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Working Paper

An ecological basic income? Examining the ecological credentials of basic income through a review of selected pilot interventions

Bath Papers in International Development and Wellbeing, No. 65

Provided in Cooperation with:

Centre for Development Studies (CDS), University of Bath

Suggested Citation: Langridge, Nicholas (2021) : An ecological basic income? Examining the ecological credentials of basic income through a review of selected pilot interventions, Bath Papers in International Development and Wellbeing, No. 65, University of Bath, Centre for Development Studies (CDS), Bath

This Version is available at:

<https://hdl.handle.net/10419/263277>

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Bath Papers in International Development and Wellbeing

No: 65/2021

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Published by:

Centre for Development Studies

University of Bath

Calverton Down, Bath

BA2 7AY

<https://www.bath.ac.uk/research-centres/centre-for-development-studies>

ISSN 2040-••3151

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An ecological basic income? Examining the ecological credentials of basic income through a review of selected pilot interventions

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Abstract

While basic income (BI) has long been advocated for its social benefits, some scholars also propose it in response to the ecological crises. However, the empirical evidence to support this position is lacking and the principles of an ‘ecological basic income’ (EBI), one with the potential to address the social and ecological crisis, are underdeveloped. This paper argues that an EBI should align with post-growth perspectives, aiming to lower material throughput, improve human needs satisfaction, reduce inequalities, rebalance productive activity towards the autonomous sphere, and shift societal values towards cooperation and sufficiency. It then examines how selected BI pilots have considered the principles of an EBI in their designs and evaluations and discusses what their findings infer about BI’s ecological credentials. The results find ecological considerations to be largely absent from the implementation of BI pilots. However, their findings suggest that interventions adopting the principles of an EBI have the potential to address the ecological crises.

Keywords: basic income, postgrowth, political ecology, sustainable development

¹ The author would like to thank Milena Buchs, Neil Howard and James Copestake for their valuable feedback on previous drafts of this paper.

1. Introduction

The Basic Income Earth Network (BIEN) define basic income (BI) as a “periodic cash payment unconditionally delivered to all on an individual basis, without means-test or work requirement”. The payment should be basic, regular, predictable and non-withdrawable (Standing, 2020). Proponents describe it as a radical proposal for a free society and sane economy (Van Parijs & Vanderborght, 2017) and a system of sustainable welfare (Buchs, 2021) built on the principle of social justice (Standing, 2017). Opponents argue that it would, instead, empower the “Capitalist State” (Dinerstein and Pitts, 2021) and divert attention from collective goods, services, and investment (Gough, 2017).

While the BI’s foundations can be traced to Thomas More’s *‘Utopia’* (1516/1992), contemporary debates emerged during the 1970s (Buchs, 2021) and the policy has since enjoyed several waves of advocacy, including a surge of support following the 2007-8 financial crisis (Standing, 2017). More recently, the Covid-19 pandemic has led to increased discussions within academic, the media and political circles (Standing, 2020; Nettle et al, 2020; Partington, 2020). A Google Scholar search in November 2021 found 61 articles with either “covid” or “coronavirus” and “basic income” in the title.

The arguments put-forward in favour of BI are primarily focused on its potential to improve human wellbeing and address engrained social issues. These include poverty and inequality (Lowrey, 2018; Standing, 2017); insecurity and the absence of freedom (Fitzpatrick, 1999; Widerquist, 2013), poor and precarious work (Gilbert, Huws, & Yi, 2019; Gilroy, Heimann, & Schopf, 2013), and the under-recognition of unpaid, reproductive work, largely performed by women (Lombardozzi, 2020; Schulz, 2017). Many of these assertions have been empirically examined and evidenced by BI pilots around the world (Davalá, Jhabvala, Standing, & Mehta, 2015; GiveDirectly, n.d.).

However, in recent years, scholars have increased the attention given to BI’s ecological credentials (Howard, Pinto, & Schachtschneider, 2019; Pinto, 2020). Given the overwhelming need for policies which simultaneously address social and ecological challenges (Gough, 2017), such attention is welcome. However, the empirical evidence to support BI’s ecological credentials is “severely limited” with less than one percent of academic articles on BI addressing the natural environment (MacNeill & Vibert, 2019, p. 2).

Given that the ecological crises are largely a result of overconsumption by the rich North (Kenner, 2015), BI’s ecological credentials rest upon its ability to improve wellbeing while

reducing overconsumption. Through a review of the literature, the following section outlines the principles of a basic income with the potential to do just this, referred to hereafter as an ‘ecological basic income’ (EBI). Sections 3 to 5 then examine how selected BI interventions in the Global North have considered these principles in their research designs and discuss what their findings infer about BI’s ecological credentials. Section 6 offers final conclusions.

2. Defining an Ecological Basic Income (EBI)

2.1. The social and ecological crises

The world is in the midst of social and ecological crisis. More than 60% of the world’s population - 4.3 billion people - live on less than \$5 per day (Hickel, 2017). While the vast majority of the extreme poor live in the Global South, and are disproportionately represented by women, children and people of colour (Pogge, 2010), the poverty crisis also extends to the Global North. In 2018, 14 million people in the UK lived in poverty; 2.8 million in households where all adults worked. In addition, four million children lived in households that were “too poor to enable them to have a healthy diet” (Standing, 2020, p. 10).

The crises of inequality, insecurity and debt have also increased over recent decades (Piketty, 2015; Standing, 2017). Since 1960, the difference in average incomes between the Global North and South has quadrupled (Hickel, 2019b) and the income share of the richest one percent in the UK and USA has more than doubled over the last 30 years (Alvaredo, Atkinson, Piketty, & Saez, 2013). In addition, the ratio of private debt to Gross Domestic Product (GDP) has reached 90% (Standing, 2020), facilitated by increased access to credit in an attempt to stimulate economic growth (Jackson, 2017; Kallis, Paulson, D’Alisa, & Demaria, 2020). High levels of private debt create a vicious cycle of inequality (Kallis et al., 2020) and have negative ecological consequences due to the need to increase production in order to service it (Hickel, 2020).

At the same time, the ecological crises have reached unprecedented levels (IPBES, 2019; IPCC, 2021). In 2009, Rockström et al. identified nine planetary boundaries which define “the safe operating space for humanity with respect to the Earth system” (p. 472). As of 2015, at least four of these have been crossed (Steffen et al., 2015): Greenhouse gas (GHG) concentrations have reached a three-million year high (Willeit, Ganopolski, Calov, & Brovkin, 2019), species extinctions are occurring at up to 1,000 times the background rate (Wagner,

2020), biogeochemical flows are at more than double safe levels, and land-system changes have entered the zone of uncertainty (Steffen et al., 2015).

Although presented separately, there is a “dense network of interactions (...), cascades and feedbacks” between the various planetary boundaries (Lade et al., 2020, p. 119). This is also true of the relationship between the social and ecological crises. The latter clearly drives the former as the impacts are felt disproportionately by the poor, increasing poverty and inequality and the concentration of wealth in rich regions (Aleksandrova & Costella, 2021; Boyce, 2007; Hsiang et al., 2017). Evidence of the social crises driving the ecological crises is more contested (Gough, 2017) and likely affected by context (Boyce, 2007; Grunewald, Klasen, Martínez-Zarzoso, & Muris, 2012). However, the literature appears to suggest that poverty and inequality are more likely to drive the ecological crises than mitigate them, particularly in rich nations. High levels of inequality exacerbate ecological harm through driving status-based consumption (Veblen, 1899/1994; Wilkinson & Pickett, 2010), and are associated with longer working hours and higher levels of debt, “both of which stimulate consumption and emissions” (Gough, 2017, p.81). In addition, high levels of inequality lead to elite political capture (Oxfam, 2019), which strengthens “the power of the rich to make decisions, set agendas and intricate selfish values” (Gough, 2017, p. 81) and “erodes the social capital” required to “demand, enact and enforce environmental legislation” (Raworth, 2017: Ch 5, para 22).

The scale of the social and ecological crises demands policies which address both simultaneously. Gough (2017) coined the term “eco-social policies”. While some scholars argue that addressing the crises can be achieved “without fundamental changes in present values or patterns of production and consumption” others argue for more radical transformation (Dobson, 2007, p. 2). Taking influence from Pinto (2020) this paper uses Dobson’s (2007) language of ‘environmentalism’ and ‘ecologism’ to distinguish between these two positions.

2.2. Environmentalism

Dobson (2007) termed the reformist approach to addressing the social and ecological crises as “environmentalism”. Environmentalism seeks to address the crises without challenging the political and social consensus around means-based development and the pursuit of capital accumulation. It seeks continued expansion of the global economy by increasing production and consumption (Patnaik, 2010) and is the approach underlying the Sustainable Development Goals (SDG) and 2015 Paris Agreement (Spash, 2020).

Green growth

Environmentalism is dependent on stimulating green growth, “a strategy premised on long-term economic benefits flowing from environmental protection in general and carbon mitigation in particular” (Gough, 2017, p. 70). Green growth is a primary focus of capitalist economies and the foundation of the mainstream environmental movement (Dale, Mathai, & de Oliveira, 2016), forming the “centrepiece” of the Paris Agreement (Gough, 2017, p. 70).

It is important to distinguish between growth in GDP and growth in the material throughput of the economy. Green growth advocates argue that growth in the former can be maintained while technological improvements facilitate reductions in the latter. Critics argue that this is overly optimistic and that growing global GDP while remaining within planetary boundaries is not feasible within given timeframes (Buchs, 2021). Growth in GDP, however, remains the principle metric of development (Kalaniemi, Ottelin, Heinonen, & Junnila, 2020).

Proposals for green growth come from three perspectives (Gough, 2017): First, a green stimulus, or ‘green new deal’, will increase demand and stimulate growth in post-crisis recessions, such as those following the financial crash and Covid-19 pandemic. Second, green growth will result from investment in natural capital and the correction of market failures. This is the perspective given in the UK Government’s Review of the Economics of Biodiversity (Dasgupta, 2021). Third, an industrial revolution based on the decarbonisation of the global economy will facilitate green growth.

The pursuit of green growth aligns with the system of productivist wage labour. “Green jobs” created by environmental protection activities are a key driver of green growth and seen as a means for providing everyone with a stake in the green economy (ILO, 2015; Renner, Sweeney, & Kubit, 2008; UNDESA, 2012). Compatible welfare systems encourage people into the labour market by requiring benefit recipients to be seeking employment (Standing, 2017) and are funded by taxes resulting from growth (Buchs, 2021).

