G R E E N G R O W T H

IDEOLOGY, POLITICAL ECONOMY AND THE ALTERNATIVES

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CHAPTER 11

Reconsidering growth in the greenhouse: the Sustainable Energy Utility (SEU) as a practical strategy for the twenty-first century

Job Taminiau and John Byrne

Introduction

Satellite imagery of our planet by nightfall depicts human triumph and progress as extensive, and sophisticated networks of artificial lighting are visible from space, illuminating modern development - a phenomenon which was invisible only 100 years ago. Implemented at such a scale and intensity that naturally starlit skies have been placed outside common experience for many, the widespread use of electricity illustrates human dominance over nature, the power of technology and capital, and the astonishing expansion of modernity. Globalization of the Modern Model has delivered significant benefits as, for instance, modern energy development has provided millions of people with critical services such as sanitation and healthcare, clean water, reliable and efficient lighting, heating and cooling, cooking, mechanical power, transport and telecommunications. The success of modernization is so highly regarded that national governments have promised the spread of the Modern Model as a political objective. Indeed, the Millennium Development Goals (MDGs) can only be delivered through the development of energy.¹

However, the powerful imagery of the 'World by Night' produced by the National Aeronautics and Space Administration (NASA) reveals, at the same time, a developmental and social dilemma of modern success. The visualization depicts both those with access to lighting options and its associated services and also the privileged

character of modern development, despite the invention of the light bulb over a century ago. In fact, two billion human beings, almost one-third of the planet's population, cannot afford or reliably access electrical energy services.² This persistent problem of energy poverty traps billions of people who cannot participate in a wide range of social and economic activities. The trap is especially harmful for those who find themselves excluded from even the basic benefits of potable water, education (for example, lighted classrooms) and healthcare (e.g. refrigerated medicine cabinets). Closing the chasm between the energy rich and the bottom billion represents a formidable challenge for the Modern Model.

This social dilemma is compounded by an ecological dilemma that has been the companion of industrial development since the start of the Industrial Revolution and which prevents business-as-usual development patterns as human society moves through in the twenty-first century. The 'World by Night' imagery discloses one example of the ecological significance of modern development as light pollution's victory over the night's sky is emblematic of humanity's capability to alter global environments and encroach upon natural frontiers. The concept of the 'Anthropocene' offers the realization that human activity now rivals geological processes and energy flows in shaping the planet's natural history.³ The exponentially increasing natural resource use and activity levels by humanity that characterize the Anthropocene is expected to produce significant ecological consequences as its effluences strain and overshoot 'planetary boundaries'.4 As such, the aspiration of the world's energy poor to be fairly treated and join the world's energy rich on the pathway to greater prosperity challenges ecosystem health so long as the wealthy refuse to cut back on natural resource consumption. As Herman Daly pointed out long ago, 'sustainable growth' is an oxymoron which pushes the poor into a perennial politics of blame for seeking development while elites enjoy luxury rationalized by an ideology of 'angelized GDP'.5 This confrontation highlights in-built injustice in the modernized ecosystem and further underscores the need to change the operating principles of societal development if human civilization is to be consistent with long-term ecological viability.

The green growth rescue?

A recently heralded strategy to alleviate these dilemmas of the Modern Model is the reconstruction of the global economy on principles of 'green growth'. This concept, originally limited to notions of 'eco-industry' growth, is now being applied to signal an economy-wide transformation process. The strategy continues the modern premise that economic expansion is capable of erasing inequality but modifies the ecological footprint of development by an appeal to smarter technology and resource management: 'green growth is about making growth processes resource-efficient, cleaner and more resilient without necessarily slowing them." As long as social and political architectures continue to encourage and prioritize the 'green' principles of economic growth, the strategy promises continuous enhancements of the living conditions of both poverty stricken and wealthy communities alike. The shift to a green energy system fuelled by renewable energy as an infinite (or, at least, longlasting) supply to energize continued growth is a critical technological and management component in the green growth strategy in order to circumvent negative climate change consequences. As such, there are two shared premises of the several green growth narratives now in use: 1) confidence in green energy architectures to deliver endless economic expansion; and 2) belief in the curative properties of green growth to persistent problems of poverty and inequality.

