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Inequality and sustainable consumption: bridging the gaps

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ABSTRACT This article examines the potential for cross-fertilisation between the sustainable consumption (SC) scholarship and the environmental justice (EJ) scholarship. The article first maps the two areas of scholarship, discussing the cognitive, social marketing and social provisioning systems literatures of SC and the empirical and conceptual literature on EJ. The article then discusses the potential for cross-fertilisation between the two areas of scholarship. It indicates how SC scholarship can benefit from the social justice sensitivity of the EJ scholarship and how the latter area of scholarship can gain a whole new area of empirical research focusing on social justice aspects of consumption. The article seeks to demonstrate the social and policy significance of the cross-fertilisation by comparing the consumption and EJ implications of carbon taxation and personal carbon allowance trading as tools of carbon management. The article suggests that to be fair both strategies of carbon management require complementary (albeit different) measures that address background inequalities and capabilities to act in the setting created by the instruments.

Keywords: sustainable consumption; environmental justice; sustainable development; climate change

1. Introduction

This special issue explores inequalities and sustainable consumption (SC), an intersection of two strands of scholarship that have seldom been examined simultaneously. Environmental justice (EJ) scholarship emerged in the United States in the 1980s (Bullard 1990, 1999, Bryant and Mohai 1992). It has focused on inequalities in exposure to environmental burdens and hazards, such as levels of pollution and the siting of hazardous facilities, and to a lesser extent on unequal

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access to environmental amenities and assets. More recently, social justice issues related to the environment have gained increasing interest in politics and philosophy as well (Dobson 1998, 1999, Schlosberg 1999, Shrader-Frechette 2002). Research on SC is more recent and perhaps more multi-faceted, encompassing topics from sustainable social innovations in local communities to technical determinations of global ecological footprints of consumption (Fine and Leopold 1993, Cohen and Murphy 2001, Southerton *et al.* 2004, Jackson 2006).

The central contention of our article and this special issue is that there is much scope for cross-fertilisation between the two areas of study. On the one hand, broad notions of sustainability encompassing its ecological, economic and social aspects demand attention to the foundations of social sustainability, which include distributive and procedural justice. Therefore, the key concerns of EJ scholars are also of significance for the development of theory and practice for SC. On the other hand, environmental burdens and hazards are not the only loci of inequality: inequality characterises many areas of consumption and constrains the ability of households to modify their behaviour for the attainment of their personal goals as well as more general welfare and sustainability goals. The contributions to this special issue demonstrate that the intersection between the fields of EJ and SC has, quite rightly, started to attract academic attention.

We contend that the intersection between EJ and SC has also become an important issue for public policy and that its urgency is only going to increase in the future as issues such as climate change have called for deep-cutting changes not only in the public and corporate sectors, but also in the behaviour and consumption patterns of households and individuals (Stern 2007). Proposals to use economic policy instruments such as environmental taxes and trading systems to achieve environmental policy goals further underline the need to explore inequalities associated with these new measures for more SC. This is because households and individuals are situated differently with regard to both the policy goals and instruments and will be differentially impacted by them. This alters the distribution of income and wealth and also influences the perceived legitimacy and effectiveness of policy interventions.

In what follows, we will first discuss in somewhat greater detail the contours of research on SC. We will then explore the EJ scholarship and examine the possibilities for cross-fertilisation between the two strands of research. We will conclude the article by illustrating the usefulness of looking at inequalities in SC by examining policy proposals for managing carbon.

2. Sustainable consumption

Shifting patterns of consumption towards more sustainable paths is a prerequisite for sustainable development and key to achieving the UK government's carbon emission reduction objectives, for example (Stern 2007). Over the last 15 years, "SC" has gradually become a core issue on the international environmental agenda (UNCED 1992, OECD 2002). In 2003, the UK Government announced its strategy for SC and production which it defines as "continuous economic and social progress that respects the limits of the Earth's ecosystems, and meets the needs and aspirations of everyone for a better quality of life, now and for future generations to come" (DEFRA 2003, p. 10). This policy agenda emphasises an "ecological modernisation" approach to societal transformation, by decoupling economic growth from environmental degradation through a range of market-based measures and relying on consumer signals through the market to transform production processes (Murphy 2000).

