

**LOW-CARBON CURRENCIES:
THE POTENTIAL OF TIME BANKING AND
LOCAL MONEY SYSTEMS FOR
COMMUNITY CARBON-REDUCTION**

by

Gill Seyfang

CSERGE Working Paper EDM 09-04

**LOW-CARBON CURRENCIES: THE POTENTIAL OF TIME BANKING AND LOCAL
MONEY SYSTEMS FOR COMMUNITY CARBON-REDUCTION**

Gill Seyfang

CSERGE, School of Environmental Sciences, University of East Anglia

g.seyfang@uea.ac.uk

ISSN 0967-8875

ABSTRACT

The challenge of achieving low-carbon communities cannot be underestimated. While government policies set ambitious targets for carbon-reduction over the next 40 years, there remains an urgent need for tools and initiatives to deliver these reductions through behaviour-change among individuals, households and communities. This chapter sets out a 'New Economics' agenda for sustainable consumption which addresses the need for low-carbon communities. It then applies these criteria in a critical examination of complementary currencies in the UK (time banking and local money). These are alternative mechanisms for exchanging goods and services within a community, which do not use money, and which aim instead to build local economic resilience and social capital. The potential of these initiatives as carbon-reduction tools has not previously been considered. Time banking appears to offer the greatest potential for carbon-reduction through offering a supportive social network which meets some of the participants' social and psychological needs for recognition, esteem and belongingness – needs which might otherwise be met through material consumption. In contrast, local money systems aim to strengthen and build resilience in local economies, and their principal impact on consumption is through localisation and import-substitution – which brings carbon-reductions from avoiding transport costs. What the two initiatives share is a commitment to building new systems of exchange which meet sustainability criteria, and express a wider set of values than mainstream money. The research and policy implications of these findings are discussed.

KEYWORDS: sustainable consumption, carbon mitigation, exchange, complementary currencies, low-carbon lifestyles

ACKNOWLEDGEMENTS

The author would like to thank the UK's Economic and Social Research Council and Research Councils UK for funding the research on which this paper is based (through project R000223453, CSERGE Centre funding, and an Academic Fellowship in Low-Carbon Lifestyles). Thanks also to Tom Hargreaves for helpful comments on an earlier version of the paper.

1. INTRODUCTION

The challenge of achieving low-carbon communities cannot be underestimated. While government policies set ambitious targets for carbon-reduction over the next 40 years, there remains an urgent need for tools and initiatives to deliver these reductions through behaviour-change among individuals, households and communities. This chapter sets out a 'New Economics' agenda for sustainable consumption which addresses the need for low-carbon communities. It then applies these criteria in a critical examination of complementary currencies in the UK. These are alternative mechanisms for exchanging goods and services within a community, which do not use money, and which aim instead to build local economic resilience and social capital. There have been three 'waves' of such currencies in recent years in the UK, and the paper examines the two most recent of these, namely time banks and local money systems. The potential of these initiatives as carbon-reduction tools has not previously been considered, and so this chapter offers a fresh perspective on carbon-reduction, consumption, and complementary currencies.

2. THE NEW ECONOMICS OF SUSTAINABLE CONSUMPTION

As climate change has become the most pressing environmental issue facing humanity (IPCC, 2007), the inequity of the consumption patterns which contribute to it have been thrown into relief. The risks and benefits of emitting carbon dioxide into the atmosphere are sharply divided among the world's economies, with the developed world contributing the lion's share of emissions, while developing countries face the most dangerous impacts. Carbon dioxide emissions, a by-product from burning fossil fuels, are directly related to consumption levels through the energy used to manufacture, grow, transport, use and dispose of products. The UK government's Climate Change Act commits the UK to reducing its greenhouse gas emissions by 80% of their 1990 levels, by 2050 (HMG, 2008). However, the greenhouse gases embedded in what we as a nation *consume* are far greater than that in what we *produce*: developed countries export their carbon emissions to developing countries where manufacturing and processing occurs (Druckman et al, 2008). The Carbon Trust's calculations of per capita CO₂ emissions are based not on production (the nationally-emitted CO₂ divided by population), but rather on consumption (tracking the emissions of all goods consumed in the UK), categorised according to 'high-level consumer need' (Carbon Trust, 2006: 1). A consumption focus highlights the environmental impact of food and other consumer goods and services produced overseas, which are commonly excluded from these calculations, and in turn suggests a different set of carbon-reduction policies from the government's focus on household energy use and transport. In turn, this draws greater attention to the consumption patterns of individuals, households and communities, and the scope for reducing carbon emissions from everyday activities and routine consumption patterns.