The green growth pathway has found widespread support and acclaim. For instance, in a 2009 Declaration on Green Growth, the Organisation for Economic Co-operation and Development (OECD) affirmed its commitment to green growth 'as part of our response to the current crisis and beyond, acknowledging that "green" and "growth" can go hand-in-hand'.⁷ South Korea's National Strategy for Green Growth similarly offers a notable example of the strategy with . the commitment to build the next phase of development on green principles to propel this 'Asian miracle'.⁸

The analytical benefit provided by this optimistic strategy is the alliance between short-term economic benefits and election-cycle drive political agendas with long-term ecological progress and viability. As a development paradigm, the green growth strategy promises the

management of ecological harm within reasonable boundaries while continuously expanding the services and benefits offered by the Modern Model to ever more people. In effect, and similar to classic re-dimensioning efforts of economic thought, green growth seeks to account for environmental degradation within economic growth frameworks.

But, can successful implementation of green growth principles resolve conflicts between economic growth and environmental sustainability? And can poverty and inequality be systematically addressed by 'doubling down' on the promise of growth? Additionally, proponents have not explained why the astonishing economic growth of the twentieth century has left 2 billion people with little or no access to technologies invented over one hundred years ago. Why is it plausible to believe that green technologies have curative properties to treat poverty and inequality which their industrial forebears did not? Improvements in energy and carbon productivity - where higher levels of economic activity are produced against lower environmental pollution or energy use in a relative sense – are cited in support of green growth, compelling some to argue for the 'bottomless well' of human ingenuity and innovation.9 Another line of support brought forward is the rising penetration of renewable energy in total primary energy supply. Indeed, year-on-year growth of green energy technology options such as wind and solar has been impressive: annual capacity growth rates have continually surpassed 40 per cent for photovoltaic (PV) energy; and compound US annual growth rates for solar PV over the last ten years is an impressive 65 per cent.10

Evaluating the 'greenshift' as a means to alleviate energy poverty

A 'greenshift' of the modern energy regime is proposed as the way to cleanse growth aspirations of their negative ecological consequences. The challenge is formidable: the Energy Information Administration (EIA) projects that world energy use will amount to 820 quadrillion British Thermal Units (BTUs) in 2040, up from the 630 quadrillion BTU level in 2010 (a 56 per cent increase in energy consumption).⁴¹ Proposals to address this challenge range from 'dash for gas' transitional strategies, nuclear revivalism, 'clean coal' pursuits, and renewable energy futures.¹² Proponents find solace in the fact that other technologies, such as the information and telecommunications sector have successfully scaled similar transformation challenges in previously unpractised short timeframes.

However, the energy regime of the Modern Model reveals a potential social complication: energy development principles were structured in favour of increasingly large-scale and centralized technologies that could provide massive amounts of energy – what Amory Lovins depicted as the 'hard path' of development.¹³ Indeed, a celebrated trend within the green energy sector's rapid growth is the shift to large-scale applications of renewable energy, substantiating calls for green 'Manhattan Projects'. Propelled by principles of economies of scale and efficiency improvements – and supported by sometimes generous financial policy support – dreams of 10, 15, 20 megawatt (MW) wind turbines lead to a championing of the industry along the lines of 'bigger is greener' or, perhaps, a 'small is stupid' mentality. Energy infrastructure data maintained by the US Federal Energy Regulatory Commission (FERC) offers an example of this trend (Figure 11.1).





Source: Federal Energy Regulatory Commission. Energy Infrastructure updates. Available at: www.ferc.gov/legal/staff-reports.asp.