There are three core strands of scholarship on SC (for a fuller discussion, see Hargreaves *et al.* of this issue). The first of these is ecological modernisation's *cognitive* approach to SC: the provision of information to rational individuals is expected to influence decision-making and therefore change consumption behaviour through the action of "green consumers" (Murphy 2000). For example, reading about climate change and carbon dioxide emissions could make consumers choose more energy-efficient products. Government campaigns to promote pro-environmental behaviour such as "Are You Doing Your Bit?" embody this neo-liberal economistic model by seeking to inform consumers, and hence send market signals to producers to transform the market (Barr and Gilg 2006). This approach also underlies the use of "eco-labelling" of products such as energy efficiency ratings for refrigerators to inform consumers at the point of purchase. These labels are founded upon an analysis of the resources and energy used in the production, use and disposal of the item. Life-cycle analysis takes a cradle-to-grave approach to assessing the impacts consumption and forms a part of the ecological foot-printing methodology which is discussed in this special issue in the contribution of William Rees.

However, research has found that acquiring information and even changing values do not necessarily translate into behaviour change. This discontinuity has become known as the "value-action gap" (Burgess *et al.* 2003, Barr 2006). A second branch of scholarship on SC takes this gap as a starting point and develops a range of cultural, social, anthropological and psychological models to explain the multiple drivers of consumption behaviour. These models include: expressing identity, boosting self-esteem, belongingness, communication, power and influence (Douglas and Isherwood 1979, Dake and Thompson 1993) (see Jackson and Michaelis [2003] for a review of these approaches).

The *social marketing* approach to SC draws on an appreciation of the rich cultural meanings of consumption to deliver carefully targeted pro-environmental behaviour messages to specific sections of the population. For example, to promote reusable shopping bags, designer Anya Hindmarch produced a cotton shopping bag that states "I am not a plastic bag" and distributed them to Hollywood celebrities, to establish the desirability of the product and to send a message about refusing disposable bags (We Are What We Do 2007). Jackson (2005) examines consumer psychology to understand the social significance and meaning of consumption and questions the link between increased material consumption and growth in wellbeing. He aims to deconstruct consumption, identify the social functions it serves and develop alternative (non-material) strategies for achieving the same social and cultural purposes, thereby marrying the pursuit of "wellbeing" to practices that do not threaten the social and ecological foundations of life.

The social marketing approach can be seen as a more sophisticated version of the cognitive model: it makes an effort to understand consumers' situations and motivations (Barr and Gilg 2006) and responds to them using all the tools and techniques of the advertising industry. Nevertheless, it is an approach founded on providing information and expecting individual behaviour to change as a result and so to transform the market. This strategy has been criticised – not least by the government's own Sustainable Development Commission – on the basis of a number of significant factors which critics claim limit its effectiveness and scope (Porritt 2003). In addition to market failures (externalised social and environmental costs), policy failures and category errors (green consumerism's inability to target producer or public sector consumption), there are more fundamental criticisms related to the political economy of requiring individuals to "vote" with their purchases (Paavola 2001), thereby silencing those unable or unwilling to participate in "green consumerism" and the inequity of pitting individuals against global corporations in the struggle to shift consumption patterns (Princen *et al.* 2002, Seyfang 2005).

This critical position provides a foundation for the third wave of SC scholarship, which considers the role of social infrastructure in shaping individual behaviour. The term "*systems of provision*" describes the vertical commodity chains comprising production, marketing, distribution, retail and consumption in social and cultural context which mediate between and link "a particular pattern of production with a particular pattern of consumption" (Fine and Leopold 1993, p. 4). These systems constrain choice to that available within current systems of provision, and "lock in" consumers to particular ways of behaving (Maniates 2002, Sanne 2002).