Green growth is technologically optimistic and reliant on future innovation (Hickel, 2020; Jackson, 2017). Proponents argue that economic activity can be decoupled from environmental pressures through increased efficiencies, resource substitution and the implementation of carbon capture and storage (CCS) (Gates, 2021; Pinker, 2018). Of the 116 IPCC scenarios for staying within two degrees centigrade of global warming, 101 rely on the proposed technology of bio-energy with carbon capture and storage (BECCS) (Hickel, 2020). Advocates argue that growth creates technological breakthroughs as innovation is driven by economic activity and

the pursuit of profit (Kalaniemi et al., 2020). Green growth is therefore both reliant on, and a source of, technological innovation.

A BI based on the principles of environmentalism would have the pursuit of green growth as a key objective. It would aim to stimulate (green) economic activity, increase participation in the labour market, and encourage innovation and entrepreneurship, particularly in green technologies. Accompanying policies would seek to maximise these effects.

The challenges of green growth

Addressing the social and ecological crises through green growth has been subject to two main critiques. First, aggregate economic expansion is argued to be an inefficient and insufficient method for reducing poverty (Patnaik, 2010; Woodward, 2015): “While global GDP per capita has grown by 65 per cent since 1990, the number of people living on less than \$5-a-day has increased by more than 370 million” (Hickel, 2017 Ch 2, para 55). Woodward (2015) argues that this is because the benefits of growth are poorly distributed: 95% of the income generated in the ten years prior to the financial crisis went to the richest 40% of the global population. At this level, additional income contributes little to increased wellbeing and further exacerbates inequality (Jackson, 2017; Kubiszewski et al., 2013). Kallis et al. (2020) go further, arguing that economic growth *requires* the exploitation of the poor (traditionally along racial or gender lines), the environment, or both, in order to generate surplus value. In addition, by requiring “certain types of people”, i.e. labourers, growth-based economies discriminate against “unproductive” citizens who are seen as not contributing to society (Spash, 2020, p. 6).

Second, green growth at the global level is argued to be incompatible with planetary boundaries. Two recent reviews of the evidence concluded that economic growth cannot be absolutely decoupled from environmental pressures (Haberl et al., 2020; Parrique et al., 2019). Anderson and Bows (2011) calculated that a 50% chance of restricting global warming to below two degrees centigrade requires the decoupling of GDP from emissions at a rate seven times higher than anything experienced to date. Gough (2017) demonstrates the scale of the challenge using the example of the industrial production of bulk materials (such as cement, steel, plastic, paper, and aluminium), which accounts for 25% of GHG emissions and is already highly efficient. With further growth, demand for such materials is expected to double over the next four decades meaning that even with further efficiency improvements of 50%, emissions levels would remain unchanged. The proposed solutions of recycling, material substitution, and CCS will only make a limited contribution and create additional challenges (see Hickel, 2020 for a critique of BECCS).

These challenges have led several scholars to conclude that strategies for addressing the social and ecological crises cannot include the pursuit of green growth (Hickel, 2019c; O'Neill, Fanning, Lamb, & Steinberger, 2018; Rao & Min, 2018). Hickel (2019c) found that achieving a good life for all within planetary boundaries would require a 40-50% reduction in the biophysical footprints of rich nations. He therefore argues for a “fundamental reorientation of development theory”, swapping means-based development for the pursuit of sufficiency, and a shift in focus away from “the deficiencies of poor countries” and on to the excesses of the rich (p. 31).

2.3. Alternative approaches

If we employ the precautionary principle and accept the above critiques, then the environmentalist approach to addressing the social and ecological crises appears unsuitable and alternatives approaches are required. Dobson (2007, p. 3) refers to such approaches as “ecologism”, which, in contrast to environmentalism, call for “radical changes in our relationship with the non-human natural world, and in our mode of social and political life”.

From means-based development to human needs

Human needs (HN) theory offers one alternative approach for focusing social, economic, and political systems. HN theory recognises that “all individuals, everywhere in the world, at all times present and future, have certain basic needs” which are “objective”, “plural” (i.e., cannot be aggregated), “non-substitutable”, “satisfiable” and “cross-generational”. These needs can be met through a potentially infinite number of “satisfiers”. These include goods, services, relationships, and activities, relevant to different contexts or times (Gough, 2017, pp. 42-48).

There are two prominent HN frameworks within the social policy and development literature. First, Max-Neef, Hevia, and Hopenhayn (1991) developed the Human Scale Development (HSD) framework to help small communities in Latin America question the “goals, behaviours, satisfiers, and infrastructure” of mainstream development and devise routes towards more people centred approaches (Gough, 2017, p. 157). HSD identifies nine fundamental HNs: subsistence, participation, freedom, protection, affection, idleness, creation, understanding and identity. These are met through “systematically related and interdependent” satisfiers. A satisfier which meets more than one need is a “synergic satisfier”. Conversely, one which hinders the satisfaction of other needs is an “inhibitor” or “violation” (Max-Neef et al., 1991).

The second framework is Doyal and Gough's (1991) Theory of Human Need (THN). THN identifies "participation in some form of social life without serious systematic limitations" as "our most basic human interest" (Gough, 2017, p. 42). Fulfilling this interest requires the satisfaction of the "basic needs" of "physical health", "autonomy of agency" and "critical autonomy" through "culturally specific satisfiers" with several "universal characteristics". These characteristics include adequate nutrition, shelter, security, and healthcare; basic education, a non-hazardous physical and work environment; and significant primary relationships. The availability of appropriate satisfiers is dependent on "societal preconditions", including freedom, political participation, and the most basic requirements of reproduction and cultural transmission (Gough, 2017, p.43).

HN approaches offer several potential advantages over alternative development frameworks. First, HN approaches overlap with both Sen's capability approach (Sen, 1999) and Patnaik's rights-based approach (Patnaik, 2010) to development. However, unlike these, HN approaches identify people's most *basic* needs, defining a minimum requirement for wellbeing. This provides a focal point for production and consumption which is important when considering planetary boundaries (Gough, 2017). Second, HN approaches provide a normative theory of wellbeing; "needs" are universal and applicable across space and time². Considering needs across time requires maintenance of the natural world so that future generations are able to satisfy their own needs (Doyal & Gough, 1984).

Third, by widening the scope for needs satisfaction beyond "bundles of commodities" and "material security", HN approaches allow for a focus on non-material satisfiers, such as enhanced relationships and changing values, with lower ecological impact (Kallis et al., 2020). Relatedly, HNs embrace traditional or indigenous systems of social provisioning, which may be structured on frugality or sufficiency. Such systems are transformed into wage-based, monetary, industrially dependent systems under the extant means-based approach (Spash, 2020). Finally, HN theory, particularly HSD, has its roots in sustainability (Guillen-Royo, 2018). Max-Neef was concerned that the pursuit of GDP growth was causing the dehumanisation of development and the subdual of nature. He developed HSD on the premise of a "reasonable use of resources that a person needs to have an acceptable quality of life" and therefore bring human development back into harmony with nature (Caria & Domínguez, 2019, para 11).

² As above, while "needs" are universal, they can be met through an infinite number of satisfiers, according to culture and context. For example, the need for "subsistence" can be met by an infinite number of foodstuff and cuisines.

By focusing resources towards needs satisfaction, including through non-material satisfiers, HN approaches remove the requirement for unnecessary economic activity and the associated ecological damage. Such approaches could therefore have the potential to help address the social and ecological crises.

Post-development and post-growth

HN theories align with the post-development literature, which challenges the dominant assumptions surrounding development, including the pursuit of growth, and exposes its failure to meet its objectives on poverty, inequality, and environmental protection (Esteva & Babones, 2013; Klein & Morreo, 2019; Max-Neef, 1992).

The post-development literature highlights the “darker side” of development policy; the “unmaking” or “underdevelopment” of the Global South (Escobar, 2011; Rodney, 2018). It critiques the way Western prescriptions of development “overlook and marginalise ‘pluriversality’”, that is, other “ontologies and ecologies of knowledge”, rendering them “traditional, regressive and non-credible” (Klein & Morreo, 2019, Introduction, para 7). HN theories, in contrast, promote pluriversality through the infinite ways in which needs can be satisfied, drawing on local knowledge and culture (Gough, 2017).

The challenges of green growth and the critiques of post-development scholars support the adoption of post-growth perspectives on development, where the term post-growth covers a range of growth-critical positions including steady state economics (Daly & Farley, 2011), doughnut economics (Raworth, 2017), post-growth (Jackson, 2017), and degrowth (Kallis et al., 2020). Post-growth perspectives are informed by the field of ecological economics (Easterlin, 1974; Martinez-Alier, 2015) and demand the just and equitable downscaling of energy and resource use in order to improve human wellbeing and bring societies back into balance with nature (Hickel, 2020; Kallis et al., 2020). Post-growth positions therefore accept the interdependence of the social and ecological crises (Raworth, 2017).

A review of the post-growth literature reveals several key themes. First, post-growth positions advocate for reductions in aggregate global material throughput. Resource use should be focused towards needs satisfaction, rather than aggregate growth, meaning unnecessary consumption by the rich should be the primary focus of reductions (Gough, 2017; Jackson, 2017). Hickel (2019a) points out that, rather than sacrificing quality of life, this would in fact lead to “radical abundance” for the majority. In addition, a “substantial amount” of life satisfaction is obtained through non-material factors, including “social support, generosity, freedom to make life choices and absence of corruption” (O'Neill et al., 2018, p. 93).

Second, post-growth positions prioritise greater equality, which is not only important for social functioning and stability (Daly & Farley, 2011) but also leads to higher standards of wellbeing (Wilkinson & Pickett, 2010). In fact, equality has been shown to contribute more to wellbeing than absolute growth in income once basic needs are met (Easterlin, 1995). Kallis et al. (2020) argue that growth-based economies *require* inequality to allow the unequal exchange of materials and energy. Post-growth societies, in contrast, would require a fairer distribution of resources to satisfy everyone's HNs without further growth (Buchs, 2021; Doyal & Gough, 1991; O'Neill et al., 2018).