Proponents of this energy future ignore that current constructs provide for such 'bigger is greener' and 'more is better' claims along existing consumption-production and nature-society relations: such a course of action could negate the social promise that was thought to be inherent to sustainable energy and, in fact, could become simple 'life extension projects'14 for the modern energy project. As 'Bie Wind', 'Big Solar' and others are integrated into the existing structure of 'Giant Power', promises of a democratized energy world and notions of 'energy for all' evaporate and are replaced by an economic rationalism of expansion and growth. Decentralized and horizontal outgrowth of energy, allowing for innovative energy access and new end-user relationships to energy based on individual contexts, are challenged by 'Giant Power' constructs that function around centralized, oligopolistic and hierarchical energy geographies and economics. The result is an inherently modernist endeavour: environmental narratives are seamlessly incorporated into the modernization project. Self-criticism is only applied to the 'end-of-pipe' consequences of current social relations to the environment - i.e. modernity's pollution consequences - rather than challenging the corporate character of energy development, the class differences that substantiate capitalist expansion and community fragmentation, or existing patterns of inequality.15

Questioning equality as a construct of growth

A discourse of political expression is available to civil society to communicate preferential development routes or direct prioritization of the political agenda in liberal democracies, at least at the conceptual level.¹⁶ However, demands for change by civil society are frequently parried by pointing to a lack of 'political will' to address the issue at hand. The climate change discourse offers an example: the Yale Project on Climate Change Communications has found that a majority of Americans (70 per cent) think climate change should be a 'very high' (16 per cent), 'high' (26 per cent) or 'medium' (29 per cent) priority¹⁷ but US political power, in contrast, has consistently been applied in an effort to reduce the effectiveness and stringency of global commitments to climate change mitigation. A 'reality gap' between rhetoric and actual action is apparent.¹⁸

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Institutions and social relationships of the Modern Model have evolved around the continuing support of a model of capital accumulation and corporate power. A case can thus be made that the voice of civil society is pre-empted by a political and corporate discourse in favour of this model.¹⁹ Political legitimacy, at least in part, depends on how well political action facilitates the 'general interest of capital'.²⁰ Political adages – such as 'green growth' – which are rapidly and easily accepted by existing political and economic architectures, as evidenced by the widespread political support positioned at its foundation, are therefore unlikely to deliver fundamental change.

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In effect, the corporatist ideology establishes a state of 'autonomous' technology and capital which evaluates alternative development pathways against the established status quo, resulting in a preservation of its own existence. Civil society's identity is reduced to a 'consumer democracy' in which end-users of energy's dominant means to influ-'ence entrepreneurial and capitalistic activity are limited to their daily vote on the means of production through the global marketplace. With the marketplace as the main depository of social and political governance, civil society's voice is fragmented, marginalized and alienated through a process coined by Lewis Mumford as the 'democratic-authoritarian bargain':

Under the democratic-authoritarian social contract, each member of the community may claim every material advantage, every intellectual and emotional stimulus he may desire, in quantities hardly available hitherto even for a restricted minority: food, housing, swift transportation, instantaneous communication, medical care, entertainment, education. But on one condition: that one must not merely ask for nothing that the system does not provide, but likewise agree to take everything offered, duly processed and fabricated, homogenized and equalized, in the precise quantities that the system, rather than the person, requires.²¹

The Modern Model's capitalist reflex to environmental degradation is made apparent in the carbon market policy model. Driven by principles of cost-effectiveness, efficiency and flexibility, the carbon market model aligns with modern political economy dynamics and

is especially suited for large-scale, transnational corporations.²² Recent surveys, however, show an emerging force, applied by 'green' corporations, to *enhance* action levels and push for more stringent negotiation outcomes in order to advance their business position.²³ Expressions by incumbents at the heart of the 'carbon economy', however, are likely to slow down this process.

