Future green economies and regional development: a research agenda

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Future Green Economies and Regional Development: A Research Agenda

David Gibbs[1] and Kirstie O'Neill[2]

[1]Geography, School of Environmental Sciences, University of Hull, Hull, HU6 7RX, United Kingdom.
[2]Department of Geography and Environment, London School of Economics & Political Science, Houghton Street, London WC2A 2AE, United Kingdom.

d.c.gibbs@hull.ac.uk
k.j.oneill@hull.ac.uk

Abstract

The past thirty years have seen an explosion of interest and concern over the detrimental impacts of economic and industrial development. Despite this, the environmental agenda has not featured substantially in the regional studies literature. This paper explores a range of options for regional futures from a 'clean tech' economy and the promise of renewed accumulation, through to more radical degrowth concepts focused on altering existing modes of production and consumption, ecological sustainability and social justice. In so doing, we investigate the potential role of regions as drivers of the new green economy, drawing on research into sustainability transitions.

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Introduction

A concern with the adverse environmental impacts of economic development has increasingly entered into the mainstream of economic policy making and represents a key challenge for national, regional and local policy makers in the twenty-first century (Rockstrom et al., 2009; Piketty, 2014). At one level it could be argued that there is nothing new about policy makers' concerns over the environmental consequences of economic development – these date back (at least) to the Rio de Janeiro Earth Summit in 1992. However, despite the widespread adoption of the concept of sustainable development following Rio and some progress in combining economic, environmental and social aims, economic development strategies and policies have largely remained wedded to a high growth, carbon-based, consumer-led economy where success is measured by increasing GVA and higher levels of personal consumption (Jackson, 2009). More recently the emerging concept of a green economy has led to a policy focus upon the potential for change to existing socio-economic development pathways. A major component of this has involved low carbon initiatives – attempts to reduce greenhouse gas emissions and so mitigate climate change – and the development of a low carbon economy (see for example, Smith et al., 2010; Davies and Mullin, 2010). This perspective is essentially one of ecological modernisation, at the heart of which is a belief in technology, innovation and progress to solve environmental problems (Roberts and Colwell, 2001; Mol, 2002). While climate change may have been the initial driver behind low carbon policies and targets, policy makers have increasingly come to recognise that the resultant shift to a greener future also offers the prospect of a more resilient and sustainable economy in the future and/or alternative modes of economic development.

Much activity has been geared towards creating the basis for future growth and consumption, albeit that what we are consuming may be less environmentally damaging than before. However, as Jackson (2009: 8) comments, while "most analyses assume that the ultimate aim is to re-stimulate the kind of consumption-driven growth that has dominated the last few decades…this goal is in the long-term entirely unsustainable without significant changes in both macro-economic structure and the social dynamics of consumerism". Indeed, Pàdranos (2013: 30) suggests that this form of a green economy amounts to "trying to solve ecological problems with the same logic that causes and perpetuates them". Thus while the green economy is seen by some as a new source of capital accumulation and job creation, the associated policy measures have been criticised for failing to address the root cause of environmental crises and neglecting issues of social justice and equity (Kenis and Lievens, 2015). Critiques of this approach to the green economy offer alternative pathways for economic development, based around ideas of degrowth and post growth (see for example Latouche, 2006, 2010; Kallis, 2011). According to the Research and Degrowth association (2012) "sustainable degrowth is a downscaling of production and consumption that increases human well-being and enhances ecological conditions and equity on the planet". Degrowth proponents question the assumption that increased material prosperity leads to increased satisfaction. On the contrary, continuous growth does not lead to greater prosperity for all people, but rather to greater social injustice and an increase in individual dissatisfaction, health problems, social tensions, and ecological crises (Bauhardt, 2014). Critically, degrowth advocates have a "different vision of prosperity, one based on dramatically less material abundance and consumption" (Kallis et

al. 2012: 174). In between the policy approaches which encompass low carbon green economies and those who advocate degrowth are a range of other approaches which attempt to challenge Westernised high levels of consumption and environmental apathy, many more than can be explored in detail in this paper. However, we recognise the potential in approaches such as voluntary simplicity (Alexander and Ussher 2012), makerspaces (e.g. HackerLabs, FabLabs etc), which experiment with new ways of producing and consuming at a more local level (see Smith et al., 2013), sharing economies (Grinevich et al., 2015), social enterprises and grassroots sustainability innovations (Smith and Seyfang 2007). These all represent interesting and challenging examples of alternatives to the neoliberal agenda of continued economic growth.