The scale of these challenges must not be underestimated; what is required is fresh thinking and new approaches to the economy-environment interface, to promote radical action. The Sustainable Development Commission of the UK government has recently published a report 'Beyond Prosperity' which sets out such an alternative agenda, encapsulating what has become known as a 'new economics' approach to sustainable development (Jackson, 2009). This manifesto for change in thinking and policy around economic policy argues that governments should eschew goals of economic growth, in favour of promoting sustainable wellbeing within environmental limits. This view is broadly representative of an alternative theoretical approach to environmental governance and sustainable consumption known as the 'New Economics' (Robertson, 1999; Daly and Cobb, 1990; Boyle, 1993; Seyfang, 2009). This environmental philosophical and political movement stresses the benefits of decentralised social and economic organisation and local self-reliance in order to protect local environments and economies from the negative impacts of globalisation (Jacobs, 1984;

Schumacher, 1973). Although its traditions go back much further (see Lutz, 1999), the UK's New Economics Foundation was founded in 1986 to promote these ideas in research and policy (Ekins, 1986), for instance by developing new measures of wellbeing, seeking to understand consumer motivations in social context, and debating how an 'alternative' sustainable economy and society might operate.

By suggesting that societal systems of provision be examined, redesigned and reconfigured in line with sustainable consumption goals, the New Economics proposes nothing less than a paradigm shift for the economy. Rather than making incremental changes, the model entails a systemic change in economic and social infrastructure, altering the rules of the game and the objective of economic development. The New Economics therefore presents many challenges to mainstream thought and practice on sustainable consumption; its objectives are to develop a practical approach to sustainable development which encompasses new definitions of wealth and work, new uses of money and which integrates ethics into economic life, and thereby to provide ecological citizens with the means to express their values and reduce their ecological footprints (Dobson, 2003; Wackernagel and Rees, 1996; Boyle, 1993).

When considering how to green consumption, this view rejects the orthodox 'ecological modernisation' policy approach of providing information to consumers and relying on market transformation and greening (DEFRA, 2003; Seyfang, 2005; Maniates, 2002). Instead it acknowledges the important social and psychological aspects of consumption decisions, and the structural factors which result in much consumption being routine, habitual and effectively unconscious (Jackson, 2007; Shove, 2003; Southerton et al, 2004). Indeed, the new concept of 'carbon capability' which might be seen as a prerequisite for low-carbon communities, stipulates that awareness of the factors outside one's own control is an important and empowering aspect of carbon management on an individual level, and one which prompts the move towards collective action and problem-solving (Whitmarsh et al, 2009). Consequently, moves towards more sustainable consumption and lower-carbon communities must therefore look beyond incremental improvements in efficiency, and instead aim for structural realignment in social institutions, and systemic changes in provisioning (Seyfang, 2009).

Integrating these basic principles of redirecting economic development, cutting economic growth and promoting social and ecological sustainability, a New Economics strategy for sustainable consumption would therefore embody the following five priorities:

- *Localisation*: strengthening local economies can occur through increasing the economic multiplier (the number of times money changes hands before leaving an area), which in turn occurs as a by-product of import-substitution or local provisioning.
- *Reducing Ecological Footprints*: cutting material consumption and waste levels can be achieved by through recycling, changing consumption patterns to cut demand, sharing facilities and resources, etc.
- *Community-building*: sustainable communities are robust, resilient, inclusive and diverse. Overcoming social exclusion, nurturing social capital, and developing active citizenship within participative communities are key aspects of this.
- *Collective action*: this covers both acting collectively to influence decisions and deliver services, and also addressing questions of institutional consumption.
- *Building new social institutions*: creating new social and economic institutions – alternative systems of provision - which are based upon different conceptions of wealth, progress, value, etc, and through these allow people to behave as ecological citizens.