More fundamentally, the positioning of science, technology and markets as the means to liberate society from natural constraints produces a nature-society relationship which will not yield to absolute natural boundaries. The drive to maximize growth patterns and sustain capital accumulation instead seek to 'bend' ecological thresholds, translating sustainability rules into efficient applications of science, technology and economics in an attempt to tie economic and technical efficiency to the ethical notion of equality. Ethical value, in this management system of commodification, only surfaces through its transformation into abstract units with exchange value. The result is a juxtaposition of technological and management capability and ethical virtue: 'Carbon emissions become an electronically tradable unit on a trader's screen displaying (only) the current price and volume traded. This virtualization of carbon simultaneously embodies the moral character, or the virtue, of the commodity being traded.'²⁴

The blending of virtue with technological and management capability inserts the logic that every improvement in technological and managerial application delivers a normative benefit. Effectively, the commodification of the environment can be seen as a pursuit of making climate change *itself* efficient: the carbon price now becomes the dominant guiding mechanism whether climate change mitigating actions should be performed as marginal decision-making processes determine whether the reduction of one more unit of emission reductions is efficient. This notion was coined 'efficient global warming' by one of the authors.²⁵

These considerations expose a critical weakness in growth-based strategies: the relationship between society, nature and economy – other than commonly represented 'triangles' of sustainable development which suggest economic activity, nature and society have independent components – is one of fundamental integration. In order to account for the fundamental nature of 'planetary boundaries',²⁶ a principle of

sufficiency thus needs to be inserted beyond which growth in an absolute sense is no longer pursued. The empirical record for absolute decoupling - impact decreases in absolute terms even as economic growth continues - however, is far from robust.27 Evidence of relative decoupling is unsurprising as profit-maximization strategies continually seek to gain additional value from each unit of input, but absolute decoupling represents a more fundamental notion: limiting expansion to stay within absolute, non-market boundaries of the natural system. Studies on environmental dependency suggest that the empirical record to support decarbonization or dematerialization along lines of 'absolute decoupling' is weak.28 Additionally, a growing body of literature continues to critique the position that economies can grow their way out of environmental harm to the point where the position has become largely untenable.²⁹ Indeed, it appears that only economic crisis has been able to materially affect the rising pattern of global greenhouse gas emissions. However, investigations into the effects of such downturns on global emissions suggest that the effect is not only short-lived but also marginal.30

Cornucopian promises of equality, therefore, rationalize the weakening of the fundamental nature of ecological limitations and their social inequality consequences. In fact, absolute restraint in line with ecological limits is considered irrational unless market efficiency, in the form of for instance a carbon price, dictates such change. The fundamental and ethical character of ecological limitations is further eroded as technological and managerial capability improves. Equality as a construct of growth therefore fails to materialize as businessas-usual extrapolations demonstrate the unworkable energy and environmental future of the modern energy regime.^{31, 32} The need for a different pathway is apparent.

Moving beyond green growth rhetoric

Lewis Mumford, in his description of the 'democratic-authoritarian bargain', early on recognized the consequences and implications of society's devotion and allegiance to Modern Model politics and envisioned a new pathway with which to approach technology, capital and societal development:

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[W]e had better map out a more positive course: namely, the reconstruction of both our science and our technics in such a fashion as to insert the rejected parts of the human personality at every stage of the process. This means gladly sacrificing mere quantity in order to restore qualitative choice, shifting the seat of authority from the mechanical collective to the human personality and the autonomous group, favoring variety and ecological complexity, instead of stressing undue uniformity and standardization, above all, reducing the insensate drive to extend the system itself, instead of containing it within definite human limits and thus releasing man himself for other purposes. We must ask [...] what is good for man: not machine-conditioned, system-regulated, mass-man, but man in person, moving freely over every area of life.³³

A workable strategy will need to improve the human condition while decoupling economy and energy in an absolute sense in an effort to observe fundamental ecological and social limitations. Insensate expansion, powered by the misguided assumption that such a process opens opportunities for all, can no longer be positioned as the objective of strategies of change. Instead, recognizing Steinberger and Roberts' finding that energy and carbon decouple from human needs at higher living standards,³⁴ strategic consideration needs to be applied towards the fulfilment of actual needs rather than the continuous expansion of supply. For energy, a new strategy that *matches* energy supply to human needs can represent Mumford's new positive course.³⁵