In this paper we examine visions for different futures and their implications for regional development research. In investigating these issues we draw upon the theoretical perspective of socio-technical transitions research to provide a framework to conceptualise these shifts in performing economies. In doing so, we also identify two shortcomings in transitions research that merit further attention. First, initial conceptualisations within transitions research neglected space, albeit this shortcoming has begun to be addressed (see for example Truffer et al., 2015; Murphy, 2015). Second, while transitions research, by definition, envisages a transition towards sustainability, it is largely silent on the forms that sustainability and the green economy should take. Both of these issues – the role of space and the form of future economies – are also key questions for regional development research in the future. The structure of the paper is as follows. In the next section we outline the rise of interest in the range of approaches to green economies and indicate that it is comprised of multiple discourses. We then outline the main tenets of sustainability transitions research. In the following sections, we draw upon secondary research to explore contrasting examples of green economy strategies. The first of these is based around a technology-led, ecological modernisation approach using the example of Styria in Austria as an illustration. Second, we explore a range of local and regional examples based around a degrowth approach. These two examples are not intended to be comparisons or indicative of the only responses to environmental and economic crises. Our argument here is that these 'niche' experiments and philosophies are presenting examples that show how alternative futures may be possible. Following a discussion of the results from the case studies, we conclude by suggesting a research agenda for regional studies research around the green economy.

The Green Economy

Although the green economy has a legacy from Limits to Growth arguments (Meadows et al., 1972) and the Blueprint for a Green Economy (Pearce et al., 1989), current mainstream iterations of the green economy entered policy discourse towards the end of the 2000s, notably at the Rio+20 conference (Bina, 2013; Borel-Saladin and Turok, 2013). For example, UNEP (2011: 16) defined the green economy as "low carbon, resource efficient, and socially inclusive [where] growth in income and employment should be driven by public and private investments that reduce carbon emissions and pollution, enhance energy and resource efficiency, and prevent the loss of biodiversity and ecosystem services." Such approaches combine environmental discourses with industrial and economic policy objectives "in search of 'win-win' solutions and virtuous cycles of progress and prosperity" (Bina, 2013: 1024).

From a policy maker's perspective, the green economy is increasingly seen as a source of new growth and jobs and the basis of a new round of capital accumulation. At the local scale, "regions and cities see the challenge as an opportunity to take our societies out of the global economic crisis transformed into more sustainable, low carbon, less resource intensive and inclusive communities" (Bonsinetto and Falco, 2013: 126). Notwithstanding the use of a new discourse of green growth, few fundamental changes have been made to macroeconomic structures and policies after Rio+20 (Bulkeley et al., 2013). As a result, the potential of developing green economies often emerges as a thinly veiled version of business-as-usual, rather than a radical shift to a more sustainable economy where social and environmental aspects have parity with economic aspects, epitomising a process of paradigm *fixing* rather than paradigm *shifting* (Bina, 2013). Moreover, many of these debates and associated policy statements offer little for countries in the global South and this has led to conflict at negotiations such as Rio+20 in 2012. Indeed, initiatives such as that of UNEP's green economy have been seen as promoting the continued expansion of extractivist economies to the detriment of global Southern economies (Hollender, 2015). It is important that discussions on green economies do not elide the fundamental need for 'development' (whilst acknowledging the tensions within this term) in many countries, albeit not reproducing the problematic forms of economic development, which have contributed to significant environmental and social problems in many countries (Escobar, 2015: Bell, 2016).

Thus while the green economy has rapidly become a focus for international and national policy documents (Bailey and Caprotti, 2014), the hegemonic discourse envisages incremental and reformist changes which do not challenge or undermine the dominance of neoliberal economic growth or consumption economies (Philips, 2013; Bina, 2013). Although there is recognition that the very premise of the green economy concedes that 'business as usual' has resulted in economic and ecological crises (Shear, 2014), the green economy frequently appears to be co-opted as a neoliberal project, proposing that it is the role of government to create new markets for capital investment, and to use markets to manage nature and climate change (Tienhaara, 2014). Such approaches have their roots in weak interpretations of sustainable development, the consequence of long standing nature-society dualisms (Moore, 2015). Here, neoliberalism offers "a range of 'environmental fixes' to the endemic problem of sustained economic growth" (Castree, 2008: 146). This means "environmental problems come to be framed as issues that are politically, economically and technologically solvable within the context of existing institutions and power structures and continued economic growth" (Bailey et al., 2011: 683).

However, although these approaches predominate, they have been criticised regarding the extent to which current green economy policy measures will substantially address global environmental problems, such as global warming and rising greenhouse gas emissions (Borel-Saladin and Turok, 2013). Some authors, such as Caprotti (2012) and Gendron (2014), believe that the most likely scenarios involve mild reform along the lines of ecological modernisation with limited environmental benefits. However, others, such as Davies (2013) and Shear (2014), suggest that such green economy developments can subsequently engender more substantive and radical change. Thus while "arguments about green jobs and growth through ecological modernisation are increasingly harnessed to elaborate positive expectations for many sustainability niches…alternative discourses

concerning new sustainability politics and economics are also available and used" (Smith and Raven, 2012: 1033). Indeed, despite the hegemonic dominance of this particular discourse, we can identify a range of discursive approaches to the green economy. For example, Bina (2013) divides these into three categories – 'business-as-usual', 'greening' and 'all change', while Ferguson (2015) similarly has 'conventional pro-growth', 'selective growth' and 'limits to growth' (see Table 1).