While the current UK SC strategy relies upon individuals sending market signals to producers through the market mechanism, it assumes that those who wish to buy more sustainable products are able, and can afford, to do so and neglects the range of actions that might be directed to more SC patterns outside the market and by consuming less. It also assumes that people are free to make consumption choices and do not address the structural obstacles faced by many people in changing behaviour patterns. For example, a person may only choose to travel by public transport if that infrastructure is in place, and the provision of that infrastructure is a collective decision. The systems of provision approach emphasises the socially embedded nature of consumption behaviour and, rather than concentrating on deliberate consumption decision-making, looks instead at the role of inconspicuous (habitual, low-profile) consumption in overall lifestyle practices. For example, while one might make a specific choice about which refrigerator to buy on environmental grounds (responding positively to information campaigns and labelling instruments), questions of habitual energy use in the home, such as social practices such as leaving appliances on standby, might not be asked (Maniates 2002, Sanne 2002, Burgess *et al.* 2003, Spaargaren 2003, Southerton *et al.* 2004, Seyfang 2005, Van Vliet *et al.* 2005, see also Paavola 2001).

Furthermore, while the cognitive and social marketing approaches rely on exhortation to voluntary individual action, they have not achieved the shifts in consumption necessary to alleviate climate change, for example, by reducing carbon emissions in line with policy goals. A second phase of policy action will have to tackle deeper-rooted questions of regulation, citizenship, collective responsibility and action in changing behaviour towards more SC. Dobson (2003) proposes the adoption of a new environmental ethic of "ecological citizenship" which speaks to the rights and responsibilities of global citizens, including not only individual responsibility but also collective action to formulate innovative socio-economic institutions and infrastructure for equitable sustainable development. Putting this approach into practice requires the development of new tools and processes for overcoming its potential individualistic tendencies, nurturing true ecological citizenship with its collective dimensions and for allowing it to be expressed, for example, through participating in local food systems (Seyfang 2006), or engaging in community-based behaviour change programmes (see Hargreaves *et al.* of this issue).

3. Inequality and EJ

EJ issues were first raised by the EJ movement which emerged from local environmental conflicts over the pollution of air, water and soil; hazardous and toxic wastes and the siting of locally unwanted land uses and facilities in the United States in the 1980s (Bullard 1990, 1999, Bryant and Mohai 1992). This subject area has become the domain of empirically oriented EJ scholarship. More recently, a more philosophically and theoretically oriented strand of research has also emerged to address both conventional and new EJ issues. In what follows, each of these two areas will be discussed in some detail.

The origins of the contemporary EJ movement are often traced to the 1982 protests over the dumping of polycarbonated biphenyls in a predominantly minority community in Warren Country, North Carolina (Bryant and Mohai 1992, p. 2). As a result, the US General Accounting Office (1983) conducted a survey which demonstrated that in the Southern states the majority of hazardous waste landfills were located in minority communities. A few years later, the United Church of Christ Commission on Racial Justice (1987) found that the siting of hazardous waste facilities is closely associated with race in the whole country. The US Environmental Protection Agency (1992) admitted later that low-income and minority groups are disproportionately exposed to lead, air pollutants, hazardous waste facilities, contaminated fish and agricultural pesticides in the workplace.

Empirical EJ research has substantiated that minority and low-income populations are disproportionately exposed to environmental hazards. In 1992, one-third of Hispanic Americans lived in areas where the National Ambient Air Quality Standards (NAAQS) were not attained for particulate emissions. Less than 15% of the white population lived in such areas. While 6% of the white population was exposed to lead concentrations that exceeded the NAAQS in 1992, 9% of African Americans and 18% of Hispanic Americans were exposed to such concentrations (Institute of Medicine 1999, p. 15). The average African American lives in a county with 60% higher emissions of toxic air pollutants than the county in which the average white American lives and for the average Hispanic American the exposure is 100% higher (Perlin *et al.* 1995). Disproportionate exposure to environmental hazards translates to adverse health outcomes among the non-whites. New York's Hispanics are three times more likely to be hospitalized and to die because of asthma than whites (Institute of Medicine

1999, p. 21). In California, the non-white population has up to 50% higher life time cancer risk than the white population because of exposure to higher concentrations of air pollutants (Morello-Frosch *et al.* 2002).