The currently dominant governor of energy supply in the Modern Model is the conventional energy utility. Conventional energy utilities have evolved and thrived in the Modern Model's centralized, highthroughput energy regime, and their decision-making procedures reflect this origin. For instance, utility revenues are dependent on energy sales, requiring cost recovery mechanisms to offset decreased revenues and the cost of 'stranded assets' when energy efficiency programmes successfully reduce energy use. Also, the integration of onsite and small-scale renewable energy generation contradicts the architectural logic of modern utility systems. These limitations require modification if a conventional energy use and generate remaining energy use from renewable energy sources. Ongoing discussion is taking place on the shape and functioning of such an institution. These 'Utility 2.0' discussions have produced innovative business models. A commonly cited model is the energy service utility, two US examples of which are the Energy Trust of Oregon and Efficiency Vermont; institutions that seek to deliver energy services to customers rather than electricity sales. Conceptually, however, these examples do not pursue paradigmatic change as they carve out energy service markets in parallel operations with conventional energy utilities.³⁶ Additionally, these models are often dependent on funds from conventional utilities to underwrite their investments.

To fulfil Mumford's vision, a more fundamental strategy is required. A pathway of strategic social change that positions livelihood-centred energy and economic development and participatory governance at centre stage through the deployment of transformative social innovations – a process of 'Social Change 2.0' if you will – is needed to establish a collaborative playing field, empower people, transform dysfunctional social systems and produce infrastructure-scale change.³⁷ Here, we discuss the Sustainable Energy Utility (SEU) as a viable and practical model to fulfil Mumford's vision and advance equality and sustainability.

The Sustainable Energy Utility (SEU)

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Designed to redraft the energy-economy-environment-society relationship, the SEU can be put forth as one answer to the challenges raised to green growth. At its core, the SEU promotes energy economy restructuring along principles of sufficiency, dialling back energy use where possible and using onsite renewable energy where needed. Its other innovative characteristics emerge when considering: a) how the SEU engages the community in which it functions; b) how it positions the value inherent in all communities; and c) how it attracts financial support to deliver infrastructure-scale change.

The SEU and community trust

Unlike accepted conceptualizations of the individual as reactive 'endusers' or 'consumers', the SEU views people and communities as

self-organizing, proactive, self-reflecting and self-regulating. Positioned as a 'community utility', the SEU empowers residents and businesses to embark on a future of sustainable energy, moving beyond limited conceptualizations of 'prosumers' and towards sustainable citizens.³⁸ SEU performance, as such, is judged on its capacity to realize public benefits, foster social acceptance and maintain social engagement, and is evaluated by the community it serves.³⁹ Indeed, without community participation and trust, the SEU model ceases to exist. Allowing for community-designated environmental, social and governance objectives, the SEU reconstitutes the contemporary technocratic energy development model that prioritizes the voice of experts of technical acumen – paid for by community members through their energy bills – rather than making energy experts subservient to community goals.⁴⁰

Participants in SEU programmes indicate their energy service needs and advanced investment-grade energy audits determine where improvements can take place and what energy reduction measures and technologies are suitable for the participant. The results of these assessments are documented in a) a long-term guaranteed savings agreement between the energy service corporations (ESCOs), the participant, and the SEU outlining the energy savings available and contractually guaranteeing their materialization, b) a payment agreement between the SEU, debt issuer and the participant outlining a payment schedule where debt service payments and remaining utility bill payments together do not exceed the utility bill payments prior to the installation of energy-saving measures, and c) a programme agreement between debt issuer, participant, SEU and ESCOs that outlines the functioning of the overall programme. Critically, energy savings are denominated in dollar amounts, providing security and clarity to all programme participants. Community trust is strengthened further as the programme is customizable to local conditions (e.g. repayment terms, energy saving measures), the participant incurs no upfront capital costs, the participant owns all improvements and associated benefits, net savings accrue to public participants, monitoring and verification protocols support participant goals (if monitoring and verification report energy saving shortfalls, the ESCO is held responsible under the guaranteed savings agreement and will need to remedy the performance shortfall or provide compensation), and low cost