These five indicators of sustainable consumption are used below to discuss the aims and potential of complementary currencies, a range of new tools and instruments for building sustainable, low-carbon communities.

3. INTRODUCING COMPLEMENTARY CURRENCIES

Faced with the challenge of forging new social institutions and systems of provision to deliver sustainable consumption, 'complementary currencies' (CCs) have been proposed as a potentially useful tool. These are financial mechanisms which operate alongside conventional money, facilitating the exchange of goods and services in a parallel market, where alternative rules and resources prevail. Far from being exotic rarities, these instruments are in fact common features of modern life in developed countries: air miles is one such complementary currency - and reportedly the second largest currency in the world (BBC, 2002) - albeit one run by corporations to promote air travel and consumption of other material goods. The complementary currencies examined here are somewhat different; they emerge from the grassroots, or from civil society organisations, and pursue sustainability and social justice agendas (see also Seyfang, 2006b). What they have in common with air miles is that they are principally media of exchange, voluntarily accepted in exchange for goods and services. The conventional definition of money describes a tool which serves three economic purposes: as a medium of exchange, a store of value, and a unit of account (Lipsey and Harbury, 1992). However, it is only in recent times that these functions have been combined within a single monetary instrument, known as general purpose money. Furthermore, as Keynes (1936) observed these functions can conflict with each other, as is seen in recession when money's function as a store of value results in it being hoarded rather than circulated, and the supply of money dries up, preventing exchange. Complementary currencies can be regarded as 'special purpose money' as they tend to fulfil one or other of money's functions to the exclusion of others, for instance offering a medium of exchange which is incentivised to encourage monetary circulation rather than hoarding (Seyfang, 2000). Indeed, history shows that economic downturns are often accompanied by an upsurge in interest in these tools for local economic resilience (Douthwaite, 1996; Boyle, 2002).

Money is a socially constructed tool, and its design imbues it with particular behavioural incentives. Lietaer states "Money matters. The way money is created and administered in a given society makes a deep impression on values and relationships within that society. More specifically, the *type* of currency used in a society encourages – or discourages – specific emotions or behaviour patterns" (Lietaer, 2001: 4). There are many diverse models of complementary currency in use around the world, from Japan and Canada to Mexico, Malaysia, Europe and Argentina (www.complementarycurrency.org). The form and design of these currencies reflects the contexts within which they are developed, and the purposes intended for its use (see Figure 1 for some examples). For instance, the London-based 'Wedge' card is a loyalty scheme for customers of local independent businesses, to promote more local shopping (www.wedgecard.co.uk). In the Netherlands, plans for an Amsterdam City Carbon Card are being developed, to incentivise consumption of more sustainable products, while also rewarding community involvement activities (www.qoin.com). In Japan, the demographics of aging (soon to be experienced in the UK) has resulted in social care needs exceeding the state's ability to provide; reciprocal social care schemes have developed such as 'fureai kippu', allowing carers to earn points helping elderly people, which can be spent on receiving care later on, or donated to others (this system echoes the time banks model below). In other areas such as Hungary, Canada, Honduras and South Africa, currencies have been developed to supplement scarce national currency and enable local trade, and in the UK the most common complementary currency is LETS (Local Exchange Trading Schemes), which had around 300 projects in the late 1990s (Seyfang, 2001; Williams et al, 2001). In Perth, Australia, an experimental greenhouse gas reduction currency called the Maia Maia Project aims to reward participants who commit to reducing their carbon emissions with a currency convertible to carbon dioxide-equivalent global warming potential, which attracts discounts in local businesses (themaiaimaiproject.blogspot.com).

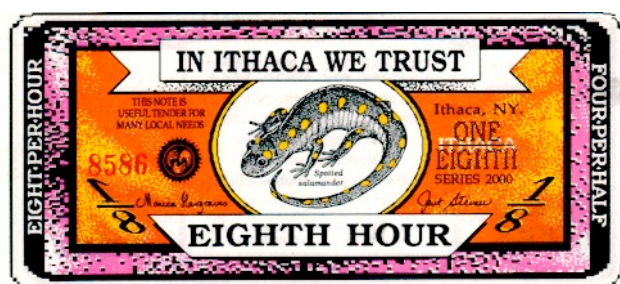


Figure 1: examples of complementary currency notes. From top: An Eighth-Hour note from Ithaca, New York State USA; Ten Toronto Dollars, from Canada; and Ten Dollars from South Central Los Angeles (images from www.complementarycurrency.org).