EJ scholarship has its longest roots in North America but similar results are obtained elsewhere. In the UK, poorer communities host large industrial facilities and suffer disproportionately from emissions of known carcinogens (Stephens *et al.* 2001). Ethnic minorities and low-income communities are exposed to higher concentrations of carbon monoxide and nitrogen dioxide which originate from transport (Brainard *et al.* 2002, p. 709, Mitchell and Dorling 2003). Yet low-income communities have low car ownership and, in addition to being burdened by pollution, they suffer disproportionately from traffic deaths, especially those of children (Stephens *et al.* 2001). Elderly and other disadvantaged groups lack access to technologies, fuels and social networks that are important for coping with environmental stress. They suffer excess deaths because of exposure to cold during the winter (Stephens *et al.* 2001). Coping with heat waves such as that of 2003 also requires unequally distributed coping assets, which makes the elderly and those who are unwell particularly vulnerable. There is not yet good understanding of the EJ aspects of the 2003 heat wave in Europe but the US evidence is indicative. The much smaller Chicago heat wave in 1995 resulted in over 700 excess deaths, many of whom were old black males living alone and who were in poor health (Klinenberg 2002).

Benefits of resource use and the burdens of adverse environmental impacts are also highly unequally distributed in many developing countries and this inequality often has an ethnic dimension. For example, in South Africa, apartheid policies included the taking of indigenous rights to land and other natural resources, siting of locally unwanted and hazardous facilities to non-white neighbourhoods and the denial of access of black Africans to environmental resources and amenities (McDonald 2002). In many African countries, such as Kenya and Tanzania, colonial rulers and post-independence governments favoured sedentary agriculturalists over pastoralists. This created a tension which still today can erupt to conflicts when droughts drive pastoralists to lowlands settled by farmers.

The patterns or inequality are the same in the international context. Climate change impacts will burden developing countries disproportionately, although they have not contributed to the problem (Paavola and Adger 2006, see also Adger *et al.* 2006). Developing countries – particularly local communities in them – also bear disproportionate costs for protecting biodiversity (Neumann 1998, Brockington 2002). Moreover, developing countries produce primary and labour-intensive products for export, which has detrimental effects on occupational and environmental health and environmental quality. For example, pesticides that cannot be marketed or used in the developed countries are still being manufactured and exported to developing countries (Perfecto 1992, Shrader-Frechette 2002).

More recently, EJ has also become a subject of scholarship in philosophy, political science, economics, geography and sociology (Dobson 1998, 1999, Low and Gleeson 1998, Attfield 1999, Schlosberg 1999, Gleeson and Low 2001, Shrader-Frechette 2002). Earlier environmental research in these disciplines was often preoccupied either with sustainable development – fair allocation of resources between the present and future generations – or the obligations of humans to non-humans. Now intra-generational justice plays an increasingly important role. For example, Schlosberg (1999) and Shrader-Frechette (2002) directly address key EJ issues from the viewpoints of political science and philosophy, respectively. Dobson (1998, 2003) has similarly sought to map the implications of theories of social justice and citizenship for EJ.

There is also increasing interest in research in the interstices of empirical and conceptual strands of research on EJ. Adger *et al.* (2006) present a collection of papers that map social justice issues involved in adaptation to climate change. Roberts and Parks (2006) in turn look at EJ issues related to climate change more broadly. Paavola (2004) examines the role of social justice in nature conservation in Europe, highlighting how omission of procedural justice concerns backfired in the early stages of implementing European Union's biodiversity policies. Kosoy *et al.* (2007) in turn explore how payments for ecosystem services schemes established in Latin America can contain complex issues of equity from the distribution of costs and opportunity costs of conservation to providing processes for the resolution of conflicts. Martínez-Alier (2003) in turn outlines a broader critical take on environmentalism.

To conclude, the empirical EJ scholarship has examined and established the disproportionate exposure of minority and other vulnerable groups to a variety of environmental stressors. The more recent interest of political theorists and philosophers in EJ is having an impact on empirical EJ research as well – it is widening the substantive area of EJ research and orienting it towards a more theoretically informed direction. Yet there are clearly untapped potential areas of EJ research. First, there is still relatively little research on unequal access to environmental amenities and assets, although this area is currently drawing increasing attention (Floyd and Johnson 2002, Burningham and Trush 2003, Mitchell 2006). Another area where there is little systematic research is the differential ability of minority and other vulnerable groups to "live up the expectations" of public policies that seek to promote various sustainability goals but which create unequal burdens given the background inequities that prevail in the society. Policies that relate to SC are one example of these kinds of policies.

In what follows, we will look in greater detail the possible cross-fertilisation of the two strands of research.