capitalization (see below) is available by taking advantage of community pooling and transaction standardization. The SEU thus becomes a trusted advisor of the community as it provides independent, objective monitoring and verification of investment performance and identifies actions needed to comply with the contractual savings guarantee throughout the long-term duration of the programme (20-25 years per contractual engagement).

The SEU and the commonwealth

Drawing from Amory Lovins' concept of the 'negawatt',4¹ the SEU's core value proposition is that it is more cost-effective to reduce energy use through conservation and efficiency efforts than to expand energy supply to meet rising demand. The promise of cost reductions realized by lowering the utility bill in this manner can be aggregated across the entire community, yielding a substantial wealth of energy use reduction potential. The 'commonwealth' - the ongoing mutual promise to share the costs and benefits of building an energy scheme that uses less - is applied to underwrite the energy use reduction measures and investment costs and attract financial capital from the capital markets. Community investments in this manner promote collective gains such as improved public health and biodiversity recovery. Providing any remaining energy use with renewable energy sources provides the additional benefit of constructing an enduring commonwealth. The SEU thus provides for a practical strategy by investing in less use, funded by the difference between waste and conservation and, for large investments where up-front capital costs are substantial, drawing from the substantial wealth of the commons. Future expansion costs for additional energy capacity or remediation and restoration infrastructures are avoided.

Positions of limiting energy supply or growth are commonly criticized as 'backward' or risking 'degrowth'. However, focusing on energy service delivery rather than energy supply is by no means a recipe for social decline. Indeed, significant benefits can be accrued with the effective deployment of the commonwealth. For instance, a recent publication by the International Energy Agency (IEA) reports a global \$115 trillion fuel saving opportunity residing within decarbonization strategies.⁴² Similarly, a \$279 billion investment could

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yield \$1 trillion in return in energy savings within the US building sector over a ten-year period⁴³ and annual US non-transportation energy efficiency potential equates to \$1.2 trillion.in energy savings against an initial \$520 billion investment corresponding to about 1.1 gigatons of greenhouse gas emission reductions.⁴⁴ Much of this potential remains untapped. The final innovation of the SEU is its capitalization approach and practical strategy with which to unlock the commonwealth.

The financial identity of the SEU strategy

The commonwealth, i.e. its energy savings potential, is deployed by the SEU in an innovative and practical strategy to overcome oft-cited barriers to successful energy efficiency and conservation efforts such as high upfront costs, limited capital availability, and the need to maintain ratepayer protection. Additionally, the deployment of the commonwealth in this manner, pooling together community savings options in infrastructure-scale investment opportunities, allows for a reduction in the cost-of-capital by engaging the capital markets. These New Energy Economics leverage financial capital from a variety of sources (philanthropic, energy and carbon auction markets, crowdfunding,⁴⁵ etc.) but an especially innovative approach is the deployment of tax-exempt revenue bonds that access the private capital market.

Figure 11.2 demonstrates how commonwealth resources can be used to pay back the bond debt service throughout the maturity of the bond. A community participant's energy use and utility costs, through the deployment of energy efficiency, conservation and renewable energy measures can thus be reduced without a financial commitment from the community participant other than the promise to pay back the debt service (which is paid for by the energy savings). Debt service repayment is ensured through the guaranteed savings agreement with the ESCOs pledging contractual monetary savings to the public participant. This is an important element: unlike other approaches to energy savings, commonly expressed in energy terms such as kilowatt hours, the monetization of energy savings delivers transparency and clarity to investors and community participants alike. Guaranteed savings agreements are possible as the SEU leverages the significant commonwealth towards those that install the energy savings measures, negotiating favourable contracts with lower prices and guarantees. The combined value of the commonwealth resource opens up this option as the energy service contractors are eager to tap into this market and will thus back up their installation measures with promises of guaranteed savings. Finally the use of standardized and transparent contractual arrangements for all participants further strengthens the credit worthiness, as these documents have established a solid track record in other types of arrangements elevating private market trust.