(Table 1 about here)

Different approaches to the green economy around "post-growth, degrowth and décroissance all raise more fundamental questions concerning the relationship between material prosperity and individual and social well-being. This concept aims at developing forms of social and economic organization that reinterpret prosperity and quality of life, freeing these aspects from the dictate of economic growth" (Bauhardt, 2014: 64), whilst also lessening the environmental impacts of such organisation. One criticism has been that these approaches also have little to offer the global South as a result of fewer opportunities for commodity and manufactured exports and less availability of credits and donations (Alier, 2009; Kallis et al., 2015). Conversely, there is an argument that degrowth strategies are closely related to, and overlap with, existing movements, especially in Latin America, such as post-extractivism, alternatives to development (A2D), solidarity economies and Living Well/Buen Vivir, all of which focus on issues such as livelihoods, environmental justice and land annexation (Martinez-Alier, 2009; Hollender, 2015). In this case, there may be common cause between the promoters of degrowth and such movements in the global South. In total, as Table 1 indicates, there is a spectrum of interpretations of the green economy, from market-led, business-as-usual through to proposals for more radical changes such as a steady-state economy and degrowth (Kenis and Lievens, 2015). Thus rather than a clear or stable end point, the "green economy remains a disaggregated and contested discourse" (Ferguson, 2015: 26) and an ongoing contest between different economic visions of the future (Bailey and Wilson, 2009; Bailey and Caprotti, 2014).

Sustainability Transitions and Space

A useful perspective from which to explore these issues is provided by research into sustainability transitions and, in particular, the multi-level perspective (MLP) of innovation (Smith, 2003; Geels, 2005). This approach has proved helpful in understanding the opportunities and constraints that a shift to a green economy may encounter. The MLP identifies three synergistic levels: the socio-technical *landscape*, which encompasses the wider context, and which influences niche and regime dynamics, and includes spatial structures (e.g. urban infrastructures), political ideologies, societal values, beliefs, concerns, the media landscape and macro-economic trends (Geels, 2012); a meso-level of socio-technical *regimes* (such as fossil fuel-based energy systems), that include interconnected systems of existing technologies, institutions, rules, norms and practices (Berkhout et al., 2003); and a micro-level of protected *niches*, which act as test-beds for innovative ideas and technologies and the potential emergence of new socio-technical constellations that challenge the existing regime (Späth and Rohracher, 2010). These 'levels' refer to heterogeneous configurations of increasing stability, which can be seen as a nested hierarchy with regimes embedded within landscapes and niches existing inside or outside

regimes (Geels, 2012). "Utilising the analytical devices of transitional landscapes, regimes, and niches provides a useful toolkit for examining the causal agents and mechanisms through which individual green economy sectors, domains, and geographical spaces seek to influence or supersede existing regimes" (Bailey and Caprotti, 2014: 1804). In transitions research a key focus has been on experimentation with new ideas and technologies in niches (Smith, 2003). Niche developments are seen as the source of new socio-technical configurations that can grow, and perhaps eventually displace, incumbent unsustainable regimes (Berkhout et al., 2003). These tensions are a product of changing circumstances in the wider socio-technical landscape acting as a driver for regime transitions, where new imperatives, such as climate change, accelerated global warming and carbon reduction targets act as a challenge to existing technological regimes (Smith et al., 2010), potentially providing a window of opportunity for niche experiments and ideas to migrate into the mainstream regime.

However, within the sustainability transitions literature "the role of places and spatial scales in these transition processes has not been an explicit issue of concern" (Smith et al., 2010: 443). Much work has either explicitly or implicitly focused on national scale transitions (Hodson and Marvin, 2010). Research that has investigated the role of space and place suggests that "cities and regions can become powerful promoters of sustainability transitions when understood as relationally embedded actors and providing crucial resources for successful innovation processes" (Truffer and Coenen, 2012: 15). Coenen et al., (2010) suggest that niches are likely to be local scale phenomena, which subsequently play an important role in upscaling these experiments to (implicitly) wider spatial scales, while Truffer (2008: 980) points out that "a first nucleus of a new regime structure could emerge on a regional…level." Truffer and Coenen (2012: 17) bring these arguments together by suggesting that "the role of cities and regions may be to provide protected 'spaces', where the usual selection pressures are somewhat modulated and therefore the construction of socio-technical configurations can take place". Similar conclusions are reached by ESPON (2014) and Badinger et al., (2016) where European regions and cities are identified as key actors encouraging sustainability transitions. It will important, given such circumstances, that those cities and regions, which possess less endogenous resources and resourceful actors, are not excluded from more sustainable economies, improved environments and social justice.