The complementary currencies examined here are designed for specific aims concerning social, economic and environmental aspects of sustainable development, and in particular the need to transform the consumption patterns of individuals, households and communities. The following section introduces two distinct types of complementary currency which are in use in the UK today (time banks and local money), and describes their origins and characteristics. It then proceeds according to the criteria of sustainable consumption set out above, and highlights where these complementary currencies are attempting to make a difference to the financial infrastructure of society, and the implications of those changes for low-carbon communities.

4. CURRENCIES OF CHANGE

4.1 Time Banks: Spending time building community

Time banking is a social justice movement which prioritises social care, wellbeing, and reciprocity. After LETS, it represents the second wave of complementary currencies in the UK, and is based on the US time dollar model developed by Edgar Cahn, which aim to rebuild supportive community networks of reciprocal self-help, particularly in deprived neighbourhoods. A time bank is essentially a volunteering exchange, with a central broker to coordinate members' activities. Everyone's time is worth the same – one time credit per hour – regardless of the service provided. Participants earn credits by helping others, and spend credits receiving help themselves (Cahn and Rowe, 1992). The first UK time bank was set up in 1998, and in 2002 there were 36 active time banks, with 2196 participants in total, and nearly 64,000 hours exchanged (Seyfang and Smith, 2002). There are currently 109 in operation and a further 48 being developed (Ryan-Collins et al, 2008). Time banks aim to overcome the 'green niche' limitations of the previous wave of complementary currencies (LETS) by being based in mainstream institutions (health centres, schools, libraries), paying coordinators for development and support work, and most importantly, for brokering transactions between participants (Seyfang, 2002), but they still face obstacles in achieving their potential. These are: large 'skills gaps' in projects which again presents a limited range of services available; short-term funding mitigates against projects which take a long time to become established (annual project costs were estimated to be £27,300 in 2002); reciprocity is slow to materialise due to reluctance of participants to ask for help; and while the unemployed are officially encouraged to participate in time banking, those in receipt of disability benefits face particular obstacles from the benefit system (Seyfang, 2003, 2004a,b; Seyfang and Smith, 2002).

Turning to the criteria of sustainable consumption set out above, it is clear that time banks have the potential to impact on the consumption patterns of participants in several ways, both direct and indirect. The services provided on a time bank – neighbourly support such as dog-walking, gardening, small DIY tasks etc – tend to be locally-based by definition, so there is no net *localisation* effect; the time bank creates new local networks and opportunities for exchange, and does not substitute for imports. Similarly, although *reducing environmental impact* is not a primary objective of time banking, it is being used to promote more sustainable consumption and environmental governance in a variety of ways. In north London for example, residents of an inner city estate will soon be able to earn time credits for recycling their household waste, and spend them on attending training courses or refurbished computers. Another London time bank rewards members with low-energy light bulbs. Participation in groups which make local environmental decisions could also be rewarded. Furthermore, it might be expected that by providing participants with access to supportive networks, where resources and expertise can be shared, some material consumption might be avoided. Examples of this type of environmental impact were found in previous studies of LETS, where members hired tools and so avoided having to purchase their own (Seyfang, 2001).

