

Social-Ecological Transformation and the Necessity of Universal Basic Income

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This article surveys academic literature that argues for universal Basic Income (BI) on ecological grounds, and frames BI as a necessary (but not sufficient) measure to build sustainable, equal, and just societies. The ecological case for BI receives less emphasis than other justifications, such as the need to eradicate poverty, protect workers from precarious employment, advance social and political equality, and augment human freedom. This article also situates the green case for BI in broader and emerging academic literature on steady-state economics and de-growth. These are seen as requirements for averting further environmental degradation and ecological disasters, and for building truly sustainable and just societies. Conceptual frameworks that could underpin such a social-ecological transition include the capabilities approach formulated by Nussbaum, and the human needs framework advanced by Doyal and Gough. Finally, the article points to a series of public policy initiatives that are required, in addition to BI, to achieve sustainable and just societies. These policies encompass housing, food security, urban land use and planning, transportation, education, and health. It is argued that the public revenue to pay for these policy initiatives needs to be raised in ways that move us towards ecological sustainability and just economic redistribution.

Introduction

Ecological arguments for the implementation of Universal Basic Income (BI) receive less emphasis than other justifications, such as the need to eradicate poverty, protect workers from precarious employment, advance social and political equality, and augment human freedom. This article focuses on the ecological (or green) case for BI. It argues that BI is a necessary requirement to avert environmental disasters and build truly sustainable economies and just societies.

This article will have three foci. First, it will survey existing academic literature that advances ecological arguments for the implementation of BI. This body of work has been somewhat prominent in recent years. But in light of the current climate emergency and other aspects of rapid environmental decline, it is imperative that these ecological justifications figure more prominently in BI research, advocacy, and policy development.

Second, this article will examine the ecological case for BI in relation to emerging academic literature on *steady-state economics* and the need for *degrowth*, with a particular focus on over-consuming wealthy countries and on sectors of the economy that are environmentally destructive. A steady-state economy – whether at the local, regional, national, or global level – is ‘an economy

of stable or mildly fluctuating size’ that ‘may not exceed ecological limits’ (CASSE, nd). To achieve the goal of a steady-state economy that is both sustainable and just at the global level, wealthy societies must engage in de-growth – defined as the ‘downscaling of production and consumption that increases human well-being and enhances ecological conditions and equity on the planet’ (R & D, nd). Such de-growth in over-producing and over-consuming economies would have to be accompanied by the transfer of substantial economic wealth and resources to countries that are poor, as well as to the poor within wealthy countries, so that people in all corners of the globe can be assured a modest but adequate standard of living.

A focus of particular interest in this section will be how this literature on steady-state economics and degrowth engages with questions of social welfare policy, and especially with income security. Technological innovation and scientific knowledge are necessary in lowering our individual and collective carbon footprints. But innovative social policy is also required if we are to build steady-state economies and ecologically sustainable societies characterised by social justice and a high degree of economic equality. If economic activity is reduced, people must still have sufficient income – from some combination

of paid work in the labour market, and social transfers from collective wealth – so that they can meet their material needs and live a life characterised by social inclusion, political engagement, and meaningful personal choices.

The third purpose of this article is to outline the range of government action that is required (through new or revised legislation, public policy, and programs) so that we can bring about a social-ecological transformation (SET) to an ecologically benign steady-state economy and an environmentally sustainable society. It is argued here that BI is a *necessary but not sufficient* mechanism in such a SET. Taken together, BI and these other public policy measures comprise a big picture of what must be done to ensure a habitable biosphere in which subsequent generations of humans and other species can survive and flourish.

The importance of SET

The importance of achieving a SET is obvious. We are facing impending crises due to rapid and profound changes in our natural ecosystems at the local, bio-regional, and global levels. Our current era in natural history is often referred to as the Anthropocene in which 'human-kind has caused mass extinctions of plant and animal species, polluted the oceans and altered the atmosphere, among other lasting impacts' (Smithsonian nd). Our misuse and degradation of our natural environment have resulted in global warming resulting from greenhouse gas emissions, loss of biodiversity due to species extinction and habitat loss, resource depletion, accumulation of waste products, and health effects related to environmental toxins (Klein 2014; Gore 2017).