Third, participation in democracy, community, and collective action are important features of post-growth positions (Buchs, 2021; Kallis et al., 2020; Raworth, 2017). Economic systems which respect planetary boundaries and satisfy HNs require changes which involve, and are endorsed by, local citizens: "this can only be achieved through truly democratic and participatory processes" (Buchs, 2021, p. 3). Unimpaired, critical, social participation, built on community economics and access to the commons, is therefore a fundamental goal of post-growth societies (Gough, 2017; Max-Neef et al., 1991).

Fourth, post-growth advocates support reduced labour hours and a shift of work to the autonomous sphere (Buhl & Acosta, 2016; Gorz, 1999; Schneider, Kallis, & Martinez-Alier, 2010). While long labour hours are feature of growth economies (Devetter & Rousseau, 2011; Jackson, 2017; Schor, 1993/2008), post-growth societies, free from the need to expand unnecessary production and consumption, would facilitate reduced hours and the better distribution of work among the population (Jackson, 2017; Ketterer, 2021). A 25% reduction in working hours is associated with a 30% reduction in ecological footprint (Knight, Rosa, & Schor, 2013). This is because shorter working hours leads to lower average incomes and therefore less unnecessary consumption. In addition, more leisure time results in lifestyles which are less materially intensive (Devetter & Rousseau, 2011).

More leisure time facilitates increased participation in non-market activities in the autonomous sphere, such as care, volunteering, community engagement, and cultural activities, (Gorz, 1999; Van Parijs, 2010). Jackson (2017, pp., Ch 8, para 55) argues that activities in the autonomous sphere generate "a greater sense of wellbeing and fulfilment" than the "time-poor, materialistic, supermarket economy in which much of our lives is spent". They are also thought to be less resource intensive with a lower ecological impact (Boulanger, 2010; Van Parijs, 2010), although Birnbaum (2010) argues that this needs further research.

Fifth, the post-growth literature advocates for a shift in individual and societal values. Kallis et al. (2020) argue that the centrality of markets, consumption, and wage labour under

capitalism has moulded socio-cultural values. As individuals become detached from community and collaboration, “they become more vulnerable to promises of pleasure, identity, and meaning through consumption” (p.23). A responsible citizen is seen as “a good consumer, buying and consuming as much and as fast as possible” (Spash, 2020, p. 7). In addition, humans are positioned as individuals which are separate to, and above, nature, therefore justifying its exploitation (Hickel, 2020).

Post-growth societies should instead be “guided by values of community wellbeing rather than competition and growth” (Kallis et al., 2020, p. 45). This requires change at the individual, communal and political levels (Kallis et al., 2020) as focusing on individuals alone “underestimate[s] the power of socio-cultural systems” (p. 20) and is unlikely to alter consumption habits (Fesenfeld, Sun, Wicki, & Bernauer, 2021).

A BI based on the principles of ecologism, and aligned with HN theories, post-development and post-growth perspectives, would therefore prioritise increasing HN satisfaction, equality, and social participation while lowering material throughput, shifting activity to the autonomous sphere, and changing individual and societal values.

2.4. An ecological basic income

Many scholars expect BI to play a role in the transition to post-growth societies (Blaschke, 2020; D’Alisa, Demaria, & Kallis, 2014; Kallis et al., 2020; Pinto, 2020; Raworth, 2017). However, support for it is not universal (Dinerstein & Pitts, 2021; Gough, 2017) and the empirical evidence of its impact on material throughput is lacking (MacNeill & Vibert, 2019). Despite this, there are reasons to believe that a BI compatible with post-development and post-growth perspectives, an EBI, is possible.

First, Hickel (2017) considers cash transfers to be the “single most effective way to reduce poverty” and increase HN satisfaction. The ability of BI to reduce poverty and inequality is a benefit claimed by most advocates (Standing, 2017, p.40) and evidenced in pilots (Davalá et al., 2015). Additional equality benefits could result from a BI financed by progressive taxation, which places the burden on the rich, and is not at the expense of welfare or public services (Buchs, 2021; Hickel, 2020; Howard et al., 2019).

Second, proponents argue that, as a secure, alternative source of income, BI would remove the necessity to accept poor work and long hours (Van Parijs, 1991), freeing people to participate in socially beneficial activities, democratic processes, and collective action (Birnbäum, 2010; Buchs, 2021; Fitzpatrick, 2010; Howard et al., 2019): "Through freeing

people from drudgerous labour” BI opens “opportunities for people to participate in the much needed, but time-consuming, work of rebuilding our communities and our democracies in ways that enable us to realise our collective interest in sustainability” (Lawhon & McCreary, 2020, p. 453).

Third, while the ability of BI to change values has received less coverage in the literature, Fitzpatrick (2013, p. 265) notes that the policy embodies “an ethic of common ownership” of the Earth’s resources whereby everyone’s “duty is to hand on the Earth to the next generation”. The increased security, time, and freedom afforded by BI could also result in value changes in individuals and communities. However, leaving individuals to follow their preferences in a liberally neutral context could give priority to the extant individualistic culture (Fitzpatrick, 2010), particularly due to the individual nature of BI payments which could weaken collective culture (MacNeill & Vibert, 2019).

An EBI would therefore need to be accompanied by policies for fostering value change. BI therefore has potential to play a role in the transition to socially just and ecologically sustainable societies if aligned with post-growth perspectives. The perspectives discussed above are presented as principles for guiding an EBI in Table 1.

Funding an ecological basic income

To be compatible with post-growth perspectives, funding an EBI cannot rely on growth-based taxes (Buchs, 2021). It should also not come at the expense of public services or existing welfare schemes. Collective public services are more important than income for meeting HNs in a sustainable way (Baltruszewicz et al., 2021; Hickel, 2020, Ch 4, para 14-15) and welfare payments would still be needed by people with disabilities or other disadvantages. The provision of universal public services (UBS) should be seen as complimentary to, rather than in competition with, an EBI as UBS focuses on the production side of the economy while BI focuses on consumption (Buchs, 2021).

Instead, an EBI should be funded from taxation of the rich, through wealth and inheritance taxes, as well as of financial transactions and large incomes (Pinto, 2020). Additional funding could also come from Pigouvian taxes on GHG emissions and resource consumption, although falling revenues as resource use declines prevents this being a lone source of funding (Howard et al., 2019). While, the BI payments would negate some of the regressive implications of Pigouvian taxes, additional policies would be required (Gough, 2017). In line with Modern

Monetary Theory (MMT), governments could also spend a BI into the economy, using taxes to remove money from the rich and mitigate inflation (Crocker, 2020; Santens, 2021).

While there is no agreed size of BI payment in the literature (Torry, 2019), satisfying HN, addressing the insecurity and vulnerability caused by the ecological crises, and breaking the link between income and labour requires a payment at the level of sufficiency (Birnbaum & De Wispelaere, 2016; Howard et al., 2019): “one can’t walk away from a nasty boss unless that job really isn’t needed” (Berg, 2020). While sufficiency calculations have been proposed by various scholars (Kenny, 2013; Reddy & Lahoti, 2015; Woodward, 2010), quantifying a sufficiency-BI risks conflating needs with satisfiers and neglects options for meeting needs with lower incomes. The exact figure of an EBI will therefore vary by context, by the presence of complimentary policies, and by the availability of public services.

2.5. Summary

Section 2 has demonstrated that the ecological and social crises require urgent responses. By employing the precautionary principle, it accepted that this will require radical changes in economic, social and political systems, in line with Dobson’s (2007) ‘ecologism’, that facilitate reductions in aggregate resource use alongside improvements in HN satisfaction. As presented in Table 1, a BI aligned with ecologism should reduce poverty and inequality, promote social participation, democratisation, and collective action; and facilitate changes in the nature of work and in societal values regarding individualism, consumption, and the natural world.

Political economy considerations	EBI compatible interventions should strive to meet BIEN's definition of BI. Transfers should be at, or close to, sufficiency to facilitate HN satisfaction and exit from the labour force. The exact amount will vary by context and by additional activities and public services. EBI interventions should also consider options for scale-up, sustainable funding options, and appropriate complimentary policies. Given the importance of public services to sustainable wellbeing, funding an EBI should not be at their expense.
Improve HN satisfaction	This study has identified HN as the most appropriate metric for wellbeing. An EBI should therefore focus resources on HN satisfaction. Compatible interventions should monitor changes in HN satisfaction. In the absence of HN specific language, monitoring changes in satisfiers, such as health, education, shelter, or autonomy, is considered compatible, while monitoring wellbeing through means-based metrics, such monetary poverty lines or income, is not.
Reduce inequalities	An EBI should reduce socio-economic inequalities. Compatible interventions should aim to such reduce inequalities and monitor changes.
Reduce material throughput	In the Global North, an EBI seek reduce aggregate material throughput. Compatible interventions should therefore monitor appropriate metrics, such as material or ecological footprint indicators. In the South, or amongst the poor, increased consumption may be required to satisfy HN (Langridge, 2021). Any increases should help satisfy HN. At the aggregate level, an EBI will reduce material throughput.
Aid transition to autonomous sphere	An EBI should aim to break the link between income and labour and support transition to the autonomous sphere. EBI compatible interventions should therefore monitor changes in time-use, aim to reduce working hours, and facilitate exit of the labour force altogether.
Increase social participation	An EBI should increase social and democratic participation, promote a social economy, and facilitate collective action. Compatible interventions should promote and monitor such changes.
Promote value change	An EBI should encourage value change at the individual, community, and political levels. Compatible interventions should encourage and monitor value changes, specifically on individualism, consumption, and attitudes towards community and nature. They may also focus additional activities on promoting value and behaviour change.

Table 1: Principles of a basic income for addressing the social and ecological crisis; an Ecological Basic Income (EBI)

3. Methods

3.1. Ontology and epistemology

This paper embraces an alternative realist ontology. A realist ontology of social science accepts the validity of the scientific model and of a common understanding of the basic foundations of social science (Layder, 1990; Pawson, 2006). In other words, that there are objective truths upon which social systems are built. However, given the “endless components and forces” which shape social systems, a full understanding of these truths is impossible. *Critical* realism therefore views “the primary task of social science” as being critical of false explanations (Pawson, 2006, p. 18). While is a useful approach for challenging accepted knowledge, its normative perspective is ineffective for moving from theory to policy and contradicts the principles of evidence-based policy (Hodgson, 1999; Pawson, 2006). *Alternative* realism bridges this divide. While accepting that social systems are influenced by an infinite number of “untapped” explanatory possibilities, it argues that “it is still worth trying to adjudicate between alternative explanations” (Pawson, 2006, p. 19). For example, while the consideration of every factor influencing the ecological credentials of BI may be impossible, it is still beneficial to offer a best possible understanding.