As indicated above, the primary rationale for time banking is *community-building*, and the projects are successful at developing social capital and new supportive networks. They attract members of the most socially-excluded groups in society (those who normally volunteer least), and are often introduced into marginalised areas where building trust and neighbourliness is a challenge which the conventional economy cannot meet. For socially excluded individuals and communities, whose skills are accorded no value in the mainstream economy, the opportunity to be valued and rewarded for one's input into community activity and for helping neighbours, is enormously empowering. There is also a *collective action* aspect to time banking. In addition to the 'community time bank' model, time banks can also be used as a 'co-production' tool to encourage people to become involved in the delivery of public services which require the active participation of service users in order to be

successful, for example health, education, waste management, local democracy, etc (Cahn, 2000; Ryan-Collins et al, 2008) and “co-production is a framework with the potential for institutions ... to achieve the elusive goal of fundamental and systemic change” (Burns, 2004). By rewarding and encouraging civic engagement, time banks could invigorate active citizenship. Finally, the most significant benefit of time banking, for many participants, is the opportunity to redefine what is considered ‘valuable’, in other words: *creating new institutions* of wealth, value and work (Seyfang, 2004a,b). The radical stance of valuing all labour (or time) equally seeks to explicitly recognise and value the unpaid time that people spend maintaining their neighbourhoods and caring for others. Thus voluntary work is rewarded and so incentivised (rather than squeezed out by the conventional economic system which accords it no value and so undermines social cohesion) thereby ensuring that vital socially reproductive work is valued and carried out (Seyfang, 2006a). Time banks represent a new infrastructure of income distribution for society, where income is not dependent upon one’s value to, and activity in the formal economy, but rather upon work – broadly defined (Burns, 2004; Seyfang, 2006a).

In addition to the positive social inclusion impacts of time banks and beyond the immediate impacts on consumption discussed above, time banks offer further possibilities for shifting consumption patterns towards lower-carbon options. Given that the principal aim and impact of time banking is to address unmet needs, and offer recognition for community engagement, there are strong social and psychological impacts resulting from participation. These include feeling acknowledged, gaining self-esteem, demonstrating belongingness, expressing values, and accessing personal contact.

All of these deep-rooted needs are among the range of social and psychological drivers of consumption, and we often consume material goods to meet these non-material needs, and this has profound implications for sustainable development and the drive to cut carbon emissions (Max-Neef, 1992; Jackson, 2007). Consumption is used to boost esteem, to feel part of a community, to express ourselves and to connect with others – even when this consumption undermines other needs such as personal safety or ecological sustainability. As time banks deliver some of these social and psychological benefits through a structure of supportive social networking, it might be expected that participants are therefore less likely to seek to meet those needs through material consumption, so lowering their overall consumption levels and associated carbon emissions. This is an empirical question for future research on time banks, and could offer important lessons on how consumers may be weaned off their material consumption fix, without compromising needs-satisfaction.

4.2 Local money systems: Supporting local businesses for economic resilience

Across the UK, there are examples of communities who are printing their own money and spending it in local businesses, knowing that it must circulate locally and stay in the area, rather than leaking away as conventional money is wont to do. Local money systems such as the Totnes Pound (totnes.transitionnetwork.org/totnespound/home) and the Lewes Pound (www.thelewespound.org) represent the third wave of complementary currencies in the UK. They build on previous experiences with LETS, and international experience in local money systems such as the US Berkshares (www.berkshares.org) and Saltspring dollar schemes (www.saltspringdollars.com) and German Cheimgauer (www.chiemgauer.info), part of that country’s ‘regiogelder’ or regional money movement (www.regiogeld.de), which currently has 28 active currencies (Gelleri, 2009). This money is legal as a voucher, but not as legal tender (ie no-one is compelled to accept it, and taxes on local money income must be paid in national currency). These are asset-backed currencies (members of the public and businesses exchange Sterling for local Pounds), and local businesses choose to accept them as part-payment for goods and services; individuals can also exchange them between themselves too.

In contrast to time banking, with its principally social objective, local money systems aim to strengthen local economies to offer a greater degree of resilience against economic shocks, and support local exchange in times of economic downturn. In this, local money echoes the goals of the earlier wave of LETS, but the mechanism and design of the currency is somewhat different, and it aims to appeal to a broader cross-section of the population. For instance, the Totnes Pound in Devon, the first of this type in the UK, was launched in March 2007, with a deliberate aim to diversify and experiment with new types of complementary currency in the UK. Following from this, Lewes in Sussex launched its own currency in September 2008 (see Figure 2).