Certainly, the likelihood of a specific transition may be unevenly distributed in space and will depend on the interplay of actors, networks and institutions available in some places and not others. In this context "notions of niche and regime are potentially resourceful concepts in framing the possibilities and limitations for green-tech clusters to emerge and develop in particular regions" (Truffer and Coenen, 2012: 12). Some regions or places may offer greater opportunity both for strategic niches to develop and operate, and for the formation and development of green entrepreneurial activities. Although some of the factors at work in a region or area may not be specifically 'local', of importance is how actors adapt or adopt national and international factors and how these come to be configured locally (Truffer and Coenen, 2012). In MLP terms, while socio-technical landscapes provide the broad context of opportunities and constraints for green developments, they do not (despite sometimes being seen as 'external pressures') determine outcomes or mechanically impact niches and regimes (Hodson and Marvin, 2010). Actors within a locality need to perceive and translate these external landscape developments in order to have purchase (Geels and Schot, 2007).

The role of purposive actors and institutions is therefore important in this process, not just within the local area, but also to help transcend the city and regional scale (Späth and Rohracher, 2010).

In the following sections of the paper, we utilise secondary data and published research to illustrate these points, drawing on the spectrum of activity shown in Table 1. In the first of these we focus on clean tech, ecological modernisation type initiatives, reflecting an 'almost business-as-usual/selective growth approach' (see Table 1) and use the example of Styria in Austria to represent these. Secondly, we turn to a more diverse group of initiatives representing more radical conceptualisations reflecting the 'limits to growth/socio-economic transformation' end of the spectrum in Table 1. We recognise the limitations of this approach, and this is not intended to be a direct comparison between clean tech and degrowth, nor do we view this as a binary divide. Rather these are stylised interpretations of the green economy which can help to orientate the debate and future research, as well as offering exploratory case studies to illustrate the diversity of initiatives that exist (Faccer et al., 2014).

A Clean Tech Green Economy: Eco World Styria

Styria's 'Green Tech Valley' has been developed in the Austrian province and is one of Europe's leading green economy locations with over 200 companies. Graz, the second largest city in Austria, is the administrative centre for the province of Styria and has won various European and international awards for its eco-city initiatives (Rohracher and Späth, 2014). The region had a history of experimentation with renewable energy technologies in the 1980s, especially in solar thermal and biomass technologies. In the case of the former, this was a product of bottom-up, self-build experiments, whereas biomass developments were more a product of established organisations, especially those related to agriculture and involving the Styrian chamber of agriculture (Schreuer et al., 2010). It has also been argued that the local population was mobilised in the 1980s to protest about air quality and pollution from 'dirty' industries such as steel and paper manufacturing plants, which led to a bottom-up sustainability agenda and the formation of 'niche thinking' (van Heyningen and Brent, 2012). The specific Green Tech Valley initiative has its origins in a project in 1998 and was formally established in 2005. It claims to be the "world's highest concentration in the areas of bioenergy, solar energy, waste and resource management and green buildings" and "the global hotspot for advanced energy and environmental technologies and proven growth through innovation" (Eco World, 2016: 6). This accords with a view that sees similar eco-clusters, defined as "regional innovative networks with a focus on environmental friendly and sustainable technologies" (Pohl, 2015: 31), as a key source of green growth at the regional scale. Indeed, promotional material for Green Tech Valley claims that more than 1000 jobs have been created each year since 2005, with sales growth of 131% compared to 73% sales growth in green tech companies globally (for the period 2006-14). Eco World Styria is the specialised networking and support organisation for the Green Tech Valley and is a provincial and city (Graz) government-supported initiative, but also involves a range of institutions in a triple helix research-industry-government approach (Schreuer et al., 2010). The organisation provides information to firms, assists them in gaining new markets, engages in horizon scanning for new technological developments and also provides regional support for R&D, training, and

apprenticeships. Styria conforms with Cooke's (2011) concept of 'transition regions' – defined as constituting sub-national administrative areas, with policies and support mechanisms in place to support green industries, clusters of related green industries and a platform of related variety sectors and sub-sectors.

Eco World uses the Green Tech Valley appellation and its designation as "the worldwide No. 1 green tech cluster" by the US Clean Edge group in 2010 (Eco World, 2016: 6) to brand and position itself externally. Eco World is a member of a range of international green economy networks including the Green Tech Service Alliance, EcoCluP, and the International Cleantech Network (ICN). These have promotional value, with Eco World staff giving presentations and study tours to representatives from overseas local and regional government staff. The development of the Green Tech Service Alliance, with partners in ten countries (six in the EU, plus Singapore, South Korea, Canada and the USA) also enables Styria's companies to access business opportunities in other green business clusters. Such international networking activities indicate the need to consider multi-scalarity in transitions research (Truffer et al., 2015) – these help to legitimise efforts to develop a green-tech cluster by emphasising (a) Styria as an important global player in the green economy, and (b) the potential gains to be derived locally through export opportunities and through potential inward investment into Green Tech Valley. In this manner, networking activities transcend existing governance levels to create an additional source of pressure on incumbent regimes (Rohracher and Späth, 2014). Such networking activities in Styria also support Geels and Raven's (2006) argument that we need to distinguish between 'local experiments' in local networks in specific geographical places and a 'global niche level' that is an emerging institutional environment of shared rules which transcends and connects particular places.