A second ontological consideration concerns human nature. Section 2 argued that an EBI should adopt HN frameworks as a framework for wellbeing. While mainstream economics views human nature as egotistical and acting in the pursuit of self-interest (Gert, 1967; Raworth, 2017), HN frameworks embody a more altruistic philosophy which views humans as social, cooperative beings with a regard for the wellbeing of others (Fehr & Fischbacher, 2003; Khalil, 2004; Raworth, 2017). However, Jackson (2017) and Kallis et al. (2020) argue that the balance between egoism and altruism is shaped by social institutions and structures, in line with the modern theory of epigenetics which regards human nature as determined by ongoing, mutual interactions (Duschinsky, 2012). This paper therefore adopts an ontology whereby humans can be both altruistic and egotistical, with the degree to which each dominates depending on socio-economic systems and relationships. An EBI should encourage altruistic tendencies.

3.2. Realist synthesis

This paper uses a ‘realist synthesis’ method (Pawson, 2006) to review how BI pilots have considered the principles of an EBI in their interventions. Realist synthesis provides an alternative to systematic review. While common in medical research, systematic review is not

suited to social science: “At every stage (...) simplifications are made. Hypotheses are abridged, studies are dropped, programme details are filtered out, contextual information is eliminated, selected findings are utilised, averages are taken, estimations are made. This is all done in an attempt to wash out ‘bias’” (Pawson, 2006, pp. 42-43). However, in social science, aggregating individual studies into a common statistical outcome does not make sense, as the variations in context present in social research are intrinsic and not due to chance. The simplifications made during a systematic review therefore eliminate the “the very features that explain how [social] interventions work” (Pawson, 2006, pp. 42-43). Realist synthesis is more suited to social science as it focuses on comparison and explanation rather than the aggregation cases. This is appropriate to this paper which seeks not to aggregate the findings of BI interventions, but to understand how their compatibility with EBI principles influences their findings on BI’s ecological credentials.

The stages of a realist synthesis

A realist synthesis follows six stages. For a full explanation, see Pawson (2006). Stage one is to identify the research question. This first requires “mapping the territory”, essentially, scoping the background literature to understand the themes needed to define the research question. Section 2 mapped the territory for this study, culminating with Table 1. The mapping of the territory therefore gave rise to two research questions which are used to interrogate the selected BI interventions:

1. To what extent does the intervention comply with the principles of an EBI in Table 1?
2. What do the intervention’s findings infer about BI’s ecological credentials, and its potential to align with post-growth perspectives?

Stages two and three of a realist synthesis involve identifying and appraising the quality of the primary studies for interrogation. This involved identifying the BI interventions, and accompanying literature, to be examined against the components in Table 1. Given the need for BI to address overconsumption amongst the rich, the scope was limited to pilots in the Global North. An initial long list was identified through database searches (Google Scholar, Web of Science, 3iE Database, Sopus and OpenGrey), BI trial maps (Sigal, 2020; Stanford BI Lab, n.d.; Wallach, 2020), and consultation with representatives from BIEN. This was then condensed in line with several criteria: First, interventions were selected based on their compatibility with BIEN’s definition of BI. A lack of fully compliant interventions meant that transitional or categorical BIs that target specific groups were also included. Second, only

interventions with more than 100 people and occurring after 2005 were selected. This ensured comparability, particularly on ecological knowledge and awareness. The year 2005 was selected as it marked the date the Kyoto Protocol, the first legally binding obligations to emerge from the UNFCCC, came into force, signalling an increase in the attention given to environmental issues. Third, the interventions were selected based on the availability of literature for interrogation. Pawson (2006, pp. 49-50) notes that the evidence reviewed during a realist synthesis should not be limited to peer-reviewed research. Instead, “good research of any stripe must be included”. A database search was therefore supplemented by information from webinars, podcasts, news articles, unpublished documents, and personal communication. The final list of interventions is presented in Table 2.

The final three stages are the extraction, synthesis, and dissemination of the data. Each source of information was reviewed in full, rather than through a simple keyword search, in order to avoid missing relevant information. Useful sections were grouped by their applicability to question one (research design) or question two (research findings), coded by their relevance to each component in Table 1, and written up in Section 4. While each intervention is examined separately, trends are identified and discussed in Section 5.

3.3. Limitations

The findings in this paper were subject to several limitations. First, few BI pilots, including those selected, meet the full, BIEN definition of BI. Second, limitations in the author’s language skills meant only information in English and Spanish was reviewed. Third, the small size of BI pilot’s limits insights to the local level, making conclusions at the whole economy level difficult to draw. Fourth, the lack of attention given to ecological footprints and high-income groups in the interventions studied limited potential conclusions.

Intervention	Location	Year(s)	Description
Alaska Permanent Fund Dividend (APFD)	Alaska, USA	1982 – present	An unconditional, yearly payment given to all Alaskan residents. The state invests revenue from oil production into a portfolio of assets. The yearly profits from this investment are the paid to citizens through the dividend. The amount paid varies each year, but in 2020 it was worth \$992 per resident.
B-MINCOMBE	Barcelona, Spain	2017 - 2019	A pilot project focused on poverty alleviation in deprived districts of Barcelona. Close to one thousand households received a payment calculated as the difference between the “basic threshold” for household maintenance costs (basic needs + housing costs) and household income. The payment was also determined by household size. For around 580 households the payment was a guaranteed, unconditional BI. For others it was conditional on participation in one of four additional “active policies” (Training and Employment Planning, the Social Economy, Community Participation, and Housing Rent Aid) or reduced as additional income increased. The project aimed to examine the effect of the payment alongside the active policies.
Finland Basic Income Experiment (FBIE)	Finland	2017 - 2018	A two-year randomised control trial (RCT) with 2,000 participants swapping unemployment benefits for a BI of €560. A control group of 178,000 people continued to receive the standard benefits.
Gyeonggi Province Youth Basic Income (YBI)	Gyeonggi, South Korea	2019 - present	One of several interventions in Gyeonggi province in S. Korea. YBIP provides 250,000 Korean Won (~\$225), in local currency, to all 24-year-old residents of the province (175,000 people) every quarter for one year.
Ontario Basic Income Pilot (OBIP)	Ontario, Canada	2018 - 2019	A BI pilot involving 4000 randomly selected low-income residents of Ontario. The payment was equal to \$16,989 per year for single participants and \$24,027 for couples, reduced by 50 cents for every dollar of earned income. People with a disability received an additional \$500 per month. The pilot was planned for three years but cut after one.
Pilotprojekt Grundeinkommen (Basic Income Pilot Project) (PPG)	Germany	2021 - 2024	PPG consists of three studies: Study one provides €1,200 / month to 122 participants for three years with studies two and three dependent upon its success. Study two will examine the impact of money versus security by topping-up low incomes to €1,200 per month. Study three will examine BI and taxation: participants will receive €1,200 offset against a simulated tax of 50% on other income. PPG is related to the Mein Grundeinkommen (MG) project in Berlin, which has been raffling off annual BIs of €1,000 per month for six years. It has so far granted more than 650 BIs.
Stockton Economic Empowerment Demonstration (SEED)	California, USA	2019 - 2021	A privately funded intervention in Stockton, California whereby 125 residents were paid an unconditional BI of \$500 per month for 18 months. Participants were randomly selected from eligible applicants: Those over-18 and living in areas with an income below the city’s median (although individual incomes may be higher).

Table 2: BI interventions selected for interrogation

4. Examining BI pilots against principles of an EBI

Section 4 examines the extent to which the interventions in Table 2 align with the EBI principles in Table 1 and highlights relevant findings. While each component is presented separately, there is clear overlap between them. Section 5 then discusses what the findings infer about the potential for an EBI to address the social and ecological crises.

4.1. Political economy

Few of the interventions met BIEN's (n.d.) full definition of BI. While the APFD is paid to individuals, universally, and unconditionally, the infrequency of payments prevents its classification as a BI for some scholars (Torry, 2019). PPG fulfils most criteria but uses randomisation to select participants rather than universal distribution (Keller & Lieder, 2020). Other interventions targeted payments by socio-economic status (FBIE, OBIP, B-MINCOME) or by age (YBI). SEED required participants to live in neighbourhoods with below median income but placed no limit on individual incomes. Given funding and logistical restrictions, such targeting is not unusual in BI pilots.

APFD, FBIE, SEED, YBI and PPG transfer(ed) cash at the individual level. B-MINCOME provided an initial payment to household heads with smaller top-ups for additional members (Colini, 2017). OBIP increased the amount paid to single-person households by ~50% for couples (McDowell & Ferdosi, 2021). Despite paying individuals, the randomisation method employed by SEED and PPG means that only one member of a household would likely have received payments and so sharing could result in them becoming household transfers by proxy (Keller & Lieder, 2020; Martin-West, Castro Baker, Samra, & Coltrera, 2021). FBIE was only paid to those previously receiving unemployment benefit (Kangas, 2016).

Payments under APFD, FBIE, PPG, SEED and YBI are/were provided unconditionally. OBIP participants, and those on the "limited" B-MINCOME modality, had their payments reduced as they earned additional income (Colini, 2017; Hamilton & Mulvale, 2019). For some B-MINCOME participants the payment was also dependent on participation in active policies (Colini, 2017).

The amounts paid by FBIE, SEED, YBI and APFD were all below the level of sufficiency. Most FBIE families still required additional means-tested benefits (Kangas, Jauhiainen, Simanainen, & Ylikännö, 2019). While OBIP was below the low-income threshold, it was higher than existing welfare payments and recipients reported that it covered basic necessities (Hamilton & Mulvale, 2019). PPG claims that its €1200 transfer will be a "liveable amount"

and “enough to live with dignity” (Keller & Lieder, 2020, p. 88). However, the amount is lower than a monthly income at the German minimum wage, based on 35-hour working week (BMAS, 2020). B-MINCOME calculated the payment to cover basic needs and so claimed to be at sufficiency (Colini, 2017).

Several interventions considered the potential for scale-up in their designs. This was a key objective of B-MINCOME (Laín, Riutort, & Julià, 2019) while PPG will examine options for wider financing in stage three of its intervention (Keller & Lieder, 2020). The Governor of Gyeonggi hopes to introduce a BI for all citizens of South Korea, financed through taxes on the private exploitation of commons, including land, GHG emissions, and digital services using citizens’ data (UBI Lab Leeds, 2020). Early findings from YBI demonstrate an increase in support for BI following the intervention (Gyeonggi Research Institute, 2019). YBI is therefore the beginning of a longer-term plan for BI in South Korea.