If the global economy is to achieve a SET, over-producing and over-consuming wealthy societies must end their addiction to open-ended and indiscriminate economic growth. As mentioned above, SET will entail degrowth – the shrinkage or elimination of environmentally harmful aspects of economic production and consumption. It will also entail a radical redistribution of income and wealth from nations, groups, and individuals with more than they need, to those with insufficient means for an adequate standard of living. Such redistribution would necessitate the provision of a sufficient monetary income, as well as a comprehensive range of high quality public goods, so that everyone would be assured a modest but sufficient material standard of living.

Although it is not a specific focus in this article, another outcome of SET could be a transformation in human values and lifestyles. SET would enable us, individually and collectively, to focus on the quality of our human relationships, mutual support in our local communities, and build social institutions and processes to achieve a

higher degree of social solidarity. We could move away from our current preoccupations – the existing global regime of capitalist accumulation – with either mere survival (by the world's billions who are economically vulnerable), or with chasing fulfillment through material over-consumption (by those who live in wealthy countries saturated with unnecessary commodities).

The Green Case for BI

A decade ago, ecological arguments for and against basic income were outlined by Tony Fitzpatrick (1999). He cited three points in favour of BI. First of all, BI could be a means towards dampening down economic growth (Fitzpatrick 1999: 184), because it is a *universal* entitlement that is not premised on taxpaying workers who depend for their jobs on a growth-oriented and 'full employment' economy. Second, BI embodies an ethic of common ownership of the Earth's resources and global citizenship which requires and enables everyone to be 'a steward or a trustee whose duty is to hand on the Earth to the next generation of common owners' (Fitzpatrick 1999: 187-88). As a third argument for BI, Fitzpatrick points to its role in reducing or eliminating poverty and unemployment traps, thereby making part-time and low-paid work more feasible and attractive, and moving us toward the goal of 'redistributing available jobs by taking the emphasis away from the necessity of working full-time for several decades' (1999: 188).

Fitzpatrick (1999) also outlines three reasons why ecological advocates might *oppose* BI. First of all, BI is only one mechanism, and would be unable on its own to bring about 'a future ecological society' without a range of other measures (Fitzpatrick 1999: 189). Second, BI recipients might opt to spend their money in ways that contribute to environmental damage and wasteful consumption (Fitzpatrick 1999: 190). Finally, paying a BI would require central administration, which runs counter to the goal of at least some environmentalists to decentralise and return control to the local level (Fitzpatrick 1999: 191). These objections can be countered, however, by embedding BI within a broader set of ecological policy measures (answering objection one), and by recognising that most BI recipients are non-wealthy and would most likely spend it on necessities, rather than on superfluous goods and services that contribute to over-consumption and waste (answering objection two). In regard to the third objection, Fitzpatrick (1999: 191) argues for 'a continuing role for central government' if we are to transition to a very different and sustainable set of economic arrangements; part of government's role would in fact be to 'facilitate decentralized self-management' that many green activists call for.

A decade later Simon Birnbaum (2009: 2) guest-edited a special issue of *Basic Income Studies* on 'Basic Income,

Sustainability and Post-Productivism'. In his introduction, Birnbaum (2009: 2) argued that '[t]he availability of a universal, work-independent source of basic security' and 'the creating of new forms of meaningful activity and integration beyond the employment contract' would mean that 'we no longer need to embrace unsustainable engines of growth in order to achieve full employment at any cost'. Birnbaum (2009: 2) outlined these 'new forms of meaningful activity' as 'local and service-intensive activities that rely much less on transports [sic] or material consumption' and that incorporate 'the expansion of community-based provision, volunteer work, cultural and sports activities, etc.'