In terms of 'local experiments', while Eco World encourages firm location, new start-ups and innovation, it is not solely focused on economic development, with a major shift towards renewable energy use in the province and support for local, community and local energy initiatives. The drive towards renewable energy is assisted by a strong regime context, which encourages renewable energy use in the local market, and is supported by both Federal and regional energy strategies. The regional government's Energy Strategy 2025 sends "a clear signal of coordination and direction towards energy efficiency" (Miranda and Larcombe, 2012: 75). The city of Graz was an early mover in implementing demand-side energy management programmes and promoted the use of both district heating and solar thermal energy (Rohracher and Späth, 2014). Regional state policy also aims to integrate the development of eco-industries into regional development strategy (Pohl, 2015). However, in addition to encouraging transition at the local level (e.g. encouraging the adoption of renewable energy, specifying building regulations) Eco World's involvement with bodies such as EcoCluP, the ICN and the Global Cleantech Cluster Association involves creating a shared vision and dynamic across partners from different countries, representing an attempt to work at the 'global niche level' (Raven et al., 2011).

From a sustainability transitions perspective, Styria indicates the important role of local visions to mobilise local actors (such as initial environmental protest) and the key role of intermediaries (such as Eco World) (Hansen and Coenen, 2015). For green economy firms, involvement in Eco World helps legitimise their activities and to counter competing industries and the dominant energy regime, as well as challenging institutionalised interest

groups such as the Austrian federation of industries and the chamber of commerce (Schreuer et al., 2010). While the example of Styria does not indicate regime change, it can be taken to represent local 'regime variation' which is more sustainable than the dominant energy regime. International awards and branding have also played an important part, helping to alter regional self-perceptions. However, these may be less important in relation to actual implementation than their role in creating a self-reinforcing process. Hence, "the bases for such momentum building for sustainability transition were…not so much changes in the physical infrastructures or environmental policy outcomes, but rather the discursive dynamics and innovative concepts, international recognition and awards, and public appreciation of the eco-city identity" (Rohracher and Späth, 2014: 1421).

However, despite the promotion of Styria as a leading green economy region, the eco-cluster is only one sector amongst others that are being supported locally through Styria's Economic Strategy 2020 – these include health tech and mobility sectors, as well as the much less environmentally-friendly automotive and steel industries (Perkonigg, 2013). Although presented as a new form of economic development, it could be argued that Styria's green economy represents the incumbent capitalist-consumerist economy, albeit with a green hue. Thus, while Styria's green industries might "constitute new socio-technical configurations with potential for larger long-term impacts" and its "programmes and projects are typical socio-technical niches for nurturing and experimenting with emerging technologies", to date local outcomes represent "gradual improvements rather than disruptive transformation" (Rohracher and Späth, 2014: 1421-2), This aligns with Smith and Raven's (2012) 'fit and conform' perspective where niche innovations are readily aligned and competitive within existing contexts and are hence incremental in terms of their broader socio-technical implications.

'Disruptive Transformation': Emerging Degrowth Hotspots

We now consider alternative forms of economies at the niche level that may challenge incumbent regimes. At this level initiatives enact a 'stretch and transform' perspective, whereby niches are empowered to radically change the socio-technical context and incumbent regime (Smith and Raven, 2012). These initiatives and projects may be geographically disparate, but share principles and ideals connected to sustainability, social justice, post-consumerism and so on under the various rubrics of degrowth, steady state economies, solidarity economies, 'transition towns', slow cities etc. In this section we highlight how cities and regions, as well as dispersed networks of committed activists, are driving forward these agendas. Although such initiatives may currently be small-scale, they can represent hotspots of 'disruptive transformation' (Rohracher and Späth, 2014) and, even if not scaled up in their current format, can illustrate the possibilities and encourage broader debates about the extent to which the status quo needs transforming. Initiatives such as degrowth, and other visions of alternative economies, represent an agenda that policy makers, businesses and communities find harder to visualize and enact as it radically challenges the incumbent way of life (Purcell, 2014). Re-configuring (or re-organizing) discourse in this manner can open up new possibilities for climate action (Swyngedouw, 1992) and performing economies and societies differently (Gibson-Graham, 2008). Given their fragmented nature, it is more difficult to pin-point whole regions that are adopting such an approach compared to clean tech examples[i]. We now consider a number of

empirical examples to illustrate the range of initiatives that challenge incumbent regime practices and discourses.

Longhurst (2015) examines how an alternative milieu in a particular place can encourage (or conversely, discourage) the development of niche experiments, drawing on evidence from Totnes, Devon in the UK. He argues that the presence of an alternative milieu – a localised density of countercultural institutions, networks, groups and practices – creates a particular form of geographical niche protection for the emergence of sustainability experiments. Within Totnes, Longhurst (2015; see also 2012) identifies a range of different experiments – from organic agriculture and permaculture, to a Local Exchange Trading Scheme (LETS). He shows how these initiatives are interlinked in nature, with connections between the permaculture philosophy, a Green Community Office that supported the LETS scheme, the Transition Towns movement (Hopkins, 2008) and the Landmatters low impact community who are attempting to develop viable self-sufficient lifestyles. We might, therefore, reasonably expect places with an existing 'alternative milieu' to develop such initiatives in advance of other places.