In contrast, FBIE has been criticised by pro-BI politicians and academics as being “fiscally unrealistic”, partly due to the payment being excluded from participants’ tax liabilities. The limited duration of the pilot was also cited as a challenge to wider scale-up (De Wispelaere, Halmetoja, & Pulkka, 2018, p. 15), but this is common to most pilots. Being based on investment returns from oil production, the long-term future of APFD is also uncertain. Funding a BI from returns on capital investment, particularly of fossil fuel profits, is problematic in a post-growth economy.

Several interventions included complimentary policies or activities. B-MINCOME’s four “active policies” intended to stimulate participation in the labour market, the autonomous sphere, and the local, social economy (Colini, 2017, 2018a, 2018b). SEED included a ‘Hold Harmless Fund’ to reimburse recipients’ unanticipated benefits losses as the intervention was specifically designed to supplement, not replace, existing welfare (SEED, n.d.). In contrast, FBIE and OBIP tested BI as a replacement for parts of the welfare system (Kangas, 2016; H. Segal, 2016). YBI was paid in a ‘local currency’ to benefit the local economy. The long-term intention is to examine whether this results in the formation of new institutions, including non-profit (Lee, Lee, & Kim, 2020). B-MINCOME also experimented with a local currency (Colini, 2017).

4.2. Human needs satisfaction

Design

None of the interventions adopted a specific HN framework in their designs. However, there was alignment with several needs characteristics, including health, nutrition, shelter, education, autonomy and social participation (Gough, 2017). B-MINCOME considered food, clothing, education, housing, and transport in calculating the transfer amount (Laín et al., 2019), aiming to help “participating households cover their basic needs and gain greater autonomy and decision-making capacity” (Riutort, Julià, Laín, & Torrens, 2021, p. 4). SEED considered the role of BI in meeting people’s most “urgent needs”, including subsistence and the ability to cope with shocks (SEED, n.d.). Both interventions included poverty alleviation as a key focus. SEED evaluated this by monitoring changes in income volatility, however, as a means-based metric, this does not align with HN frameworks. The poverty indicators employed by B-MINCOME included physical and mental health, education, and life-satisfaction (Colini, 2017), which are compatible with HN approaches.

Physical health changes, including diet and nutrition, are/were monitored by B-MINCOME, FBIE, OBIP PPG, SEED, and YBI (Colini, 2017; Gyeonggi Research Institute, 2019; Kangas et al., 2019; Keller & Lieder, 2020; SEED, n.d.; H. Segal, 2016). Two of B-MINCOME’s active policies focused specifically on nutrition; training participants on the basics of healthy eating and helping those with reduced mobility to access healthy food from local markets (Colini, 2018b). OBIP and YBI monitored changes in exercise participation (Basic Income Canada Network, 2019; Gyeonggi Research Institute, 2019). Alongside physical health, most interventions recorded changes in psychological health (B-MINCOME, FBIE, OBIP, PPG, SEED, YBI). B-MINCOME and OBIP also examined changes in access to healthcare services.

Shelter was a focus of B-MINCOME and OBIP. One of B-MINCOME’s active policies encouraged homeowners to rent out spare rooms at social rates, below market value (Colini, 2017). Changes in housing outcomes was a key focus area for OBIP, alongside financial volatility and education (Glass, 2017). Education and training outcomes were also metrics for B-MINCOME and YBI.

Freedom and autonomy impacts were examined by several interventions. B-MINCOME monitored changes in time use, financial security and decision making capacity (Riutort et al., 2021) while SEED included a research question focusing on changes in participants’ agency

and autonomy of decision making (Martin-West et al., 2021). The first quarter report from YBI evaluated changes in participants' self-determination (Gyeonggi Research Institute, 2019).

Social participation is/was a clear focus of B-MINCOME, OBIP and PPG, and also featured in the analysis of FBIE, SEED and YBI. More details on social participation are provided in Section 4.6.

APFD includes no aims relating to HN satisfaction. In addition, few evaluations have considered the dividend's impact on wellbeing (Goldsmith, 2010; Guettabi, 2019). However, in recent years, a few isolated studies have examined some specific health and educational impacts (Chung, Ha, & Kim, 2016; Lerner, 2019; Watson, Guettabi, & Reimer, 2019).

Findings

B-MINCOME reported reductions in severe deprivation and improvements in wellbeing across all modalities. There was no improvement, however, in households' ability to deal with unforeseen shocks (Blanco et al., 2021; Laín, 2019; Riutort et al., 2021). Despite paying below the sufficiency level, recipients reported that OBIP did cover their basic necessities (Hamilton & Mulvale, 2019). Life satisfaction and wellbeing was also higher among FBIE, SEED and YBI participants when compared to their respective control groups (Gyeonggi Research Institute, 2019; Kangas et al., 2019; Martin-West et al., 2021). APFD has coincided with poverty declines in Alaska, particularly among Native Americans (Berman, 2018; Goldsmith, 2010; P. Segal, 2012). The contribution of the dividend is, however, unclear.

Improvements in health were reported across all interventions (Basic Income Canada Network, 2019; Gyeonggi Research Institute, 2019; Kangas et al., 2019; Laín, 2019; Martin-West et al., 2021). Participants of B-MINCOME and OBIP reported increased access to healthcare services and medicine (Basic Income Canada Network, 2019; Riutort et al., 2021) but there was no change in the probability of having severe health problems (Blanco et al., 2021). While evaluations of the health impacts of APFD are limited, Chung et al. (2016) found a positive, but modest, effect on birth weight. There is also evidence that the dividend reduces obesity in toddlers (Watson et al., 2019).

Participants in B-MINCOME, FBIE, SEED, OBIP, and YBI all reported experiencing less stress and fewer symptoms of depression and anxiety (Gyeonggi Research Institute, 2019; Kangas et al., 2019; Martin-West et al., 2021; Riutort et al., 2021). McDowell and Ferdosi (2020) found that 68% of OBIP participants reported improvements in their mental health while Laín (2019) reported a 10% reduction in the probability of developing mental illness after participating in B-MINCOME. Increased cognitive functioning, confidence and the ability to

enjoy things was reported by participants of FBIE (Kangas, Jauhiainen, & Simanainen, 2020) while the treatment group from SEED moved from being likely to have a mild mental health disorder to likely mental wellness over the year-long intervention (Martin-West et al., 2021).

Increased food security was reported by participants of OBIP, SEED and all modalities of B-MINCOME (Basic Income Canada Network, 2019; Blanco et al., 2021; Martin-West et al., 2021; Riutort et al., 2021). In SEED, this also extended to participants' wider networks (Martin-West et al., 2021). Evaluations of OBIP found that between 75% and 86% of participants reported making improvements in the quality and healthiness of their diets (Basic Income Canada Network, 2019; McDowell & Ferdosi, 2020, 2021). The probability of B-MINCOME participants going to bed hungry reduced by 8-10% (Laín, 2019).

The time and money dedicated to preventative medical care increased under SEED (Martin-West et al., 2021). OBIP participants reported a reduction in their reliance on medication (Basic Income Canada Network, 2019; McDowell & Ferdosi, 2020) and, alongside YBI recipients, increased their participation in exercise (Basic Income Canada Network, 2019; Gyeonggi Research Institute, 2019).

Improvements in housing insecurity were found under B-MINCOME and OBIP. B-MINCOME led to an increase in the quality of housing and ability to pay rent (Blanco et al., 2021; Riutort et al., 2021). Under OBIP, 59% of participants reported an improved housing situation (Basic Income Canada Network, 2019).

The OBIP intervention gave recipients the security to go back to education; to retrain or upgrade their skills. One third of participants reported using the cash for this purpose (Basic Income Canada Network, 2019; McDowell & Ferdosi, 2021). APFD, however, has resulted in no significant change to high school completion rates (Lerner, 2019). There were also no significant changes in the educational outcomes of children under B-MINCOME, although some positive educational impact resulted from the active policies (Laín, 2019).

While some B-MINCOME participants reported increased economic independence and the ability to plan for a more autonomous future, this was not the case for all. Others were still unable to exit economic and housing precariousness, limiting their self-determination (Riutort et al., 2021). Changes in autonomy and freedom under SEED were also limited, although some participants were able to break from unwanted ties of vulnerability: "indicat[ing] the potential for guaranteed income to bolster self-determination and a sense of agency" (Martin-West et al., 2021, p. 20). A significant improvement in participants' perception of self-determination and influence on the decision making process was reported by YBI, even after only one quarter of payments (Gyeonggi Research Institute, 2019).

4.3. Inequalities

Design

The potential for BI to reduce economic, social and gender inequalities was recognised by all interventions. The equitable distribution of State oil revenues and the provision of a safety net for the poor was a key rationale behind APFD (Widerquist & Howard, 2016). PPG intends to examine the potential of BI to “combat perceived injustice” and reduce discrimination (Keller & Lieder, 2020, p. 70). Combating inequality was also an objective of B-MINCOME (Colini, 2018a). Most interventions disaggregated their data by age, gender, ethnicity, and economic status. As discussed above, B-MINCOME, FBIE, OBIP and SEED all targeted low-income households.

Women formed the majority of B-MINCOME recipients (over 80%) and OBIP respondents (68%) (Basic Income Canada Network, 2019; Riutort et al., 2021). B-MINCOME therefore imposed measures to support women’s participation in the active policies, including adjusted hours and locations and the creation of mutual aid spaces which helped women combine participation with reproductive responsibilities (Blanco et al., 2021). YBI analysed changes in perceptions of “the level of gender equality in society” and “interest in gender discrimination issues” (Gyeonggi Research Institute, 2019, p. 41). FBIE considered the gendered impacts of different levels of cash transfer, although focused on the labour market. For example, a larger payment was seen to have the negative result of “persuad[ing] more women to stay home” (Kangas, 2016, p. 36).

FBIE modelled the impacts of different transfer amounts prior to the intervention. The results suggested that a larger transfer would likely decrease income inequality by increasing the purchasing power of low-income earners and reducing the disposable income of the rich. The modelling also showed that a partial BI would be too low to have a significant impact on inequality and could even increase child poverty. However, as neither of these factors were key aims of the intervention, a partial BI was still selected (Kangas, 2016).