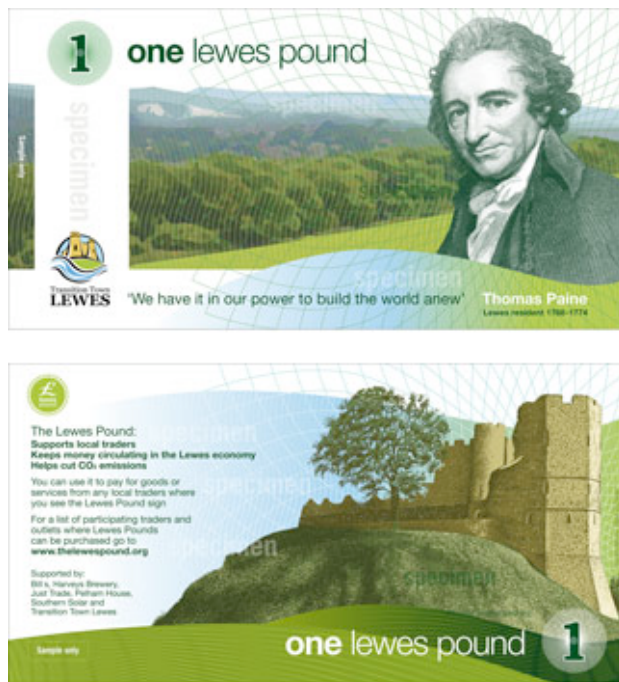


Figure 2: The Lewes Pound note (from www.thelewespond.org), and the German Cheimgauer notes (Gelleri, 2009).

Both these UK initiatives have grown from groups of community activists seeking to develop a more sustainable money system. Indeed, they have emerged from local Transition Town groups, which have the stated aim of mobilising grassroots action to move towards low-carbon, resilient communities. As the Lewes Pound website states, the local currency: "...benefits shoppers by creating stronger and more local shops, increasing a sense of pride in our community, decreasing CO2 emissions and increasing economic resilience" (Transition Town Lewes, 2008). How successful have they been at achieving these aims? Initial reports in the media and on practitioner websites suggest that their impact has so far been more symbolic than economic, and both projects are considering how to evolve and develop in the future to learn from initial experiences (some details of which formed the focus of a recent edition of *You and Yours* broadcast on radio by the BBC, 2009). To date there has been no published empirical research on these experiments, which renders a critical evaluation problematic, but indicative impacts can be suggested using the criteria for sustainable consumption outlined above.

Unlike conventional money, the fundamental characteristic of local money is that it can only be spent within a defined local or regional area. Thus, Lewes Pounds can only be spent amongst individuals and businesses in Lewes, and they must keep circulating (increasing the local multiplier) until they are converted back to Sterling. In this way, the aim is to strengthen local economic linkages and promote import-substitution, thereby nurturing local economic resilience, as opposed to dependence on external markets, and reducing transport costs (and carbon emissions) from imports. This objective speaks directly to the New Economics goals of *localisation* of economic systems and *reducing ecological footprints*. While the impacts of these projects are currently unresearched, the Cheimgauer regional money system in Germany (see Figure 2) is comparable and might indicate possible future impacts¹. This currency launched in 2003, and by 2008 Gelleri estimated that the velocity of circulation of the local currency was three times that of the Euro, and that approximately 2,500 consumers exchange €100,000 into Cheimgauer notes each month, which they can spend at 600 local businesses. In 2008 the turnover increased by 30% over the previous year, to €3.6 million, and an estimated one third of this represents new economic activity which would not have occurred before. This includes significant import-substitution benefits such as local biofuels replacing imported oil (Gelleri, 2009). Of course, the overall impact on sustainable consumption depends on the extent to which this new consumption is different to pre-existing patterns, rather than more of the same, and whether it is in addition to, or replaces that consumption.

The *community-building* aspects of these local currency notes is significant, perhaps eclipsing the economic impacts in these early stages, as was previously found with LETS (Seyfang, 2001). While electronic currencies are more efficient, it is certainly true to say that the physical notes themselves in a printed currency hold great symbolic value for local residents. High-quality, counterfeit-proof paper displaying local landmarks or notable citizens, are a concrete expression of local pride and solidarity. The Lewes Pound, for instance, pictures local hero Thomas Paine, and carries his quotation 'we have it in our power to build the world anew' (www.thelewespound.org). By presenting the currency as a token of positive local action, it aims to appeal to a wide cross-section of the population. Furthermore, by encouraging consumers to favour local businesses, there is a positive benefit in terms of building supportive links between townspeople and their traders. Other than this, however, there is little scope at present for *collective action* to be generated directly through the use of a local currency system. Essentially the currency is an individualistic tool, to complement existing transactions in national currency, rather than a structure to generate collectivity.