In this same journal issue, Pierre-Marie Boulanger (2009) focused on 'changing the unsustainable consumption patterns in rich Western societies, which are the main cause of the ongoing environmental crisis'. The remedies, according to Boulanger, include *eco-efficiency* which refers to 'competitively priced goods and services that satisfy human needs and bring quality of life while progressively reducing environmental impacts of goods and resource intensity' (2010: 2). Another remedy is *de-commodification* – the substitution of non-commercial goods, services, and experiences for commercial ones, so that need and cultural value take precedence over profit (Boulanger 2010: 4). A third remedy combines two elements: *sufficiency*, the embrace of non-consumerist lifestyles based on 'getting the maximum well-being from each unit of material service consumed' and 'minimising the role of material services in the production of our well-being'; and *cultural dematerialisation*, deriving our sense of well-being not from material goods or sensual amusements, but from 'non-materialist values of self-control, spirituality, simplicity, etc.' (Boulanger 2010: 12). Although Boulanger (2009: 1) concludes that 'the impact of basic income on eco-efficiency is uncertain', he contends that BI 'could and should play a central role in a framework of sustainability', thereby achieving de-commodification, sufficiency, and cultural dematerialisation.

In his contribution to this special issue, Jan Otto Andersson (2009) proposes options on how to finance a BI. It could be funded in an ecologically benign way, such as by green taxes designed to curb consumption among the well off, and linked to eco-tax relief for low income people, thereby maximising both eco-efficiency and distributive justice. A BI could also be financed in ecologically damaging ways, through deliberate growth of the economy to bolster the tax base, or through natural resource rents that would incentivise the state to increase resource extraction. Andersson also offers ecologically sound macro-economic strategies for BI implementation related to the wealth of the country in question. In the interests of global equity, Andersson (2009: 1) proposes 'linking a BI to ecological taxes and degrowth in the

overconsuming societies', but using BI as a tool for economic development and the alleviation of economic deprivation in regions with high poverty.

A green case for BI is also made by Greg Marston (2016: 157), who addresses the challenge of 'how to create conditions for human flourishing within the ecological limits of a finite planet'. He notes that, as a guiding principle, the development of 'a greener economy [must] not exacerbate social inequalities and injustices within and between countries' (Marston 2016: 157). Marston (2016: 174) also cautions that 'basic income is not a panacea', but that it 'can be seen as a progressive insurance policy against a host of direct and indirect risks associated with climate change'.

Similar to Andersson (2009) cited above, Marston (2016: 174) sees the rationale for, and means of, financing BI as being different for wealthy as opposed to poorer parts of the world. In rich countries, 'a basic income could be a key platform in addressing unsustainable economic growth, environmental pollution, and the problem of over-consumption and population'. For poor nations, BI 'may increase local economic growth and be a part of the solution to poverty problems'. Marston (2016: 165) also sees BI as tied to an expanded definition of 'societal well-being' that is 'focused on the distribution of wealth, but also on the distribution of time and opportunities for the expression of human agency that are not instrumentally tied to labor market status or potential for profit'.

Such a profound economic shift will not be easy. Marston (2016: 161) points out that in our present context the state is 'deeply conflicted, striving on the one hand to encourage consumer freedoms that lead to growth and on the other to protect social goods and defend ecological limits'. Securing public support for 'new welfare paradigms' and proposals such as BI will 'require informed public dialogue and debate' (Marston 2016: 170). Processes based on 'deliberative policy making and planning' could not only 'act as an antidote to overly technocratic and rational-scientific modes of policy making', but could also 'encourage preference transformation in ways which are sympathetic to environmental goals' (Marston 2016: 170).

Linking BI With Steady-state Economics and Degrowth

It is important to situate the question of BI as a guarantor of income security for all in relation to a broader set of macro-economic questions. These refer to ending our addiction to economic growth and creating ecologically sustainable societies that are prosperous and democratic. In highly developed and ecologically destructive societies, BI would ensure that the non-wealthy majority have enough money for a decent life in an economy that is not growing, and in

which jobs are being lost in ecologically harmful industries such as fossil fuel extraction and refining, the manufacture of armaments, and the production of luxury goods and services. It can be noted that liberal democratic countries that adopted a version of the Keynesian welfare state in the three decades following World War Two never actually attained their stated goal of a full employment economy. Given the current imperative to immediately decelerate and then end growth in over-developed economies, we must once and for all set aside the goal of full employment (understood as full-time, well paid jobs for everyone in the paid labour market). Hence, we need to work to achieve viable iterations of steady state-economies (varying in form by particular societies' resource base, stage of development, and level of relative wealth), to manage and mitigate the various aspects of our current ecological crisis.