Findings

Results from B-MINCOME and SEED demonstrated an increase in women’s economic autonomy and a reduction in financial stress (Blanco et al., 2021; Martin-West et al., 2021). Female participants of SEED also reported increased free time and a greater ability to prioritise themselves. Women increased preventative medical care and caught-up on dental health (Martin-West et al., 2021).

B-MINCOME's active policies had additional empowerment benefits for female participants, above and beyond those resulting from the cash transfer, such as increased feelings of security and confidence. While much of the reproductive work was still undertaken by women, the intervention opened them to a "new world" outside the home and led to changes in their roles in the labour and community spheres. In some cases, women even became the main breadwinner for the household. Women reported being able to exit unhealthy relationships, supported by the financial independence and social networks provided by the cash and active policies respectively (Blanco et al., 2021; Riutort et al., 2021).

Most outcomes from the B-MINCOME intervention were unaffected by the gender of the head of household. However, women played a more central role in the Community Participation active policy: "in these neighbourhoods it is very evident that it is the women who manage the social connections. There are men that participate, but it is the women who are most emotionally involved" (Blanco et al., 2021, p. 80, citing a professional working on the project). This active policy also helped reduce stereotypes and improved participants' views on neighbourhood diversity. However, some difficulties in the relationships between people of different origins remained (Blanco et al., 2021).

Results from the first quarter survey of YBI found a statistically significant increase in participants' perception of gender equality. However, interest in the issue of gender discrimination saw no change (Gyeonggi Research Institute, 2019).

In theory, APFD should provide a levelling effect on income distribution. As a taxable income, it should provide greater benefit to those at the lower end of the distribution than to those at the upper end (Goldsmith, 2010). However, Kozminski and Baek (2017) found that the dividend in fact worsens income inequality in both the short and long-term. This may be due to differences in consumption practices: If low-income groups spend the dividend on non-durable goods while high income groups invest it, economic disparities will increase.

4.4. Material throughput

Design

None of the interventions' included metrics for monitoring changes in ecological footprints. Most paid no specific attention to ecological outcomes. While the PPG design document does address the potential environmental impacts, and intends to evaluate changes in the

environmental attitudes and behaviours of participants, monitoring changes in consumption or material throughput is considered out of scope (Keller & Lieder, 2020).

SEED, B-MINCOME and YBI collected data on participants' consumption and spending patterns (Blanco et al., 2021; Martin-West, Castro Baker, Balakrishnan, Rao, & You Tan, 2019; WSJ, 2020). However, they did not then go on to analyse the ecological implications of such consumption. Most were instead concerned with the stimulating effect on the local economy.

FBIE did not include sustainability in its research design. However, a separate study by Kalaniemi et al. (2020) compared the carbon footprints of those at the FBIE level of income to the average carbon footprint in Finland. The paper discusses the sustainability of consumption at the FBIE level of income in relation to carbon budgets.

Findings

Results from B-MINCOME show that the majority of additional consumption was necessities, including food, shelter, clothes and durable household items (Blanco et al., 2021). Kalaniemi et al.'s (2020) study supported these findings, asserting that consumption at the FBIE level of income is largely spent on necessities.

PPG's environmental hypotheses are based on findings from its partner intervention, the Mein Grundeinkommen (MG) project. While the results are based on online self-assessments, and so not necessarily representative, 53% of MG respondents claimed to have "shopped greener" as a result of the intervention (Keller & Lieder, 2020, p. 24).

Little is known about how APFD is spent. However, Goldsmith (2010, p. 10; 2011) suggests that demand for consumer goods and services increases at the time of the transfer and retailers compete for business with timed offers and sales, creating a "consumption frenzy" atmosphere. A study by Kueng (2018) supported this assertion, finding that Alaskans spend significantly more on non-durables and services in the month when the dividend is paid.

The average carbon footprint at the FBIE level of income is less than half the Finnish average (Kalaniemi et al., 2020). Single parents and two-adult families demonstrate the lowest footprints. The difference between FBIE level households and the Finnish average is largest for couples: FBIE level couples have a carbon footprint 56% smaller than the average Finnish couple. However, the average carbon footprint at the FBIE level is still three times that required to limit global warming to 2C (O'Neill et al., 2018).

4.5. Working hours and the autonomous sphere

Design

Labour impacts were a key focus of several interventions. The primary objective of YBI, FBIE, and OBIP was to increase participation in the labour market (De Wispelaere et al., 2018; Forget, Marando, Surman, & Urban, 2016; Gyeonggi Research Institute, 2019; Kangas, 2016). YBI aims to improve the employability of graduates and monitors the economic activities of participants (Gyeonggi Research Institute, 2019). FBIE and OBIP sought to understand whether BI removes the work disincentives associated with means-tested benefits (Bendix, 2019; Hamilton & Mulvale, 2019; Kangas et al., 2019). The Prime Minister of Finland explained that the pilot would “investigate whether a social security model based on a basic income could promote more active participation and provide a stronger incentive to work than the present system” (Kangas et al., 2019, p. 7).

The design phase of FBIE considered piloting a participation income but this was rejected for bureaucratic and definition reasons. It was thought that too broad a definition of “participation” could reduce supply to the labour market (Kangas, 2016). Changes were monitored using official employment registers, taxable income and participation in employment-promoting measures (Kangas et al., 2019). Students and elderly citizens were excluded from the interventions as these groups were not actively seeking employment (Kangas, 2016). FBIE’s definition of “work” therefore centred on the formal labour market and not the autonomous sphere.

SEED, PPG and B-MINCOME take/took a more open stance towards work. SEED monitored participants’ time-use and type of work undertaken. PPG and B-MINCOME aim(ed) to create the conditions for people to not have to work if desired and not to be forced into jobs they didn’t want to do. Both interventions examine(d) how attitudes change when income is guaranteed and the requirement to work is removed (Colini, 2017, 2018a; Keller & Lieder, 2020). However, the relatively small transfer value in both interventions is unlikely to fully remove the need for employment. Furthermore, there is some ambiguity in PPG as one of the conditions it cites as necessary for a BI is that it “does not reduce the incentive to paid employment” (Keller & Lieder, 2020, p. 8).

Two of B-MINCOME’s active policies focused on participation in work. One policy provided training and support in developing employment plans for the formal labour market. A second supported participants in creating or joining cooperatives, or partaking in social, community-interest projects: “The best formula in the situation of poverty is to activate

participants' entrepreneurial capacities and motivations in the social economy sectors" (Colini, 2017, p. 13).

Findings

Findings on labour market impacts are mixed. On the one hand, the first quarter evaluation of YBI reported an increase in working hours when compared to the control (Gyeonggi Research Institute, 2019, 2020b). Similarly, results from SEED demonstrated an increase in full-time employment as participants used the cash to take time away from part-time jobs, improve their skills, and then obtain better, fulltime work. In contrast, OBIP and B-MINCOME reported a decline in labour market participation, particularly in full-time work (Blanco et al., 2021; Laín, 2019; McDowell & Ferdosi, 2021). FBIE found no change in days employed or earnings from self-employment (Kangas et al., 2019). A long-term evaluation of APFD also found no change to the labour market (Jones & Marinescu, 2018).

Alongside increases in fulltime work, SEED also reported greater participation in non-labour market activities, including time spent with friends and family (Martin-West et al., 2021). It is not clear whether the same people who moved into fulltime work also increased non-labour activities. It could be that while some participants chose fulltime work, others shifted to the autonomous sphere. Alternatively, participants could have swapped multiple part-time jobs for one fulltime job, and so freed up time.

Participants of B-MINCOME, OBIP, FBIE, SEED and YBI all wanted to work and be financially independent (Gyeonggi Research Institute, 2019; Hamilton & Mulvale, 2019; Riutort et al., 2021). Uptake of the B-MINCOME Training and Employment active policy was high even when not a condition of the transfer (Riutort et al., 2021).

An additional finding from Kalaniemi et al. (2020) was that employment status made no difference to the consumption of households on the FBIE level of income.

4.6. Social participation

Design

FBIE, SEED, PPG, and OBIP use(d) randomisation to select participants for their interventions. FBIE, SEED, OBIP, and YBI targeted specific groups, based on socio-economic factors or age. This meant that not everyone in each community received the transfers and so somewhat limits the ability to analyse changes in social participation. B-MINCOME also targeted payments at low-income residents but concentrated on certain communities. The

active policies also provided additional insight of changes in community relationships and participation.

Despite these limitations, all the interventions, aside from APFD, included some analysis of social participation in their designs. FBIE monitored changes in time use and trust in social institutions. While concentrating on time spent in employment, the intervention also monitored non-labour market activities (Kangas et al., 2020; Kangas et al., 2019).

OBIP and B-MINCOME monitored changes in domestic and community relationships as well as time spent volunteering or on communities activities (Basic Income Canada Network, 2019). Two of B-MINCOME's analytical objectives were to improve participants' "sense of belonging in the community" and increase "community development" (Blanco et al., 2021; Laín, 2019; Riutort et al., 2021). The active policies aimed to improve community solidarity. Specifically, the Social Entrepreneurship policy intended to "familiarise participants with the social, solidarity and cooperative economy as an alternative to the traditional labour market" (Riutort et al., 2021, p. 10) while the Community Participation policy "promoted the involvement of participants and their families in the social and community life of their neighbourhoods", creating spaces for group cohesion and the generation of shared projects (Riutort et al., 2021, p. 10). Activities undertaken in the Training and Employment Planning policy included the maintenance of common and public spaces and facilities in order to "improve co-existence" and create "quality community relationships" (Colini, 2018b, p. 9). Participants also delivered food purchased from local markets to residents with mobility issues in order to reinforce "the neighbourhood based economy of proximity" and "promote participation of families in the neighbourhood" (Colini, 2018b, p. 14).

While SEED offered no real evaluation of community outcomes, it did include a "Community Dashboard" component which gave partial ownership of the intervention to residents. It allowed them to co-construct the learning agenda and focus on the questions they felt were important to answer. The intervention also included 'Reinvent Roundtables', which promoted dialogue on poverty and inequality by linking BI to issues of race, gender, and economic justice (Martin-West et al., 2019).