4. Synergies between SC and EJ

There appears to be a number of synergies and possibilities for cross-fertilisation between SC scholarship and EJ scholarship in the light of the foregoing discussions on their strands and trends. This is also suggested by the contributions to this special issue. At a general level, the EJ scholarship reminds us that, although the focus of SC scholarship and policies is over-consumption on a societal level, for many groups in society under-consumption remains a key social justice issue which must not be overlooked. The other way round, the SC scholarship reminds that environmental hazards and burdens are not the only dimension of inequality which has to do with the environment. In what follows, we will discuss the key synergies and cross-fertilisation possibilities in somewhat greater detail.

From the viewpoint of SC scholarship, the EJ scholarship has the most obvious links to the "systems of provision" research. The EJ scholarship reinforces the critical orientation of the systems of provision approach by suggesting that factors such as class, race, ethnicity, gender and age demarcate groups that experience a limited range of alternatives and have unequal access to systems of provision. Similarly, some groups may be differentially locked in to systems of provision and with unequal implications. For example, people living in rural areas with no public transport can be locked-in to a private vehicle mode of transportation, yet this system of mobility provision will be differentially accessible according to income. Groups like these will be at the sharp end of policy changes which seek to alter general consumption patterns in the society by raising fuel taxes or introducing road pricing.

The cognitive and social marketing strands of SC research may also benefit from cross-fertilisation with EJ scholarship. Again, there already are some linkages between these areas of research. On the one hand, for the cognitive strand of SC theory, the EJ literature suggests that the starting point of the research should be a stratified instead of a universal view of consumers, to better understand the constraints and opportunities of different consumer groups in changing their behaviour. On the other hand, the part of cognitive SC research looking at the impacts of consumer choices can actually be reformulated as EJ research which seeks to highlight the differential ecological footprints of different groups of people (Imhoff *et al.* 2004). In this special issue, William Rees's contribution is an example of this potential area of cross-fertilisation between cognitive research on SC and EJ scholarship.

While this application of EJ theory to cognitive SC research may sound somewhat similar to the social marketing body of SC work, there is a clear difference between the analytical foci of the two approaches. The former would be critical from the outset and be sensitive to material political–economic issues which constitute the phenomena under scrutiny. In contrast, the latter would examine the cultural aspects of the same phenomena. What an EJ approach could bring to the social marketing theory of SC is an emphasis towards a combined material and cultural analysis of consumption such as that of Pierre Bourdieu's work (1986) on consumption and distinction. In this special issue, Will Medd and Heather Chappells' contribution on inequalities and the consumption of water comes closest to this potential area of cross-fertilisation.

From the viewpoint of EJ scholarship, the literature on SC suggests an entirely new empirical area of research. Until now, most studies of EJ have focused on the incidence of environmental "bads". The extension of empirical focus of the EJ scholarship to consumption would strengthen the linkages between it and other areas of critical social science research. This extension could involve scholarship on both material consumption – the core concern of SC scholarship – and on the consumption of intangible amenities which is only now being added to the EJ portfolio of research (Floyd and Johnson 2002, Burningham and Thrush 2003, Mitchell 2006). Moreover, some of the empirical tools such as ecological foot-printing which is commonly used in the SC scholarship would appear to fit to the orientation of empirical EJ scholarship quite well.

The critical and more conceptual orientation of the "systems of provision" strand of SC scholarship suggests a stronger theoretical orientation for the EJ scholarship as well. This would give additional momentum for a transition towards the more philosophically and conceptually oriented EJ research which has started already earlier (Schlosberg 1999, Shrader-Frechette 2002). While there has been some research along the more conceptually informed lines recently (Paavola 2004, Roberts and Parks 2005, Adger *et al.* 2006), this research has tended to focus on traditional environmental issues rather than on consumption. There appears to be fertile possibilities for theoretically informed EJ research on SC, in particular because the transition to SC is likely to require newly defined stances towards such issues as "consumer sovereignty".