It is readily apparent, notwithstanding ecological imperatives, that the shift to lower employment rates is already underway as a result of technologies, including robotics and artificial intelligence (Brynjolfsson and McAfee 2014; Kaplan 2015). The relations of production under global industrial capitalism have always been characterised by alienation (Marx 1978) – by jobs that are unfulfilling, unpleasant, and often hazardous to one's physical and mental health. The eclipse of human 'wage slavery' through having technology carry out such work can be seen as a desirable goal – provided that all of us have a reliable, adequate, and unconditional income in the form of a BI.

In the context of a SET, there could be a broad redistribution of paid work, and an increase in everyone's discretion over their time. A BI would provide a dependable floor of economic security to enable this transition to sustainability and greater human freedom. But even in light of the displacement of alienated labour by technology, we must ask ourselves if it is possible or desirable for robots and artificial intelligence to replace *all* forms of human labour. It is probable in a steady-state economy that working-age adults would perform on average fewer hours of paid work. We would all have much more choice about how and when to apply ourselves to remunerative employment, care work in the family, personal and leisure pursuits, cultural production, and unpaid community and voluntary service. In this vein, Marston (2016: 173) argues for a justification for BI 'reframed in terms of human security and genuine sustainability, rather than facilitating labor market participation at whatever personal and environmental cost'. He argues for 'developing social citizenship, greater autonomy in relation to the state and markets, the abolition of poverty traps and the creation of meaningful employment and voluntarism' (2016: 173).

The question of whether SET is in fact achievable in the context of current regime of globalised capitalism is fundamental. Will tinkering at the margins with incremental economic reforms be sufficient to bring about a SET? Or is more radical change required, if we are to bring about an authentic social-ecological *transformation*? Blauwhof (2012) argues for the necessity of the latter path. Using a Marxist political economy framework, Blauwhof contends that 'a stable and just SSE [steady state economy] is possible, but not feasible within the social relations of capitalism'. However, he does not see 'reform' or 'revolution' as mutually exclusive ends. Blauwhof (2012: 261) argues that useful reform can be achieved only with a revolutionary vision and quest. Drawing on the work of Daly (2008) and others, Blauwhof (2012: 259) identifies seven useful social-economic reforms arising out of the work of ecological economists:

1. Minimum and maximum income and wealth limits
2. Progressive income taxes
3. Public employment programmes such as a Job Guarantee
4. Basic income
5. Reducing the work week
6. Spreading ownership of wealth and businesses
7. Organising businesses as producer cooperatives

Such reforms, according to Blauwhof (2012: 261), could be inspired and guided by a revolutionary vision to deconstruct the 'dynamics of capitalist reproduction' and 'the drive to accumulation'. Bringing about such a transformation would involve a strategic alliance between the environmental movement and the labour movement. The former constituency fully grasps the ecological threats facing us. The latter constituency is composed of workers, who according to Blauwhof (2012: 261) are 'those who as the creators of the products and profits of corporations, are in a unique position to gain control over the qualitative decisions about what, how and for what purpose goods and services are produced'.

This process of transformation would not be identical in all societies and countries. Buch-Hansen (2014: 167) offers a critique that 'not enough importance is ascribed to capitalist diversity and the nature of institutional change' in scholarship on steady-state economics. Thinking on steady-state economics has evolved since the 1970s, from being a relatively 'apolitical' idea to one that is now 'premised on left-wing values' (Buch-Hansen 2014: 172). It is to be expected that transitions to steady-state economies will occur in different ways – depending, for instance, on whether a given country has a 'liberal', 'state-led', or 'coordinated' form of capitalism

(p. 170). Buch-Hansen (2014: 172) sees an advantage in 'acknowledging the possibility of a variety of SSEs [steady-state economies] based on competing political ideas', so that 'de-growth could come to have much broader political appeal than it currently does'.

Koch (2013) sketches a broad picture of how to achieve societal welfare in a post-growth context, in which we must achieve a 'politically monitored socio-economic and environmental development strategy within the ecological limits identified by natural scientists' (Koch 2013: 10). He draws upon research on human happiness to make the point 'that once countries have sufficient wealth to meet the basic needs of their citizens and reach a certain per capita income', then 'reported levels of (un)happiness show little correlation with GDP growth' (p. 10). Koch (2013: 11) also notes that 'extra happiness provided by extra income is greatest for the poorest and declines steadily as people get richer'. Happiness is not determined by growth in the GDP but by the seven factors of 'family relationships, financial situation, work, community and friends, health, personal freedom and personal values' (Koch 2013: 11).