YBI is paid in a local currency for use at traditional markets, restaurants, and shops within Gyeonggi Province. B-MINCOME also piloted a local currency in one of its modalities. The first quarter evaluation of YBI included an analysis of time spent on leisure and social activities (Gyeonggi Research Institute, 2019).

Finally, PPG intends to analyse changes in "social cohesion" and examine whether the intervention promotes cooperation over competition and causes participants to base decisions

on the “best interests of society”. It also aims to reduce discrimination and social division (Keller & Lieder, 2020, p. 55).

Findings

Social participation, including volunteering, extra-curricular activities and attending community events, increased under FBIE and OBIP and was more likely under all modalities of B-MINCOME, especially the Community Participation active policy and particularly when the BI was conditional (Basic Income Canada Network, 2019; Blanco et al., 2021; Kangas et al., 2020; McDowell & Ferdosi, 2020, 2021; Riutort et al., 2021).

Results from OBIP and B-MINCOME (as well as anecdotal reports from SEED) also demonstrated relationship improvements, both at the domestic and community levels (Blanco et al., 2021; Hamilton & Mulvale, 2019). Participants spent more time with family and friends (Basic Income Canada Network, 2019) and increased frequency of socialisation (McDowell & Ferdosi, 2020, 2021) and time spent helping others (Blanco et al., 2021). Under B-MINCOME, the active policies again increased this impact, particularly the Community Participation policy. Again, the largest effects were seen when the cash was conditional (Riutort et al., 2021).

Both FBIE and YBI reported an increase in participants’ trust in others and in political and social institutions. Both interventions also recorded improvements in participants perception of their own influence on social issues and on the decision-making process (Gyeonggi Research Institute, 2019; Kangas et al., 2020; Kangas et al., 2019). However, none of the interventions reported changes in democratic participation or collective action.

Under B-MINCOME, the participants view of their neighbourhoods improved, including an increased sense of belonging and motivation for participating in activities to improve their neighbourhoods (Blanco et al., 2021; Riutort et al., 2021).

The local currencies introduced by YBI and B-MINCOME increased revenue for local businesses (Gyeonggi Research Institute, 2020a; Riutort et al., 2021). Consumer spending patterns changed in both interventions with participants shopping more locally (Ock, 2020; Riutort et al., 2021). Participants of YBI also increased spending on leisure and social activities (Gyeonggi Research Institute, 2020b).

4.7. Value change

Design

While less prominent, value change did feature in some of the interventions. B-MINCOME aimed to promote ethical, social values through the “creation of cooperative economies, mutual support, public participation at neighbourhood level and, last but not least, the creation of a local currency” (Colini, 2018a, p. 7). YBI analysed changes in participants attitudes towards gender equality, government, society and universal welfare (Gyeonggi Research Institute, 2019) while OBIP included the examination of changes in participants’ outlook on life (McDowell & Ferdosi, 2020).

Changes in values, attitudes and behaviours is also a key focus of PPG. Specifically, it will examine how BI affects feelings of inadequacy, fear of survival, and life satisfaction. Building on findings from MG, PPG will examine how people’s desires, fears and time-use change under the security of a BI: “Do I really want to work that much in this job? What is behind the need for a luxury item or long-distance holiday? What do I really want?” The intervention hopes to understand whether the increased autonomy provided by BI leads to more pro-social behaviour, creating the conditions for people to develop in ways which will help “solve the world’s major crises” (Keller & Lieder, 2020, p. 23).

Findings

Following the OBIP intervention, 77% of respondents said that they had a more positive outlook on life (McDowell & Ferdosi, 2020). Early results from YBI suggest that participants increased their trust in society, in laws and institutions, in politicians and in the media. They also took a greater interest in politics (Gyeonggi Research Institute, 2019, 2020b).

The B-MINCOME pilot encouraged participants to imagine fairer ways of working. Participants in the Social Cooperative active policy reported being motivated to work in ways that not only benefited themselves, but also their wider communities (Colini, 2018a).

Given PPG provides the most focus on value change out of all the interventions examined, there are limited findings to report on this area to date.

5. Discussion

The opportunity for this paper to form overarching conclusions about the ecological credentials of BI is limited. This is partly due to variation in the interventions' alignment with BIEN's definition of BI but also because of the limitations arising from targeting, transfer size, and pilot duration. However, developing aggregate conclusions is not the goal of realist synthesis and important insights can still be drawn from examining specific components.

The interventions' targeting criteria and focus areas appeared to be influenced by precedents set by previous BI pilots and by government priorities. For example, YBI openly reproduced many of the evaluation criteria used in FBIE (Gyeonggi Research Institute, 2019) while FBIE's focus on stimulating employment and streamlining the welfare state was a direct objective of the Finnish government (Kangas et al., 2019).

The dominance of environmentalism and green growth was clear in most interventions. Gyeonggi province governor, Lee Jae-Myung, described YBI as a tool for generating growth: "At the centre of the global problem of low economic growth is a shortage of consumption demand (...) the government's role should be focused on enhancing consumers' spending capacity". He argued that a BI would benefit tax payers by growing the size of economy (Speaking at the National Assembly on July 30th 2020, cited in Ock, 2020). Similarly, the rationale behind OBIP was to "help ensure that everyone shares in Ontario's economic growth" (Glass, 2017) while FBIE's aim was to get people into the labour market.

However, not all interventions conformed to this view. PPG's design document recognises that the crises "are the result of an economy that has been for centuries geared towards growth" (Keller & Lieder, 2020, p. 76) and includes an environmental section which examines BI's potential to empower people to live and act more sustainably. Kalaniemi et al's (2020) study considered the relevance of its findings to degrowth. Both of these interventions showed potential alignment with ecologism (Dobson, 2007).

Human needs, poverty and inequality

While none of the interventions addressed HN frameworks explicitly, the results demonstrated incidental alignment on several areas. In accordance with the BI literature, the interventions demonstrated consistent improvement in life satisfaction indicators, which are generally accepted as an important component of human wellbeing (Layard, 2011). Similarly, improvements in health, particularly mental health and nutrition; housing, access to education, and, to some extent, autonomy, support the view in the literature that BI is an effective policy

for reducing poverty and deprivation (Davalá et al., 2015; Standing, 2017). Improvements in the above areas all contribute to preventive healthcare, which can lower the burden on healthcare systems (Nurse et al., 2014; Owen et al., 2011).

Improvements in HN satisfaction were particularly high among low-income groups, women, and ethnically marginalised communities. This gives credence to the assertion in the literature that BI has strong equality benefits (Standing, 2017; Van Parijs & Vanderborght, 2017). Qualitative research from SEED also showed that women were able to prioritise their own needs and wellbeing, something they usually neglected and craved for its own sake (Martin-West et al., 2021). This contributes to satisfaction of the fundamental HN of “identity” (Max-Neef et al., 1991). The findings on poverty, inequality and life satisfaction align with those from BI interventions in the Global South, as examined in Langridge (2021).

Increased time spent in education and training appeared to be mainly motivated by the desire to improve employability. However, given the disconnect between the labour market and social wellbeing (Graeber, 2019), such time in education cannot necessarily be said to provide a social benefit or contribute to HN satisfaction. The mixed findings on autonomy were likely due to the low transfer amounts and the short duration of the pilots, both of which restricted full exit from the labour force.

However, the positive findings relating to HN satisfaction occurred despite the low transfer amounts and short pilot durations. Larger improvements could reasonably be expected if pilots aligned with HN frameworks, were longer in duration, included a higher transfer amount and/or were accompanied by increased access to public services. By removing the requirement to work, such pilots would also provide increased understanding of how any changes in education and autonomy related to HN satisfaction.

Ecological focus, consumption, and material throughput

Prior to the main analysis, a Google Scholar search was conducted using the intervention titles or country names, plus the phrase “basic income” and any of the following words: “green”, “sustainable”, “sustainability”, “ecology”, “ecological”, “environment”, “environmental”, “sustainable”, “climate change”, “degrowth”, “post-growth” (search completed 01/06/2021). The study by Kalaniemi et al. (2020) was the only result, demonstrating that ecological implications were generally absent from the interventions’ designs and evaluations.

This assertion was supported by the primary research. None of the interventions addressed the “non-hazardous environment” characteristic of HN from an ecological perspective and none examined changes in ecological or material footprints (beyond Kalaniemi et al’s study).

PPG was the only intervention to include an environmental section in its research design, although this focuses on attitudes and behaviours rather than consumption and material throughput. Those interventions which did monitor consumption did not then go on to consider the ecological impacts. These findings support the view in the literature that the ecological evidence for BI is extremely limited (MacNeill & Vibert, 2019). This should therefore be an important focus area for future pilots.

The data available suggests that any increases in the consumption of material goods under the various interventions was focused towards HN satisfaction. This is unsurprising given that the majority of participants were on low incomes. However, the findings from APFD, the only intervention (alongside the plans for PPG) not to target low-income participants, demonstrated an increase in the consumption of high-income households at the time of the payment (Goldsmith, 2010; Kueng, 2018), resulting in what Goldsmith (2010, p. 17) calls a “misallocation of personal income”. This is fuelled by marketing campaigns timed for the dividend payment date. Such marketing could occur alongside other BI interventions unless combined with efforts to limit or ban advertising. Given the limitations of the APFD, there is a need for further research on the impact of BI on the consumption and ecological footprint of wealthy recipients. An EBI should facilitate a reduction in both these indicators.

Kalaniemi et al’s (2020) study found that under business-as-usual, incomes at the level of FBIE still result in consumption levels exceeding available carbon budgets. However, the paper did not study FBIE participants directly and did not account for the wider changes to society that could result from an EBI. Such changes include behaviour and value change at the individual, communal and political levels, which could encourage HN satisfaction through non-material means. The study does however demonstrate the necessity of such changes.

Work and labour

While none of the interventions aimed to break the link between income and labour, their alignment with the environmentalism view of work varied. FBIE, OBIP, YBI, and certain modalities of B-MINCOME aimed to increase labour supply, with the potential for BI to reduce labour market participation seen as “one of the biggest objections” to the policy (Gyeonggi Research Institute, 2019, p. 42). Such a position clearly aligns with green growth and not with the principles of an EBI put forward in this study. PPG, SEED, and the other B-MINCOME modalities took a different view of work. Their interest in changing attitudes, particularly when labour isn’t necessary, and their desire to promote a more socially focused, altruistic view of

work, aligns more with ecologism and post-growth perspectives and therefore with the principles of an EBI.