To conclude, there appears to be ample opportunities for cross-fertilisation between the SC scholarship and the EJ scholarship. We indicated that there are a number of possibilities for extending the current empirical scope of research and that there are also ramifications for the orientation of research if the possibilities for cross-fertilisation are taken seriously. But this is not all that there is to synergies between the two areas of scholarship. Research in the interstices of SC and EJ scholarship is likely to be highly policy relevant. On the one hand, the taboo of consumer sovereignty has left the public management of consumption an under-researched area. On the other hand, the merger of SC and EJ concerns can yield an approach which has clear strengths in examining social justice implications of environmental and sustainability policies more generally. We seek to substantiate this claim in the next section by looking one sustainability policy area – that of carbon management – more closely from a combined perspective of SC and EJ scholarships.

5. Applying the analytical framework to carbon management

The utility of an approach combining SC and EJ can be illustrated in a brief discussion of carbon management. In this section, we outline the context of carbon mitigation policies, and examine two alternative ways to achieve carbon emission reductions: carbon taxes and tradable personal carbon allowances (PCAs). We demonstrate how an understanding of EJ issues enables a more sophisticated analysis of these alternatives than is achievable from a single perspective.

Average per capita carbon dioxide (CO_2) emissions stand at 9.1 tonnes a year in the UK, compared with 19.7 tonnes in the USA and to a global average of 4.0 tonnes (International Energy Agency 2005). The imperative to reduce emissions of carbon dioxide, and so mitigate the harmful impacts of climate change, faces governments, businesses and citizens alike across the developed world (Stern 2007). Policy to reduce carbon dioxide emissions has become ever more prominent over the last five years. Today, the UK government is committed to reducing the country's carbon emissions by 60% of its 1990 levels by the year 2050 (HM Government 2006).

In contrast to their negligible responsibility for anthropogenic climate change, developing countries face with the lion's share of its impacts (IPCC 2007). In response, the "Contraction and Convergence" model proposes that the world reduce (contract) its carbon dioxide emissions towards a stabilised atmospheric concentration of 450 parts per million by 2100, and simultaneously move toward a globally equal per capita distribution of carbon emissions (convergence) (Meyer 2000). For developed countries, this requires a drastic reduction of per capita emissions of 60–90%, allowing those of developing countries to rise and converge on a figure of around 5 tonnes per year per person (RSA 2007).

Current regulatory efforts for mitigating climate change in the UK largely rely upon voluntary measures (i.e. exhortations to save energy) and an "ecological modernisation" model whereby informed and motivated consumers send market signals to producers through a process of market transformation towards a lower-carbon economy (HM Government 2006; see also Ekins and Etheridge 2006). However this individualistic strategy is not achieving the scale of carbon reduction required to reduce the UK's carbon dioxide emissions by 60% of its 1990 levels, by 2050 (Anderson *et al.* 2005). While emissions are falling in some industrial sectors, the household sector continues to increase its carbon emissions and already directly accounts for a significant proportion of their total (ONS 2004). Therefore, carbon mitigation efforts must begin to engage with households and individuals in a new way to achieve these policy goals. This requires a new phase in the low-carbon transition, namely the enrolment of citizenship values and responsibilities to coordinate effective collective action for carbon reduction, and the identification of practical strategies to achieve widespread behaviour change to reduce "carbon footprints" (Dobson 2003).

Carbon taxation is one possibility for carbon management that has in the past been used in a few countries such as Denmark, Finland, The Netherlands, Norway and Sweden (Baranzini *et al.* 2000). Carbon tax directly increases the price of fossil fuels and indirectly the prices of goods in the production of which fossil fuels are an important input. Consumers facing higher prices of fuels and carbon-intensive goods would have incentives to cut back on their consumption of fossil fuels and carbon-intensive goods and to switch to less expensive and less carbon-intensive goods and services (Ekins and Barker 2001). Higher energy prices and prices of carbon-intensive goods would improve the relative competitiveness of their alternatives: higher prices could make their supply more profitable and thus provide incentives to increase their supply in the market.

Carbon taxation thus appears to have a number of potential policy benefits and an ability to steer consumption and production to a more sustainable direction. Paavola and Adger (2006) have also argued that in addition to correcting incentives as discussed above, a globally agreed and implemented uniform carbon tax could institute responsibility for climate change impacts and raise funds for compensating climate impacts and assisting proactive adaptation to climate change. Carbon taxes obviously also have disadvantages. First, they face political opposition because they entail enduring financial drain to pollutees in addition to the financial implications of investing in abatement technologies – this is also one reason why existing carbon tax systems tend to have exceptions and rebates for particular industries (Baranzini *et al.* 2000, Bruvoll and Larsen 2004). Moreover, as policy instruments, taxes are not good at bringing about sought-after environmental outcomes.