Koch (2013: 11) is particularly critical of how 'positional goods' (the consumption of which bestows upon users high social status) are held out as objects of value and desire by 'various culture industries'. This 'never-ending cycle' of stimulating and meeting consumer demand for luxury goods and superfluous services 'contributes next to nothing to human welfare and contradicts the principal reproductive needs of the earth as an ecological system'. But the cycle continues and props up the capitalist imperatives of production, profit and accumulation.

As an alternative to such a cycle of production and consumption based on psychological stress, moral vacuity and ecological destruction, Koch (2013: 12) recommends that our goal should be to create conditions in which all human beings can exercise 'Martha Nussbaum's list of ten central capabilities [as] a promising point of departure for redefining welfare'. These capabilities are grounded in 'socio-economic and ecological aspects of welfare' that incorporate

life (ability to live a life of normal length); bodily health and integrity; senses, imagination and thought; emotions (being able to have attachments to things and people outside ourselves); practical reason; affiliation (being able to live with and toward others, to recognize and show concern for other human beings); other species (being able to live with concern for and in relation to animals, plants, and the world of nature); play; [and] control over one's environment (political participation, economic

and employment rights) (Nussbaum 2006 cited in Koch 2013: 18 [note 4]).

Koch (2013: 12) argues that Nussbaum's articulation of human capabilities does not require greater wealth or production, is not a zero-sum competitive game among different social groups or generations, and should not be equated with austerity. In fact, the capabilities approach can bring about a 'transition from a consumerist society to a welfare society' (Koch 2013: 12) that would prioritise 'inward aspects of human wellbeing' instead of 'outward manifestations of status and success' (De Geus 2009: 121 cited in Koch 2013: 13).

An alternative framework to use in examining strategies for degrowth (in addition to metrics related to human happiness or the ability to exercise human capabilities, as discussed above) is one focused on 'the centrality of human needs' (Koch et al. 2017). In this approach, there is a 'deprioritization of subjective well-being' and the adoption of 'an alternative degrowth research agenda oriented [to] the satisfaction of human needs' (Koch et al. 2017: 74). They recommend the human needs framework of Doyal and Gough (1991) that posits two 'basic needs' of *physical and mental health*, and *critical autonomy* (the ability to make informed choices) (Koch et al. (2017: 74). The first basic need for health is linked to a set of 'universal intermediate needs': adequate nutritional food and water, adequate protective housing, a non-hazardous work environment, a non-hazardous physical environment, and appropriate health care. The second basic need for critical autonomy is linked to another distinct set of intermediate needs: security in childhood, significant primary relationships, physical security, economic security, safe birth control and child-bearing, and basic education. Doyal and Gough's needs framework also includes a third level (beyond basic and intermediate needs) of 'culturally, socially and locally specific satisfiers' related to 'cultures, sub-cultures, states and political systems' that must be discerned through careful analysis of specific groups.

Koch et al. (2017: 77) find the Doyal and Gough (1991) framework 'particularly relevant for degrowth research' because of the 'centrality of the notion of environmental limits that define different levels of need satisfaction, especially the lowest level – understood as a "minimally decent life" '. Although they do not address basic income *per se* in this article, it can be easily seen that a BI could be the primary means for satisfying the intermediate need for 'economic security' and would indirectly contribute to satisfying other intermediate needs related to physical and mental health and personal autonomy.

