (Escoffier 2018). Concretely, they make visible and tangible economic practices marginalised due to their incompatibility with state and market logics, but possessing inbuilt affinities with the aspirations of the SDGs. By strengthening the political subjectivity and agency of participants, they offer them possibilities of influencing policy both in their own favour and in ways conducive to delivery of the SDGs.

Case Study 4: Gaia Education and Food Security in Podor, Senegal

Gaia Education (GE) is an international NGO, with headquarters in Scotland, dedicated to pioneering community-based educational approaches to sustainable design and development. Founded at the same time as the launch of the UN Decade of Education for Sustainable Development (2005-2014), GE has been developing unique curricula and pedagogic methods that draw upon the educational experiences of ecovillage communities around the globe (SDG4). GE programmes are delivered in fifty-one countries on five continents, in settings ranging from tribal and traditional communities to intentional eco-communities, from urban slums to universities and commercial research and development centres (SDG16). GE educational programmes equip students of all ages and cultural backgrounds with the appropriate knowledge, skills, and critical thinking tools necessary to co-create a society that uses energy and resources with greater efficiency (SDG12), distributes wealth equitably (SDG10), centres autonomy within local communities, and makes quality of life, rather than open-ended economic growth, the focus of future thinking. Learners become change-makers capable of playing active roles in transitioning their existing communities and neighbourhoods to sustainable and regenerative practices, lifestyles and infrastructures (SDG9, SDG11).

GE's work with local communities operates on the basis that SDG implementation via SSE requires locally adaptable strategies, activities and products, carefully tailored to the biocultural uniqueness of each location in ways that promote social and ecological regeneration. Accordingly, the project examined here adopted an approach to sustainable food production that rejected the resource-intensive, technologically dominated, expert controlled paradigm imposed by the corporate agribusiness forces of globalisation. It sought to address multiple linked threats to the

⁴ <https://www.economiasolidaria.org/xes-xarxa-deconomia-solidaria-de-catalunya>

livelihoods of small-scale producers in the Podor region of Senegal, including transfer of the most productive land from production for local needs to commercial exports, and decades of misguided policy favouritism towards industrial agriculture, undermining traditional methods and degrading soils, compounded by the relentless desertification of the Sahel and forcing constant adaptation and innovation on the part of small-scale producers.

In response to this, GE took part in a three-year food security project engaging four villages in the Podor Region of Northern Senegal. The project aimed to develop more efficient methods of organic food production on 16 hectares of community land, in order to increase the communities' resilience and capacity to adapt to the increasing effects of climate change. It aimed to strengthen the communities' social, economic and ecological competences and to build skills in agroforestry, permaculture, food processing and trade. By combining indigenous and scientific knowledge in the design of productive agroecological systems, the project directly benefitted over 3,000 community members, especially women, by enhancing their agricultural and social enterprise knowledge and skills.

Over three years, GE, in collaboration with international and regional experts, conducted a series of capacity-building activities in permaculture, agroforestry and food-processing. Agroforestry practices regenerated the fragile ecosystem by storing carbon, preventing deforestation, increasing biodiversity, protecting water resources and reducing erosion (SDG15, SDG6). Throughout its life, the project has promoted the full and active participation of women, who were its main implementers and beneficiaries (SDG5). Women made the initial decisions about which land to use and crops to plant and were given roles that ensured equal access in power structures; whenever possible female tutors were identified.

In three years, the project successfully transformed 21.3 hectares from arid wasteland into productive soil, supporting flourishing gardens and high yields. In rigorous formal evaluations, participants reported increased food production, dietary diversification, high levels of use of permaculture farming techniques emphasised in skill transfer components, and complete cessation of use of agrochemical inputs. New income generating activities have arisen (SDG8), with separate groups forming to produce and market preserved, processed and dried food. Agroforestry nurseries have been initiated in each participating village in order to enable acquisition of skills in tree husbandry and continued expansion of agroforestry activities beyond the project. Several people have been trained in operation and maintenance of water pumps, part of a wider strategy to ensure proactive engagement with challenges by participants who, for example, have had to self-organise to maintain and provide fuel for the pumps and to expand planting capacity through seed-saving.

GE's involvement not only enabled delivery at project level, it also connected local action to the wider commons ecology of GE's global network of courses, projects, trainers, students, alumni, beneficiaries and other collaborators. Sharing of knowledge, skills and experience through this action learning commons is its key self-regenerative dynamic. It provides a rich body of collective wisdom upon which action at the scale of local communities can draw, and allows these experiences to feed into both the GE global community itself and the wider collaborations and networks, including various UN processes, of which it is a part (SDG17).

Discussion and Conclusions

The case studies presented in this paper are from diverse geographical, social, cultural and economic settings. They nevertheless illustrate common patterns illustrating both the difficulties of reconciling SDG implementation with capitalist logics, and how such difficulties can be overcome through establishment of commons ecologies appropriate to their respective contexts.

In each case, pressures originating in both states and markets mitigate against socially and ecologically regenerative livelihoods, buffered by multi-level networks of relationships within commons ecologies originating through self-organised action at community scale. This suggests commons ecologies are a transferable strategy that can inform development of systemic approaches integrating environmental and social aims, thus mobilising SSE as a means of decreasing the disparity between levels of implementation of different SDGs.

Each of the four case studies considered here demonstrates, in its own way, the distinctive features of commons ecology approaches to deploying SSE as a vehicle for SDG implementation at the scale of the local community and linking this with wider levels of scale up to the global. Application of permaculture to the design and operation of SSE enterprises roots them in ethical orientations and organisational strategies that integrate SDG delivery as a core feature. Permaculture enterprises generate relationships of mutual support via their participation in regional enterprise ecologies and networks of action learning and strategic collaborations at local, regional, national, international and global scales. At Tamera these principles are integrated into the daily life of the residential community and regional networks of cooperation among SSE actors within and outside the community, making SDG implementation an embedded feature of local and regional economies. The work of Esperança/Coesperança enables self-organisation of economically marginalised actors into local and regional SSE networks reflecting autochthonous social and ecological principles that strongly align with, and enable implementation of, the SDGs. Gaia Education's work in Senegal supports local people to mobilise their own material, intellectual, social and cultural resources for economic empowerment and participation in global networks for innovative deployment of SSE as a vehicle for SDG implementation. In all these cases, SSE connects local self-organisation towards SDG delivery with nested networks at all levels up to the global. In this way, diverse perspectives, ways of knowing, practices and organisational strategies originating at local level, shared through multi-scale commons ecologies, become the basis of wider collective learning and collaborative action towards the SDGs.

Our analysis challenges policy-makers and practitioners to develop strategies for SDG implementation based on promoting local-regional clusters of SSE enterprises as commons ecologies in the following ways:

- 1) adopting regenerative approaches based on synergies between regenerative ecology and commons-based, cooperative post-growth strategies;
- 2) re-localising supply chains and promoting autonomy and sovereignty in terms of water, energy and food production, so as to make SSE clusters more resilient to pressures from the mainstream economy, as well as fluctuations in availability of public funding;
- 3) developing context-sensitive strategies through epistemologies that combine scientific and local/traditional knowledge.

The concept of commons ecologies reveals the shared features that allow diverse forms of local SSE organisation to incorporate SDG delivery as an in-built feature. Such commons ecologies address economic, social and ecological factors in inherently synergistic fashion, in which they are mutually enabling, avoiding the tensions and trade-offs that inevitably arise under conventional market logic. Their involvement in global networks provides a ready-made basis for their deeper and fuller engagement with mainstream processes within the UN and elsewhere, which can benefit greatly from the novel solutions, insights and perspectives they provide.

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