"Sustainable Structures of Living Together" for Imagining Degrowth in Energy Policy

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Abstract

The organisation of the energy sector is foundational to the economic development status quo of rapid industrialisation, urbanisation and mass-, hyper-consumption societies. We outline here an approach to imagine an energy policy break from this growth status quo. The idea of 'sustainable structures of living together' (Mathai, 2012) is a synergy between areas of praxis that have evolved and developed quite significantly, but separately, in the fields of energy policy and finance, development studies and science, technology and society (STS) studies. An end-use orientation in energy planning connects decision making with clearer and informatively rich normative goals, as opposed to the vague utilitarian policy guidance of more is good. The resulting requirement is to articulate, prioritise and select valuable ends in decision making - within the constraints of fairness in human well-being outcomes on a finite planet. This places high demands on energy governance. The ensuing modalities are conceived as proceeding through deepening democracy and democratic deliberation in energy governance. This requirement in turn calls into use understandings of energy technology that can be responsive to such governance. For this purpose energy technologies are differentiated as leaning toward "authoritarian" or "democratic" tendencies, and we propose a strong tilt toward democratic technologies. Fundamentally however, the above possibilities are constrained powerfully by the impulse of competitive accumulation spurred along by globalised finance and the resulting commodification of energy. The first step therefore necessarily explores energy financing and notions of property that reimagine energy and some aspects of wealth as a commons.

Energy and Growth: Problematising the Development Status Quo

The growth and flourishing of industrial-capitalism is co-terminus with the unprecedented energy abundance of the fossil fuel era. The improvement of the steam engine starting from the late seventeenth century culminated in the ability to dig deeper into coal seams and in turn to increase the production of coal and the productivity of coal mining. This encounter of industry with "buried sunshine" (Dukes, 2003) was captured by Lewis Mumford (1934) as "carboniferous capitalism" and its significance was characterised thus: "In the economy of the earth, the large-scale opening up of coal seams meant that industry was beginning to live for the first time on an accumulation of potential energy derived from the ferns of the carboniferous period, instead upon current income. In the abstract, mankind entered into the possession of a capital inheritance more splendid that all the wealth of the Indies" (p. 157; also see Dukes, 2003).

This energy inheritance forms the basis of the "four-cheaps" (cheap food, cheap labour-power, cheap energy and cheap raw materials) that have underwritten accelerated labour productivity (and mass-consumption) and accumulation over two-centuries (Moore, 2015). During this period a powerful synergy emerged between technological innovation, improvement, productivity and accumulation. Energy conversion technologies grew in power (watts; Jules/second) by seven-orders of magnitude. The steam engine in the early eighteenth century converted energy in the order of hundred of watts, while the steam turbine today converts energy in the order of gigawatts (Smil, 2010). The energy-development status quo normalised today arises at the confluence of access to hundreds of millions of years of 'buried sunshine' and its super-accelerated transformation at the rate of billions of watts to deliver increases in productivity and accumulation. When considering sustainable consumption or degrowth today, this confluence of cheap nature and labour, productivity and accumulation is to be reckoned with.

How to imagine degrowth?

A formulation of the question of how to degrow that may elicit wider resonance in less industrialised countries, is how to make energy provisioning for economic activity a *means* toward *valuable ends*, and not anymore perpetuated *ad infinitum*, as an unquestioned end in itself? In other words, how to make the orientation of energy policy contingent on human well-being outcomes that are cognisant of biophysical conditions and social justice. This is a restatement of the widely perceived requirement to make the guiding criteria for development policy reflective of human well-being outcomes. Given that the conventional measure of GDP has failed in this respect, a greater focus on articulating the normative content of well-being and materialising development accordingly is suggested (Sen 1992; Sen 1999; Stiglitz, et al. 2009).

That economic policy needs to move "Beyond Growth" (Daly, 1996) has long been understood (Mill, 1848) and articulated with clarity. How that was to come about has remained less than widely agreed upon and even less widely practiced. Daly (1996: 220) notes "...that the goal is *sufficient* not maximum, per capita wealth. Sufficient for what? Sufficient for a good life." He continues, "we do have some notion of how much is sufficient for a good life, even though there will be disagreements. Much thought and

clarification is needed here, but, clearly at one extreme life can be stunted by poverty, and just as clearly, at the other extreme life is not improved and is even harmed by surfeit and excess" (p. 221). Daly's proposal to find this elusive sweet spot between these extremes leans on identifying ethical principles to guide economic policy.