The different approaches may partially result from the need to align with government priorities. By receiving government funding, B-MINCOME, FBIE, OBIP, and YBI likely experienced greater pressure to align with their economic policies on growth and labour. PPG and SEED, in contrast, included independent funding and so likely had increased freedom. B-MINCOME appears an exception to this rule: Despite being local government funded, the intervention included challenges to business-as-usual. However, this aligns with the more “radical” politics of the Barcelona government (Gessen, 2018).

It should also be noted that targeting low-income or unemployed participants could have influenced the interventions’ attitudes towards work. The need to reduce labour hours and shift to less materially intensive time use (Devetter & Rousseau, 2011) is most applicable to wealthy groups (Kallis, Kerschner, & Martinez-Alier, 2012). These groups were not the focus of the interventions studied.

Variation in the results means that findings on BI’s effect on labour supply are inconclusive and likely affected by local context. No correlation was observed between the labour market objectives of the interventions and the resulting labour supply effects; FBIE and OBIP saw no change despite having a specific goal of increasing labour supply. The low transfer value and limited duration of the pilots may have restricted further exit from the labour market, as participants were unable to meet all their needs without working and had to plan for the end of the interventions. These are positive findings when considering the potential of an EBI to break the link between income and labour as they suggest it is possible under the right conditions. In accordance with the literature, future pilots should aim to study the effects when the transfer amount is higher and pilot duration longer.

A clear trend in the results is that, despite providing some potential to exit the labour market, BI does not reduce people’s desire to work and contribute to their communities. This was evidenced by increases in volunteering and participation in extra-curricular activities, as well as the improved perception participants had of their neighbourhoods. Participants also re-evaluated how they could use their work to benefit their communities. This supports the view in the HN and post-growth literature of the importance of social participation to wellbeing (Gough, 2017; Kallis et al., 2020). If an EBI were to fully facilitate exit from the labour market, these results suggest that citizens would find ways to participate usefully in their communities. This would, of course, include some socially beneficial, paid labour, which would still be necessary, including as a potential means of funding a BI.

However, exiting the labour market alone may not be sufficient for reducing environmental pressures: Kalaniemi et al. (2020) found that the consumption of working and non-working low-income households in Finland was similar. Therefore, additional changes in behaviour, particularly around consumption, and policies for facilitating low-consumption lifestyles would also be required.

Changing values and social participation

While most interventions analysed changes in behaviour, values and social participation, findings are limited by the fact that the cash was not paid to whole communities under FBIE, OBIP, SEED, YBI, and PPG. This limits the potential for change above the level of the individual. As Kallis et al. (2020) explain, shifting to a post-growth society also requires change at the communal and political levels.

PPG hypothesises that their intervention will increase social cohesion by reducing insecurity and pressure on the time and finances of participants. This will reduce competition and allow people to prioritise the wellbeing of others. However, the behaviour of individuals is affected by social influence (Walker, 2015) and creating change in society requires change in a significant minority (Centola, Becker, Brackbill, & Baronchelli, 2018). Creating social change through a randomised BI therefore appears optimistic and future interventions should instead cover whole communities. The future publication of PPG's findings will help determine the extent to which this is true.

The results from the other interventions demonstrate that BI can improve personal relationships, both at the household level and with wider family, friends, and community members. It can also increase the time recipients spend volunteering and participating in community activities. These results were consistent even in interventions which utilised the randomisation approach, although appeared stronger when undertaken as a community wide intervention, as in B-MINCOME. Complimentary policies, discussed below, also increase these results.

Recipients of OBIP reported a reduction in their use of community services such as soup kitchens. While a positive outcome, this supports assertions in the literature that a BI could undermine collective institutions, reduce community interaction, and increase individualism (MacNeill & Vibert, 2019). An EBI therefore needs to facilitate the evolution of community services, and not just replace them.

The local currencies used by YBI and B-MINCOME encouraged recipients to participate in their local economies. While the analysis of their impacts was concentrated on benefits to

local businesses, there are also likely benefits to quality of life, social cohesion and environmental sustainability (Kwon, Lee, Xiao, & McIntosh, 2019; Sanz, 2016). More research is needed on the connection between BI, local currencies, consumption, and material footprints.

Finally, the increased trust in society, laws, institutions, politicians, and the media resulting from FBIE and YBI could facilitate preservation of the status-quo and increase support for a business-as-usual, or environmentalism, approach to addressing the social and ecological crises. This is something which future EBI interventions should consider.

Additional remarks

While BI alone contributed several positive changes, the interventions demonstrated the importance of appropriate complimentary policies: Health and dietary improvements were higher when combined with workshops on healthy eating in the B-MINCOME intervention. Equality improvements were also higher when the payment was supported by active policies, as they facilitated the generation of systems of mutual support which increased the autonomy and empowerment benefits for women. Equality benefits would be maximised if BI formed part of taxable income and was accompanied by progressive tax policies (Goldsmith, 2010). Finally, complimentary activities increased community participation, helping reduce stereotypes and ethnic divisions, and improving trust and solidarity within communities. EBI interventions should therefore consider complimentary policies, currencies, activities, or institutions which maximise HN satisfaction and increase social cohesion, mutual support, and participation in local communities.

The findings suggest that BI can reduce reliance on debt. B-MINCOME reported reductions in borrowing from friends and family (Blanco et al., 2021; Riutort et al., 2021) while nearly half of respondents in the OBIP evaluation used the money to pay off loans (Basic Income Canada Network, 2019). Studies of APFD have also found that recipients use the dividend to reduce debt burdens (Goldsmith, 2010). Spending, rather than loaning, money into the economy (in line with MMT), through policies like BI, could therefore reduce the ecological impacts of debt. However, the relationship between BI and debt is not necessarily straightforward. As income security increases, so does the potential for low-income groups to improve their credit score and access loans. The relationship between BI and debt is another area for further research.

Alongside the increasing attention given to MMT, the literature suggests that funding scale-up of BI interventions should come from a combination of Pigouvian taxes on carbon and resources and progressive taxes on wealth, inheritance, or investments (Howard et al.,

2019; Pinto, 2020). APFD demonstrates that a partial-BI can be funded through natural resource revenues alone, but the need to lower resource use means that additional funding mechanisms which reduce wealth inequalities, by limiting capital accumulation and increasing redistribution, will also be required. Gyeonggi Province intends to fund scale up with a “technology tax” alongside taxes on land and the use of citizens’ data (UBI Lab Leeds, 2020; WSJ, 2020).

The funding requirements of BI could be reduced if priority was given to non-material HN satisfiers. This would require complimentary policies or public services which encourage participation in the autonomous sphere, provide opportunities for generating mutual aid and support, and foster values which prioritise the wellbeing of others and of the environment. Given public services are more cost effective than the private sector, a combination of BI and UBS could be an appropriate way forward (Buchs, 2021).

6. Conclusion

The social and ecological crises form the major global policy challenge of the 21st century. A review of the literature suggests that the crises are self-reinforcing and require policy responses which address both simultaneously. The dominant strategy in policy discourse centres on green growth. However, post-growth scholars have provided convincing evidence to be sceptical of this approach. Responses aligned with the precautionary principle should therefore explore approaches which adopt post-growth positions, and so aim to reduce the material throughput of Global North economies.

BI is a radical policy proposal which has been advocated in the post-growth literature. However, the policy’s ecological credentials are under-examined and the principles of a BI which aligns with post-growth positions are under-developed. This paper proposed a BI based on such principles; referred to as an EBI. It argued that an EBI should seek to improve HN satisfaction, reduce inequalities and unnecessary material throughput; facilitate a shift from waged labour to activities in the autonomous sphere, and promote value change at the individual, communal and political levels, particularly in attitudes towards individualism, consumption, community, and nature.

Employing a realist synthesis method, the paper analysed whether previous and current BI interventions in the Global North align with an EBI, and what their findings inferred about the policy’s ecological credentials. The results suggested that BI interventions to date have aligned

more with green growth than with post-growth positions. This is likely due to the dominance of green growth in policy and academic discourse, and the trend for pilots to replicate the focus of their predecessors. It is also likely that funding requirements from governments require such a focus. Ecological considerations are largely excluded from the empirical research, with no analysis of the policy's impact on material or ecological footprints.

However, alignment with green growth is not universal and does not preclude findings which demonstrate the potential for an EBI to form part of the solution to the crises. Despite not embracing HN frameworks, the interventions demonstrated the potential for BI to increase HN satisfaction. Aligning an EBI with such frameworks and offering transfers at the level of sufficiency could generate even greater benefits. The interventions also demonstrated improvements in economic, social and gender equality.

Despite being a key focus of several interventions, BI's effect on labour supply was inconclusive and requires additional research which is not focused exclusively on the poor and unemployed, as was the case in most pilots studied. It is, however, clear that BI does not weaken the motivation to participate actively in society, instead appearing to increase it. An EBI should capture this motivation and direct it towards ecologically and socially beneficial activities, both in the labour market and, increasingly, in the autonomous sphere.

Alongside payment size and intervention duration, complimentary policies appear to have the most influence on the impacts of a BI, increasing benefits to health, equality, and social participation. The influence of such policies supports calls for an EBI+, in which cash transfers are accompanied by policies which encourage exit from the labour market, increased social cohesion and mutual support; and changing values around consumption and the natural world. Interventions should also adopt a whole-community approach rather than selecting participants at random. The benefits of BI would be furthered if accompanied by policies which limit the wealth accumulation of the richest.

The considerations raised in this paper require future pilots to be longer in duration, and to pay a sufficiency-BI to participants from across the socio-economic spectrum. Evaluations should consider changes in ecological footprints and in the values and behaviours of high-income groups. Such pilots would, naturally, require greater state involvement and therefore likely include the requirement to promote green growth. Lobbying to present post-growth positions as the preferred alternative is therefore vital. In addition, the relationship between BI, local currencies, and material throughput, and between BI and debt, should be integrated into future research.

Aside from funding considerations, this paper has not covered the means for shifting the dominant discourse towards post-growth positions and, therefore, towards support for an EBI. This is a daunting political challenge requiring further research. However, this paper does propose that an EBI be advocated, not as a next-best option to green growth, but as a preferable alternative in its own right. An EBI aligned with post-growth principles has the potential to help avert the social and ecological crises and increase HN satisfaction, by removing the false consciousness of consumerist culture. It could therefore be an effective policy for opening the door to further research addressing the obstacles to post-growth transitions.

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