In thinking beyond BI to other aspects of public and macro-economic policy, Koch (2013: 13) is critical of 'no-growth

theorists' fragmented ideas for reform'. But Koch (2013: 13-16) does point to a number of general policy goals¹ that must be pursued:

- Lowering social inequality through economic redistribution, given that more equal societies have less serious social problems such as poor health and high crime rates, and can achieve greater eco-efficiency by not having to address severe aspects of such social problems. Economic redistribution to achieve greater equality can be accomplished partly through green taxes on those who consume excessively
- Setting minimum and maximum incomes, to increase economic equality and lower the average carbon footprint
- Rationing carbon expenditure through resource and emission caps in a way that places a heavier burden on the wealthy and lessens the burden on the poor
- Lowering overall consumption levels out of a 'sense of obligation toward future generations'. Steps toward this goal could include the regulation of advertising (e.g. banning advertising to children), imposition of stiffer taxes on burning fossil fuels and on consuming luxury and ecologically damaging goods and services, and implementing stronger curriculum in the public education system on the need for ecological values and environmental stewardship.
- Ensuring working time reduction for all through measures such as BI
- Supporting better work-life balance, which a BI would also support
- Achieving population stability (and perhaps even a decrease) through a variety of measures such as better education and job prospects for girls and women in poorer countries, and universal access to reproductive health services. It should also be a goal to stem crisis-driven migration from poorer countries through improving living conditions and human rights in these countries.

Heikkinen (2018) uses mathematical modelling to draw links between consumption, degrowth, and BI. She applies the Bernoulli-Nash aggregate calculation to demonstrate that 'collaborative consumption' (defined as 'non-ownership models of utilising goods and services') and basic income can 'support welfare-increasing degrowth' (Heikkinen 2018: 44). She also finds that de-growth can create levels of higher overall welfare, even in conditions of inequality in the allocation of wealth, and that this process is enhanced when economic agents embrace 'voluntary simplicity' (restrictions on consumption). She

presents voluntary simplicity as a necessary but not sufficient condition for degrowth (Heikkinen 2018: 43).

Are we making progress towards a socially sustainable steady-state economy? O'Neill (2015: 1213) indicates that '[t]here are no countries that achieve a true steady-state economy', and 'that the majority of countries in the world are biophysical growth economies'. He concludes that 'a steady-state economy can be socially sustainable, but countries need to become much more efficient at transforming natural resources into human well-being if all seven billion people on Earth are to lead a good life within ecological limits'.

Weiss and Cattaneo (2017) trace the trajectory of our understanding of 'degrowth' over a ten year period between 2006 and 2015. They argue that this idea began as one rooted in environmental activism, but evolved into 'a multi-disciplinary academic paradigm' that 'occupies a small but expanding niche at the intersection of social and applied environmental sciences' (Weiss and Cattaneo 2017: 220). They contend that the academic research on degrowth could contribute to building both 'wider public support' and 'a paradigmatic change in the social sciences' through investigation of key questions such as 'analyzing the potentials for non-market value creation' and 'identifying concrete well-being benefits' in economic conditions of degrowth (Weiss and Cattaneo 2017: 220).

In regard to the overall state of sustainability research, Görg et al. (2017: 14) argue that 'the current debate on transformations towards sustainability can be improved by a critical, inter- and trans-disciplinary approach to social-ecological transformations'. They call for conceptual and empirical reliance upon work done in social ecology and political ecology, and the use of '[a]n integrative perspective that aligns analytical, normative and strategic dimensions' (Görg et al. 2017: 14). That takes full account of 'the crisis-driven and contested character of the appropriation of nature and the power relations involved' (Görg et al. 2017: 1). Recognising that aspects of SET are always occurring – whether in positive directions towards sustainability, and/or in negative directions towards more acute unsustainability – Görg et al. (2017: 14-16) emphasise the importance of appreciating 'three strong tendencies ("grammars") that structure the industrial and fossilist mode of production and regulation of [societal relations to nature]':

- the colonising of nature or land taking;
- the capitalist grammar of capital accumulation, the growth imperative and the predominance of the production of surplus values over the production of use values; and

- a multi-scalar perspective that does not lose out of sight the global, despite the great deal of attention paid to local struggles and the predominance of national-level policy questions and political-economic processes.

What Else Is Necessary Besides BI?

So far this article has focused on the ecological justification for BI, and on a broader set of questions to do with social-ecological transition to steady-state economies and sustainable and just societies. This concluding section presents a brief list of general public policy initiatives which are likely to be required – in addition to BI – if we are to achieve a fundamental transformation in our political economies towards the goal of ecological sustainability. BI is, however, a necessary, but not sufficient, precondition for SET. What other goals must we set for ourselves as grand challenges in public policy?