The ethical principle that Daly (1996) offers is the notion of "maximising cumulative lives *overtime*". A policy proposal derived from this principle is that of tradeable permits. The idea is to cap consumption at a level that does not undermine biophysical conditions for 'maximising cumulative lives overtime'; this cap in turn informs the total number of permits (e.g. to consume televisions or have babies) issued. Subsequently, a market in these permits allows for their exchange and would, it is offered, bring about economically efficient and sustainable allocation of consumption. All three criteria of biophysical scale, allocation of capital and efficiency of transacting are accounted for in this policy proposal. In this approach consumption is seen as a subjective choice that drives the economy. Modifying this choice is therefore seen as an apt method to approach degrowth.

On the other hand, a strong case exists to recognise production decisions as the driver of the economy from which levels of consumption are a derivative. This approach views production determined not by consumption demand, but by the "competitive relationships among the different owners of capital" (Meadway, 2016:97). The factor here that makes growth of production an objective requirement for the economy and not dependent on subjective consumption decisions, is that if it were not for competitive accumulation capital would cease to be capital and instead simply remain as wealth, an existence that is unproductive, disconnected and static. The possibility of this results creates the "objective requirement for growth at the level of individual capital" (Meadway, 2016). It is this that requires us to approach the problem of consumption not primarily as a subjective choice of individuals to be modified by behaviour targeting policies in the market, but instead as a product of entrenched political and economic relationships of power and interests that drives production and mass-consumption (e.g. Fuchs et al. 2016).

Building Sustainable Structures of Living Together

The proposed 'sustainable structures of living together' (Mathai, 2012) are a synergy of ideas that have been developed, quite significantly but separately, in the fields such as

energy studies, policy and finance, development studies, human ecology and science, technology and society (STS) studies.

The economy operates at three levels. The ecological level of low-entropy matter and energy provides the foundation for the other levels; the production and consumption level where goods and services are produced and consumed to produce surplus; and the financial level that lubricates production and consumption by issuing debt in excess of deposits (Martinez-Alier, 2009). It is this debt-production-consumption cycle that produces wealth and capital. But while often unacknowledged, this cycle necessarily depends on the ecological level for provisioning the energy and material basis of this production and consumption. This arrangement has breached sustainable limits in the appropriation of stocks and flows of low-entropy matter and energy (e.g. Rockstrom et al. 2009 and various) and calls for redress.

1. Reclaiming the energy commons and building commonwealth

A crucial step to redress this status quo is muting the dynamics of competitive accumulation in energy policy that engenders the debt-production-consumption cycle. Two areas can be looked into as leverage points: A) the commodification of energy, B) the debt financing of energy infrastructure.

The energy system matured over the twentieth century as state or private multinational corporations that controlled the extraction and supply of coal, oil and gas, and as "natural monopolies" that controlled the electricity sector. An feature of this evolution is the essentialised identify of energy as a commodity in the debt-production-consumption dynamic. While this has produced important transformations[1], the question for us it how to challenge the commodification of energy and thereby stunt the impulse of open-ended growth in production and consumption fuelled by competitive accumulation.

Interestingly, the energy of the air, water or sunlight are eminently suitable for this purpose. Unlike fossil fuels that are immediately amenable to commodification by the

1 It is clear now that further growth in production and consumption of energy is not needed if advancing well-being is the objective of energy policy. According to World Bank Data, per capita "energy use" in 2014 was 80 GJ per year. This level of "energy use" is well over the values of primary energy calculated by Steinberger and Roberts (2010) for arriving at high HDI levels for all today, and upto 2030, based on their projections.

entity that mines them, renewable energies don't have to be mined and are readily amenable to being governed as a commons (Byrne et al. 2006; Malm, 2013). Commons regimes are historically and culturally pervasive with discernible conditions that allowed for their successful functioning (e.g. Ostrom et al. 1999).

Preserving the commons' attribute of renewable energy requires that it not lapse into commodity regimes. While air, water or sunlight cannot per se be commodified, this can happen indirectly through the property relationships of the technologies used to convert them. And this determination is made at the moment when infrastructure financing arrangements decided. A model to fund installation of renewable energy technologies from a "commonwealth" is possible (Byrne et al., 2009; Houck & Rickerson, 2009). In this model, the switch to renewable energy infrastructure redirects the saved recurring fuel costs that so far flowed to the energy utility for purchase of commodity energy, to a community fund -- commonwealth -- created for this purpose. The cost savings can be shared for a limited period of time to recuperate the initial investment and could subsequently accrue entirely to the entities who make the switch.