 Maximum Debt Service
 Net Savings

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 Utility costs prior to participation
 Utility costs during the debt service period
 Utility costs after the debt service period

Figure 11.2. Example illustration of the application of the Commonwealth principle for a programme participant

Source: Citi (2011). Delaware Sustainable Energy Utility – Energy Efficiency Revenue Bonds. Series 2011: Post-Pricing Commentary. New York, NY: Citigroup.

Green growth and the Sustainable Energy Utility (SEU)

The difference between the green growth narrative and the narrative represented by institutional innovations like the SEU is paradigmatic: optimal growth versus sustainability.⁴⁶ For instance, fundamentally, *matching* energy supply to be directly in line with energy service needs is wholly different compared to providing ever-growing energy supply options to satiate unending demand. Similarly, where marginal decision-making processes – which decide whether action should be undertaken based on the marginal addition of one extra unit of

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action – can suffer from rebound effects as energy efficiency measures make the use of additional energy easier and more attractive,⁴⁷ infrastructure-scale system transformation along guaranteed savings for 20-25 years provides long-lived, system change. On top of that, the positioning of the SEU as a community utility, drawing from the commonwealth and reliant on community trust, changes the end-user relationship to energy from one of consumer to one of empowered sustainable citizen – indeed, the application of the SEU model changes the public or commons character of energy–society relations as a whole. It's difficult to imagine how this change enables privatization to return in the form of spending to have more.

Renewable energy applications under SEU models serve to provide remaining energy use after energy savings measures have been implemented. Positioning energy supply options in this manner counteracts earlier mentioned consequences of a 'greenshift' under growth processes as the context-specific nature of participants' energy profiles dictates diversity through customer-sited energy applications rather than uniformity and centralization. The provision of just enough energy supply options to meet remaining energy demand furthermore directly counteracts mentalities of 'more is better', 'bigger is greener', and 'small is stupid' and, instead, celebrates restraint. Finally, the fact that energy systems put in place by SEU programmes are owned by the community (i.e. the programme participants) shifts away from the corporate character of largescale and centralized energy development and, instead, celebrates a commons-based character of energy supply.

Equality as a construct of the commons establishes benefits out of reach for growth-based equality pursuits in at least three ways. First, unequal consequences of planetary boundary overshoot – such as climatic change – are addressed by creating a system that thrives by explicitly staying within such boundaries. This change equalizes the position of the powerful with those of the 'other' (other places, other peoples, other times). Moreover, rather than seceding control to bureaucratic and technical experts, SEU models empower people to control their own energy futures as community participants articulate the energy service needs they require. Finally, equality as a construct of the commons allows for resource efficiency in an absolute sense to occur where welfare benefits are realized with lower energy use in an absolute sense – a process that can continue as energy saving technologies progress.

Practical SEU application

The transformative power of the SEU approach is illustrated by its first application by the Delaware SEU in the United States. The issue of the state-wide tax-exempt bond issue realized a \$72.5 million financing in sustainable energy capital from the private market, sufficient to invest in energy saving measures that deliver a guaranteed \$148 million energy saving.⁴⁸ The \$37 million premium benefits the agencies and institutions of the state of Delaware that participate in the programme, lowering the cost-of-government (Figure 11.3). Indeed, the Delaware SEU, applying its 'social change 2.0' framework, outpaces the results of 'Utility 2.0' counterparts such as Energy Efficiency of Vermont and Energy Trust of Oregon.⁴⁹

Figure 11.3 Overview of the Delaware SEU Sustainable Energy Bond issue's costs and guaranteed savings



Source: Citi, Energy efficiency revenue bonds.