In addition to this example of initiatives for degrowth societies (Whitehead, 2013), other examples exist such as localised currencies (North, 2014; Seyfang, 2003; Longhurst, 2015), voluntary simplicity (Alexander, 2013), diverse economies (Gibson-Graham, 2008; Roelvink et al., 2015), solidarity purchasing groups, solidarity economy districts, Slow Food (Grasseni, 2014) and Slow Cities (Mayer and Knox, 2008). Slow cities, for instance, imply the practice of a Slow movement philosophy in all aspects of city life. The goal is to preserve the quality of life of their residents and the biodiversity that shapes their cultural traditions by reducing noise, pollution and stress, plus investment in community, public spaces, cooking and gardening, or healthy habits like walking and cycling (Pàdranos, 2014). Similarly, the solidarity economy draws on various projects and initiatives that focus on the everyday practices of alternative ways of living, producing, and consuming. This includes cooperative housing and urban gardening projects, barter clubs, self-governed businesses and ecovillages. Each underlines particular aspects and represents a vision for the reinvention of society through a radical rethinking of the economy and the ecology of capitalist consumption (Grasseni, 2014). While degrowth may ultimately require a sharp break with capitalism at a macro-sociological level, in terms of everyday life this transition may involve a series of improvisational triggers in and through which small scale changes can lead to the emergence of alternative socio-ecological trajectories (Boonstra and Joosse, 2013). Put differently, such initiatives may be part of a series of steps towards more transformational actions which 'stretch and transform', whereby niches are empowered to change the socio-technical context and incumbent regime (Smith and Raven, 2012).

Schindler (2016) illustrates how even cities once at the heart of globalized, capitalist networks can turn to degrowth principles as a result of economic crisis. Drawing on Detroit as an example, Schindler argues that the 2008 global financial crisis hit some cities (and regions) harder than others – Detroit was declared bankrupt in July 2013, and suffered from a mass exodus of residents leading to abandonment of large swathes of the city. The resultant available land resources are now seen as a resource that can be leveraged to create a new green and sustainable city through the Detroit Future City plan. Detroit's bankruptcy has not resulted in straightforward 'austerity urbanism', and bankruptcy has

allowed city and state governments to defy the demands of extra-local bondholders (Walsh, 2014a; 2014b). Howsoever reached, these means of defiance offer a foothold for new ways of doing things. While many of the proposals to revitalise Detroit do draw on conventional urban entrepreneurial approaches to regeneration (such as sports stadia, entertainment and retail districts etc.), there are also plans that draw on degrowth principles, based on the realization that conventional economic growth is unlikely in the short term and would not be adequate to deal with the severity of issues experienced there. In contrast to other so-called green cities being developed (e.g. Masdar city, see Cugurullo, 2013), in Detroit it is proposed that neighbourhoods will be redeveloped to produce a "stronger, greener, and more socially and economically vital Detroit, where neighbourhoods feature a wide variety of residential styles from apartments to houses, and where residents are connected to jobs and services by many transportation options" (Schindler 2016: 827), and where cycling is promoted. While the elements of Detroit's future described in Schindler (2016) do not all necessarily align to degrowth as such, and there are overlaps with ecological modernisation ideas of 'smart growth' (Gibbs and Krueger, 2012), they are, as Schindler notes, exceptional given Detroit's past as the centre of the motor industry.

The example of Detroit illustrates the degrowth argument that it is "better to start adapting to…de-growth, in order to find a prosperous way down" (Martinez-Alier et al., 2010: 1745), rather than deal with the harsh realities of collapse (Tomlinson et al., 2012). However, definitions of 'prosperous' in this context are qualitatively different to contemporaneous understandings, and might involve valuing time to grow one's own food, or spending time with family and friends, rather than having the newest car or a foreign holiday (Kallis et al., 2012). These examples are drawn from a developed world perspective, but there are overlaps between degrowth and similar initiatives in the global South such as the adoption of Buen Vivir into government policy in Bolivia and Ecuador, Ubuntu in South Africa and ecological Swaraj in India all of which have an emphasis on self-reliance, mutuality, harmony with nature and environmental justice (Hollender, 2015; Kothari et al., 2015). There is thus a great diversity of practices and ideas that characterise degrowth-type initiatives, but rather than seeing such internal diversity as a weakness, proponents suggest that the multiplicity within the degrowth movement is key to its long-term ability to have global widespread appeal (Demaria et al., 2013).