Carbon taxation could also have problematic social justice implications when used alone. Carbon taxes make up a higher proportion of the budgets of lower income groups and are thus likely to be a regressive form of taxation (Metcalf

1999, Baranzini *et al.* 2000, Ekins and Barker 2001). For example, Metcalf (1999) estimates that if green taxes, including a carbon tax, were used to collect 10% of tax revenue in the United States, this would increase tax burden in the lowest income deciles by 7% in contrast to below 2% in the highest income deciles. But different forms of taxation can have quite different implications. Taxation of transport fuels can be mildly progressive because wealthy households use more transport services, while taxation of domestic fuels would be particularly regressive (Ekins and Barker 2001, Bruvoll and Larsen 2004).

There are also lock-in features in areas of carbon consumption which make it difficult for households and individuals to respond to new incentives. Transport choices depend on the menu of alternatives that is available, and the menu cannot be easily altered by individual choices (Paavola 2001). Similarly, those living in rented accommodation have but little influence on the thermal performance of the buildings they live in. Furthermore, distribution systems for many goods such as food impose their own economic logic on what is available to consumers and may be slower to change than consumer preferences. This means that in practice a carbon tax may not have the steering effect it has in theory, while at the same time it does distribute carbon tax regressively.

This does not mean, however, that carbon taxation cannot be a part of fair carbon management. It simply means that to be just, carbon taxation has to be accompanied by other measures that help to avoid and to alleviate its adverse social justice implications (Metcalf 1999, Baranzini *et al.* 2000). Economists typically focus on how green taxes such as the carbon tax may make it possible to reduce other taxes to achieve efficiency or equity goals. For example, Metcalf (1999) demonstrates how changes in payroll taxes and other changes in the taxation system can effectively be used to reduce or even to eliminate the regressive effects of green or carbon taxes. That is, the increased tax burden of lower-income groups can be addressed by altering income taxation.

There is also an alternative to tax reform: the fiscal use of carbon tax revenue, for example, for transfers and the provision of public goods and services which address the inequities created by the carbon tax. For example, active intervention to the systems of provision (for example, in the area of transport) could facilitate acting on the changed market incentives. These kinds of interventions (such as the provision of new public transport services) can be funded by the revenue generated by the carbon tax to replace or complement the activities that it discourages. A policy package consisting of carbon taxes, reforms of other forms of taxes to address the regressive nature of green taxes and fiscal measures seeking to facilitate sought after behaviours is not overly complex and does not have any novel and untried elements. It can address both efficiency and equity dimensions of carbon management and shift the object of taxation in the society from labour to natural resources.

Tradable PCAs are a new, untried policy alternative to reduce carbon emissions that uses carbon rationing and tradable "carbon currencies" at a household level (Fleming 2005). It is an extension of the "cap and trade" carbon emissions trading scheme (Ekins and Barker 2001, Ekins and Etheridge 2006) to households and individuals. In this model, the UK carbon budget would be set for a year, and 60% of emissions rights auctioned to the public and private sectors. The remaining

40% would be allocated on a free and equal per capita basis to all citizens and would be "spent" when purchasing fuel and electricity. The model demands mandatory participation. Low energy users could sell their surplus credits and high users would need to buy additional units. Carbon emission credits would be traded alongside conventional money, and each year the carbon budget would be reduced, providing market signals and incentives for adaptation to low-carbon consumption and lifestyles. Despite preliminary theoretical work concentrating on technical issues and instruments (Starkey and Anderson 2005) and growing policy interest (Miliband 2006, Roberts and Thumin 2006), there has been little research on the EJ implications of this approach to cutting household carbon emissions.

Our analytical approach suggests that a range of EJ issues are relevant for assessing the suitability and potential effectiveness of PCAs as an SC policy. The principal questions are around equity in allocation and use of carbon allowances, and in the trading mechanism itself (see Seyfang *et al.* [2007] for a fuller discussion). Starkey and Anderson (2005) find that PCAs are efficient, effective and equitable. This is because low-income households tend to be low-energy users: equal initial allocation of permits would benefit these households financially, while forcing the more affluent households to adapt or face financial penalties of purchasing allowances from low-energy users from the outset.