The transformational power of this strategy has received endorsements from the US White House and the Asian Development Banks and the SEU model experiences active diffusion within the US and around the world.³⁰ To facilitate diffusion, the Foundation of Renewable Energy and Environment (FREE) provides knowhow and advice to organizations across the US and internationally to take advantage of the SEU model. For instance, the Sonoma County Water Agency (SCWA) in California is set to release a \$30-\$50 million bond issue for Sonoma County. Interestingly, this bond issue innovates beyond earlier iterations of SEU bonds as it includes material- and watersavings potential available in the community. A partnership with the California Statewide Communities Development Authority (CSCDA) seeks to provide outgrowth of the application to the entire state of California, which would significantly advance the SEU concept. Similarly, a recent launch by the Pennsylvania Treasury in collaboration with FREE of the Sustainable Energy Finance Program is a further example of the diffusion of the SEU model. Finally, through the partnership between FREE and Applied Solutions (an agency dedicated to serving community needs in all US jurisdictions), many more communities throughout the US are being engaged and informed about the SEU concept and promise.

The Delaware SEU example offers a guide to how the SEU model can unlock significant energy savings when applied in a comprehensive strategy: a national application of the model in the US along the same lines as described in this chapter would present a \$25 billion energy investment market in the public sector alone (i.e. applying the model in municipalities, universities, schools and hospitals). When applied at this level, approximately 300,000 additional green jobs and 225 million metric tons of greenhouse gas emission reduction could be realized.⁵¹ Indeed, considerable opportunity exists for such a strategy as the SEU model would outperform current programmes with similar objectives by a factor of six.⁵²

Pursuing 'Social Change 2.0' in the twenty-first century

As Mumford says, we need to consider whether we advance strategies that are good for 'machine-conditioned, system-regulated, mass-man' or whether we pursue and develop strategies that align with 'man in person'.⁵³ We offer that the SEU model is representative of this strategic pursuit. The proposals under the green growth narrative – the end-of-pipe greening of existing unequal and hierarchical energy geographies, the reliance on resource efficiency when faced with absolute growth, and the conceptualization of community members as energy consumers along the democratic-authoritarian bargain – are challenged by this new commons-based paradigm arguing for the reallocation of capital to serve the public benefits of equality, sustainability and justice. As such, the SEU model is paradigm shift-inducing as it competes – both politically and economically – with the existing utility framework.

The 'Social Change 2.0' strategy, of which the SEU model is a part, is proposed as the way forward. In the energy and climate space, the SEU shows a practical articulation of this strategy by matching supply to energy service needs and empowering the community landscape. By doing so, it prioritizes the position of energy efficiency and conservation - now too often considered a 'fifth fuel' afterthought in supply-dominated energy geographies. To prioritize energy saving within the supply-dominated business model, like that of the conventional energy utility, requires extensive regulatory frameworks and rate-recovery mechanisms yielding the paradoxical outcome that, despite frequent affirmations of the cost effectiveness of energy saving compared to energy production, end-users are subjugated to rentseeking behaviour - they pay more for less. The value proposition that the SEU model maintains moves away from this conceptualization and instead creates a practical strategy to unlock existing community value of future energy savings and leverages this resource to realize infrastructure-level investments in measures that cost-effectively result in energy-use dial-back.

The Social Change 2.0 strategy injects human personality into (energy) development agendas as it supports social innovations like the SEU. Fundamentally, such a strategy repositions the community away from the conceptualization of the 'individual as beneficiary' – enjoying all that is provided but without influence – and towards the notion of the 'individual as author' where individuals and communities democratically govern their own energy future. As the

movement actively labours to accelerate the diffusion of the SEU model throughout the US and globally, its promise of advanced prosperity, restructured ecology-energy-society relations, and energy provision to meet energy service needs becomes clear. A twenty-first-century sustainability paradigm that seriously considers both the need to advance equality while maintaining the long-term ecological viability is within our reach.

Chapter 11

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