Transitions, Ecological Modernisation and Degrowth

In terms of transitions research, both ecological modernisation approaches to the green economy, such as in Styria, and degrowth initiatives can be viewed as niche developments that offer a challenge to the dominant regime. However, the potential to gain acceptance and articulation varies - green economy developments such as those in Styria are much more readily aligned with the dominant regime and/or can be incorporated by it ('fit and conform'). Shifting landscape imperatives around climate change and reducing carbon emissions provide legitimacy to the niche. By contrast, in the case of degrowth, such landscape shifts (challenging the fundamental basis of capitalist economies) have barely registered outside of a small group of proponents and legitimacy is lacking – 'stretch and transform' is far more problematic (Smith and Raven, 2012). Thus "niche innovations must be compatible with elements in the incumbent regimes, or with the wider landscape context such that an alternative socio-technical regime might emerge. Such alignments enable

niche innovations to be translated, articulated, and/or anchored within dominant or alternative socio-technical regimes" (Murphy, 2015: 79)

In both our examples there have been attempts to move beyond 'local experiments' to construct a 'global niche' of an emerging institutional environment of shared rules which transcends scale and particular places. In the case of Styria this has taken on a fairly conventional form of participating in, and helping to build, international networks of similar green economy developments (often funded through the EU) such as International Cleantech Network. Such networking initiatives helps to legitimise the activities of their members (such as Ecoworld, Styria), but also serves as a means to promote increased exports, sales and investment, and read as traditional versions of neoliberal capitalism albeit with different 'products'. Degrowth initiatives are also linked through international networks, although these are rarely as focused and are often more informal (Demaria et al., 2013) - for example Research and Degrowth is an informal network that "strives to bring scientists, civil society, practitioners, and activists together to think, imagine, discuss, and create proposals for sustainable degrowth[ii]". Other networks are more substantial, for example the Transition Network lists 479 separate initiatives, Cittàslow has 213 member towns and cities, and Slow Food has 2000 food communities, but their activities remain largely marginal in their impact upon the dominant regime. As such, degrowth interpretations of the green economy may remain niche developments, with little potential to offer a challenge to the mainstream economy.

Moreover, the limited evidence to date suggests that they may only offer a 'temporary niche solution' or 'short term sustainability fix' in those cities and regions where there has been a substantial breakdown in the capitalist economy, such as in Detroit, Southern Europe and parts of Latin America, until economic growth as usual can be reinstated. The official adoption of Buen Vivir in Bolivia and Ecuador has also been criticised as masking a continued focus on the extractive economy by national governments (Hollender, 2015). However, such examples are important in making such other worlds possible and further work is needed to expose how degrowth is being adopted in practice and how it interlinks with, and challenges, neoliberal, capitalist economic development in different places globally. Empirical examples can help bring theoretical discussions to life, and illustrate to policy makers and others the vibrancy and difference that is possible and desirable. Such examples help to move economic development debates beyond the limited concept of sustainable development to consider new forms of regional development where social, economic and environmental considerations are on an equal footing rather than regularly being superseded by economic imperatives.

Conclusions: Moving Forward: A Regional Studies Research Agenda

In this paper we have focused on the need to address environmental degradation and global change associated with economic development, with the intention of encouraging the regional studies community to address sustainability transitions more wholeheartedly. In particular we have been concerned with investigating policy responses that aim to develop a green economy and address key environmental problems. While there is general agreement that 'something needs to be done' to address these, especially climate change, there is little consensus on the types of policies and programmes that need to be adopted

and implemented. Although international agreements, such as the Paris Agreement on climate change, and nation states' policies are of key importance, there is also evidence that cities and regions can play an important role in driving forward change through experimentation and as locations for niche developments. However, to date, regional development research has had relatively little engagement with issues of the environment and sustainability. Truffer and Coenen (2012), in a review of past work published in *Regional Studies*, indicate three main strands based around ecological modernisation; industrial ecosystems; and frameworks to analyse the policy process. Conversely, research from a sustainability transitions perspective has, by definition, engaged with environmental change and sustainability, but has largely lacked any consideration of the role that space plays in influencing transitions. There is, therefore, a key research agenda that needs to be developed further to explore the role of cities and regions in sustainability transitions building on the work of Truffer and Coenen (2012), Coenen et al. (2010), Smith et al. (2010), Hodson and Marvin (2010) and Murphy (2015), with the potential for fruitful cross-fertilisation between regional studies and transitions scholars.

Both strands of research, on regional development and sustainability transitions, also lack any detailed consideration of what the outcomes of a shift to a more sustainable future or a green economy would entail. In both cases, there is often an explicit or implicit assumption that this would rely heavily on technological solutions and approaches drawn from ecological modernisation. In this paper we have shown that, in reality, the green economy is a contested concept – while the hegemonic discourse may currently be around clean tech, low carbon developments, there is a spectrum of green economy discourses available. We have illustrated some of these differences by drawing on examples from both ecological modernisation and degrowth discourses and explored how transitions research can help us understand the potential for change towards a more sustainable economy in both cases. Future research therefore needs a focus on "the spatial contexts in which sustainability transitions evolve and take place" and "an understanding of transition spaces, that is, a synthesis of locally embedded contexts of events, objects and actions coupled with the wider socio-political, institutional and cultural context" (Truffer and Coenen, 2012: 11). The aim for research in regional studies should be to investigate the socio-spatial embedding of conditions in particular locations that encourage and support new technologies, new policies and sustainability transitions (Truffer et al., 2015). We need "analysis of the particular settings (places) in which transitions are embedded and evolve, while at the same time paying attention to the geographical connections and interactions (i.e. the spatial relations) within and between that place and other places" (Hansen and Coenen, 2015: 95). Drawing on our analysis of the green economy spectrum, we can add to this the need for an analysis of the particular forms of the green economy that are being developed and promoted, as well as *where* these are being developed, as well as a means of evaluating their 'sustainability'.