However, low-income households tend to live in poorer quality and less energy-efficient housing, for example. Therefore, they would require a greater *proportion* of their income to meet basic needs, including domestic energy. For example, low-income households frequently face a situation of "fuel poverty", where more than 10% of a household's income is spent on energy. A parallel inequality might be expected to develop with carbon allowances, where low-income households need to spend a larger proportion of their allowances on meeting basic heating needs (Dresner and Ekins 2005). This could be exacerbated by the fact that low-income households often depend on high-carbon fuels such as coal (Ekins and Barker 2001, p. 365). Furthermore, there are important issues around "carbon capabilities" – that is, the resources, skills and understanding about the sources and implications of carbon emissions from daily activities – for using the new carbon currency which the PCAs would introduce (Seyfang 2007). For example, Starkey and Anderson (2005) note that it is not necessary to understand the scheme in order to use it (a "pay as you go" approach can be taken), but acknowledge that this would incur higher charges. On an educational and social learning basis, it is likely that lower-income households will be less carbon-wise and would not be able to take the full advantage out of the scheme.

These two brief examples have shown how an analytical approach that combines SC and EJ perspectives can deliver insights and outcomes which prompt a more holistic interrogation of sustainability policy proposals. In particular, it has revealed that, perhaps counter-intuitively, the market-based PCAs approach can be equitable despite fairly widespread popular resistance to the commodification of carbon. However, our brief discussion has also suggested that there are several wider justice issues to consider. For example, while carbon taxation alone can be quite unattractive from a social justice viewpoint, it really should not be viewed as a stand-alone solution at all. A package of policy measures both facilitating responses to newly configured incentives and redistributing the burden of taxation can be both fair and effective, and enable quite targeted redistribution if that is deemed desirable. Other instruments of carbon management, such as PCAs, are also in reality likely to need accompanying measures to ensure their effectiveness and fairness. In the final section below we draw some conclusions from this exploration, for research and policy.

6. Conclusions and policy implications

Sustainable development demands environmental policies which are both economically effective and socially equitable. In order to better understand the sustainability transitions required, and to inform policy development, this paper has brought together two areas of theory and analysis which have hitherto been largely unrelated: SC and EJ. The resulting cross-fertilisation of ideas promises to be a fruitful source of insight and evaluation. Indeed, a growing body of work in this area has important messages for theorists and policymakers concerned with environmental change and social justice, as the collection of papers in the special issue attests. This new agenda offers a more sophisticated understanding of the social processes, contexts and structures within which environmental policy must sit, and which therefore ultimately determines the success or failure of that policy, and its impacts and implications.

The examination of two carbon management alternatives demonstrated that a multi-faceted investigation encompassing both SC and EJ aspects reveals previously overlooked aspects of instruments and impacts. On the one hand, PCAs are a technocratic market instrument which promise to be equitable in their allocation, but which require high levels of (inequitably distributed) resources, skills and understanding to use most effectively. On the other hand, carbon taxation can be inequitable if implemented alone, but can be both fair and effective if bundled with other redistributive and public provision measures. Similar dilemmas are present in other policy areas, for example, in those related to waste and consumption of water. Future research in all areas of SC policy should therefore attend more closely to the justice implications of measures to change consumption behaviour.

From a wider perspective, our combined SC and EJ approach also highlights the lack of emancipatory focus in mainstream policy strategies for carbon management and SC more generally. Neither of the two examined carbon management strategies deals with empowerment of people to act as political citizens, as opposed to as consumers. In each case, universal solutions are proposed as being fair for all, yet EJ research repeatedly tells us that society is segmented; policy *packages* are required to reflect this uneven distribution of impact and ability to respond appropriately. In carbon management, positive intervention is required to overcome societal obstacles to behaviour change, to boost the capability to act of the most vulnerable groups in society (who have the lowest capacity to change behaviour in society) and to facilitate agency and learning (particularly carbon literacy). This might require increased public service provision – improving public transport being an obvious example to help people adapt away from private vehicle use. Finally, although the focus of SC policy is over-consumption on a societal level, for many groups in society under-consumption remains a key social justice issue which must not be overlooked.

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