2. End-Use Planning and the Capability Approach

Confronting collective action endeavours is the task of building the collective! The possibility of the 'commonwealth' discussed above helps isolate the energy system from the imperatives of competitive accumulation. But even inside that space, the successful installation and functioning of this energy infrastructure will depend on shared norms, goals, rights and responsibilities. In the atomised relationship individuals have with an energy utility they have the right to demand any quantity of a commodity contingent only on their ability to pay. If the same expectation transferred to a solar home system funded through the commonwealth or neighbourhood micro-grid, agreement on the power and storage capacity of the system would be difficult to come by. Systems capable of accommodating any and all demands for energy will likely be very big[2] and that much more difficult to finance through a shared-savings model. It becomes crucial then that an end-use orientation connects decision making about the energy system to explicit

2 For example, in the raditional utility setup, consider the allowances and expenses incurred for the provisioning of peak-demands.

articulation of normative goals that the energy will help satisfy (Reddy, 1995), as opposed to vague utilitarian notions of more is good.

The development studies vocabulary introduced by the Human Development and Capability Approach or Capability Approach (hereafter, CA) is well suited to articulate and deliberate on normative goals -- what is a good life -- so that it does not remain a foundational yet intractably vague question. Instead the CA's semantic resources brings clarity to this question by defining *Development* as expanding the *freedom to do* and *to be* as we have *reason* to value. To keep this helpful focus on individual well-being from becoming an insatiable obsession and debilitating fetish - *a la* The Century of the Self - requires the consideration of valuable capabilities via deliberative processes. Reason is of the essence for this collective formulation of energy demand in accordance with fairness in human well-being outcomes within constraints of socio-ecological limits.

3. Deepening Democracy and Democratic Technics.

Energy planning and governance is conceived as proceeding through "[face-to-face communication] to express and perceive emotions, share a set of values, engage in dense social networks, and learn to associate locally and act collectively over time" (Malm, 2013: 69-70). This process requires a political culture of deliberative democracy starting from the ground up. This imagination builds on the ideas of participatory democracy, the principle of subsidiarity, the idea of poly-centricity in public administration, and as already mentioned, deliberative democracy. The idea quite simply is a decision making processes that, a) links the three levels of the economy with informationally rich feedback loops, and b) diminishes entrenched power that scuttles feedback and leads to less than sustainable decision making through regulatory capture, rent-seeking and even physical violence.

Such requirements call into use assessments of energy technology for "authoritarian" and "democratic" tendencies. Science, technology and society studies have long conceived of democratic and authoritarian technics (Mumford, 1964). In energy policy this idea was expressed famously by Amory Lovins (1977) as a choice between "hard path" and "soft path" energy policy choices. The former corresponding to highly centralised architectures like coal and nuclear that lock-in an expansionary energy policy status quo. The latter

energy path resembles the direction outlined above in responsiveness to end-use, with the ultimate goal of moving away from the hard path.

Two trends are visible in the expansion of renewable energy technologies (REN21, 2018) in the past two decades. First, despite significant growth modern renewable energy technologies constitute a tiny fraction of the global energy supply, and this is likely to remain so for some time to come. Second, the initial enthusiasm around small-scale, decentralised renewable energy installations - a "soft path" - is being overrun by large utility-scale renewable energy installations that have no reference to end-use or efficiency of the rest of the economic system. This approach believes that simply replacing carbon with photons, will suffice. No consideration is made of the expansionary political economy within which it is embedded. These energy technology architectures are unlikely to reorganise social relationships in ways that valorise fairness, representation and finitude (Byrne et al, 2006; Glover, 2006), and therefore needs to be guarded against while building 'sustainable structures of living together'.

Conclusion

This essay outlines a 'sustainable structure of living together' to conceive a path for degrowth in energy policy. The essay problematises the impulse of competitive accumulation as fundamentally contradictory to any possibility of degrowth. It responds to this problem by exploring a financing model for renewable energy infrastructure that conceives of capital as commonwealth and energy as a commons. The next set of elements nuance the long-standing end-use orientation in energy policy. Finally, the essay considers the governance mechanism that can synergise commons and end-use toward degrowth. This part draws on the acknowledgment of decentralisation and democratic technologies to unseat the energy policy status quo and reorient it toward fairness in human well-being outcomes on a finite planet, and in so doing pursue degrowth.

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