In transition terms, Truffer and Coenen (2012: 14) argue that both green-tech cluster initiatives and more alternative forms, such as transition town movements can be seen as representative of the kinds of "protected 'spaces'…where the construction of socio-technical configurations can take place". As for hegemonic discourses of the green economy, therefore, a useful line of research is to explore how certain cities or regions provide protected 'spaces' for the emergence of degrowth experiments. This may be the

case in parts of Latin America where A2D initiatives "offer potential spaces to advance innovative regional policy frameworks" (Hollender, 2015: 97). While degrowth may not be relevant as a counter to the excesses of over-growth in parts of the global South, such initiatives may indeed offer a route to more sustainable economies and societies. For cities and regions in the global North, such as Detroit and those in Southern Europe, degrowth has been an unavoidable consequence of the 2008 financial crisis rather than a deliberate policy choice (Schindler, 2016). A key question is whether degrowth will only be adopted or have traction in cities and regions that perceive themselves as having no viable alternative, such as bankrupt Detroit and parts of Greece and Spain. In these instances, the 'decision' to pursue degrowth strategies may reflect the lack of more conventional options and, perhaps, may be short-lived if conventional growth patterns return in future. In these cases the niche will remain an area for experimentation, with little impact on the broader regime.

Degrowth and other related initiatives can, thus, arise for a variety of reasons and from various stimuli. There are significant differences between managed decline and active degrowth approaches that do not just envisage financial shrinkage, but radically new and different forms of 'economic' development and social vibrancy. A number of research questions arise from this: can these initiatives dovetail with green economy regions, such as the example from Styria, as well as mainstream economies, given that changes will not happen overnight? Will such sustainable initiatives remain marginal and limited in their impact on the mainstream (unsustainable) regime? What support will be necessary to ensure that these degrowth examples can flourish and offer hope, rather than being excluded in favour of further economic growth and ecological decline? Are such initiatives only focused on those unable to participate in the conventional economy? Future research needs to explore these questions in more depth through detailed case study work that can deepen our understanding of alternative futures for urban and regional transitions. Here we concur with Hodson, Burrai and Barlow (2016) that this calls "for more work on better understanding the range of alternatives and an examination of the interconnections and possible interconnections between alternative initiatives and formal priorities".

In focusing on different forms of new green economies, we have highlighted how different places are adopting and adapting new forms of economies and societies, and how sustainability can be differently interpreted. Sustainability transitions research offers a powerful tool to emphasise the conflicts and power structures in transitions in particular places and to "reveal novel insights into the power relations and political processes underlying transition processes, and thus enable transition researchers to better account for the relationalities and context-specific forces determining the pace, scale, and direction of socio-technical change" (Murphy, 2015: 83). Whilst it might seem that our two 'case studies' of different forms of the green economy are incongruous, this is an important distinction. As Hansen and Coenen (2015) make clear, we need to investigate struggles and conflicts, given that transitions are not all about consensus and alignment of actors. Difficult changes that challenge long-ingrained ideals and widely held views about economic growth, for instance, are unlikely to result in consensus but rather fierce debates and disagreements about the best approach – this is not to say that such debates should not take place, but that they represent important milestones in progressing towards more sustainable futures. Given the potential severity of the impacts of climate change,

especially in some parts of the world, it is unlikely that such changes would be easy or uncontested. However, the status quo is not tenable either.

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Table 1. Discourses of the Green Economy.

Frequently articulated in policy ⟷ **Rarely articulated in policy** **Incremental change** ⟷ **Transformative change**		
Fit and conform - Stretch and transform		
Conventional pro-growth/almost business as usual	**Selective growth/greening the economy**	**Limits to growth/socioeconomic transformation**
• Greening as investment opportunity • Restarting market economies • Green Keynesianism • Green job creation • Green New Deal policies	• Resource-efficiency • Low carbon growth • Decoupling • Clean technologies • Ecological modernisation • Cleantech clusters • Makerspaces	• Steady state economy • Prosperity without growth • Degrowth • Social well-being • Alternative food networks • Eco housing developments

Source: Adapted from Bina (2013), Ferguson (2015).

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[i] Thus while we focused on Styria in the previous section, we could equally have chosen Copenhagen, Boston or Stockholm city regions as exemplars. Outside a western context, both South Korea and China have developed similar green industry initiatives (Bell, 2016; Quitzov, 2015).

[ii] http://www.degrowth.org/description, Accessed 13.5.16.