These goals come readily to mind:

1. *adequate and affordable* housing for all, built or retro-fitted according to rigorous environmental standards, with units that are modest in size and optimally energy-efficient;
2. *food security for all* focused on consumption of maximally sustainable food sources (e.g. locally sourced whole foods rather than industrially-produced processed foods that are transported long distances to markets; more reliance on plant protein as an alternative to carbon-intensive production chains for products such as meat and dairy);
3. *labour market restructuring* (underpinned by BI) that emphasises job creation in sectors such as renewable energy production, environmental reclamation and management, and public-sector care and service work; and creation of new patterns of employment that include job sharing, part-time work, flexible work schedules, career sabbaticals, and retraining for new green jobs;
4. *low- or no-carbon transportation options* (e.g. free local public transit, rapid ground-based intercity transit, car-sharing and car-pooling, and carbon offset requirements for air travel);
5. *zero (overall) population growth* through ready provision of fertility control methods and reproductive health services, vocational and educational options for girls and women in poor countries, and social policy incentives for smaller nuclear families and enrichment of relationships between children and adults in the broader extended family structure;
6. *land-use planning and habitat protection* that maximise natural space and species diversity, and

control urban sprawl and ecologically unsound local development;

7. robust ecological *education* at primary, secondary and tertiary levels, and public education on sustainable lifestyle choices that are low-carbon, localised, and convivial; and

8. environmentally efficient *health care* focussed on non-institutional and community-integrated care, including professionally delivered, high quality home care, and multi-disciplinary care in accessible community locations. Steps should also be taken to reduce material waste in health care, and decrease the use of tests and treatments that (based on clinical evidence) may not be efficacious. The overall health care system should redirect significant resources to disease prevention and health promotion as 'upstream' strategies that will lessen the need for 'downstream' (very resource-intensive) management of ill health.

Needless to say, this long and ambitious list of public policy initiatives will require significant streams of public revenue for implementation.

The question of financing a SET cannot be exhaustively addressed in this brief article. But suffice it to say that the required public revenue should be secured in ways that help move us towards a sustainable economy and a just society. The necessary tax revenue for a SET could no doubt be raised through these types of mechanisms:

- Progressive income tax (operating together with an adequate BI, to achieve a more just redistribution of economic wealth).
- Heavier reliance on taxes on carbon emissions and on luxury goods and services, in order to curb wasteful consumption and encourage all of us to live lightly on the planet Earth.
- Rigorous taxation of revenue derived from the buying and selling of real estate, stocks, foreign currencies, and other financial instruments based on speculative greed and quick profit-taking.

Conclusion

The Anthropocene is an era which we have been living through by some estimates (Meyer 2019) for almost seven decades. Radical and multi-faceted action is absolutely required, at local, bio-regional, national, and global levels, if further environmental degradation and ecological disasters are to be averted.

In light of the daunting challenges we face – that of simultaneously reclaiming the ecological health of the

planet and achieving social justice for human societies – it is important to maintain some hope for positive change. The situation is dire, but we must not let ourselves be paralysed by what Stoett (2019: 2) refers to as ‘postmodern planetary anxiety’. We must be motivated by our concern for future generations, and by the sober recognition that ‘we are in collective trouble’ (Stoett 2019: 2).

This collective anxiety could spur on at least three constituencies that would seem to have an indispensable role to play in bringing about a SET. These key actors are: i) radically critical and well informed components of the broad social movement for social justice and ecological health (including organised labour and environmental advocates); ii) theoreticians and researchers who can offer strategic guidance and pragmatic solutions required for a SET; and iii) ‘inside activists’ in government and public sector institutions (as described by Hysing and Olsson 2018) who can manipulate the levers of power in consultation with ‘outside’ change agents from environmental movements, academia, and citizens’ organisations.

Success in jointly meeting the two grand challenges of social justice and environmental sustainability is not impossible. These challenges are more likely to be met if all of us – whether we are activists, academic experts, political and community leaders, or engaged citizens – have a secure economic floor underneath us and our families in the form of a Universal Basic Income.

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End Note

1. The general categories in this list correspond to those advanced by (Koch 2013: 13 – 16), but I introduce some of my own ideas and examples in the brief explanations of each category.

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