¹ The Cheimgauer differs in one important way from the UK local currencies: it slowly devalues over time. This 'demurrage' or negative interest fee of 2% a quarter must be paid by people holding the notes, before they can be spent. This incentivises rapid circulation and discourages hoarding (Gelleri, 2009), and the mechanism is being considered by the UK projects as part of their evolution and development.

However, despite this, the currency strongly represents a *new financial institution or system of provision*. Its rules, mechanisms and practices differ from mainstream exchange mechanisms in their local-boundedness, and thus they promote a different set of ideas and practices about economic behaviour.

Experience to date with the Totnes and Lewes currencies indicates that while some people and businesses use the local money enthusiastically, other businesses find it difficult to spend the notes, and so the economic impact is constrained (BBC, 2009). In the USA, similar projects overcome this barrier by paying some of their staff's wages in local currency, and it may be that as the currencies grow in scale and achieve a critical mass in a town, they can become ubiquitous and easier to earn and spend. In the UK, the Lewes and Totnes Pound groups are also investigating the possibility of introducing electronic versions of their local currency, to more closely match the transaction style of businesses and consumers alike. These nascent projects demand further empirical study to investigate their economic impacts, and the ways in which the new currencies mediate consumption.

5. CONCLUSIONS: GROWING GRASSROOTS INNOVATIONS

Sustainable consumption requires a radical realignment of social and economic institutions and systems of provision. One such system is that of exchange. The two types of complementary currency examined here each present distinct possibilities for reducing carbon emissions and moving towards low-carbon communities, while simultaneously meeting some or all of the New Economics criteria for sustainable consumption. Time banking appears to offer the greatest potential for carbon-reduction through offering a supportive social network which meets some of the participants' social and psychological needs for recognition, esteem and belongingness – needs which might otherwise be met through material consumption. A secondary impact is through the potential for sharing resources. In contrast, local money systems aim to strengthen and build resilience in local economies, and so their principal impact on consumption is through localisation and import-substitution – which brings carbon-reductions from avoiding transport costs. What the two initiatives share is a commitment to building new systems of exchange which meet sustainability criteria, and express a wider set of values than mainstream money.

In this, they can be seen to be successful, albeit on a small scale. However, their potential for wider impact is much greater. The 'sustainability transitions' literature describes the role of experimental niche projects in seeding wider system change (Geels, 2002; Schot and Geels, 2008). While this literature is mainly focused on technological innovations in commercial organisations, an emerging 'grassroots innovations' literature is exploring the applicability of these models for social innovation in the social economy (Seyfang and Smith, 2007; Seyfang, 2009). From this perspective, complementary currencies can be viewed as social innovations in exchange. Their interactions with mainstream exchange and regulatory systems, as they attempt to replicate and grow, are complex and problematic – not least because the projects' values differ markedly from those of the mainstream economic system (see Seyfang, 2006a; Smith, 2007).

Despite official support, contradictory and occasionally unhelpful policies can block the wider adoption of projects like this, as the time banking example demonstrates. But there are further institutional issues which hinder the development of alternative green niches of this type. Commonly, these are a need for funding to support new experimental initiatives and test new practices, a lack of institutional learning (scarce time is spent securing funding rather than developing learning mechanisms and consolidating knowledge), and the need for networking institutions to support initiatives, share best practice and liaise with partnering organisations, government and business to translate ideas into new settings (Smith, 2007). In the cases of these complementary currencies, efforts have been made to address these

issues, for instance through international and national time banking organisations (www.timebanks.org, www.timebanking.org), and through conferences on local and regional monetary systems across Europe (www.regiogeldkongress.de).

Nevertheless, there is scope for much greater policy support, and it may be that lessons can be drawn from the more conventional literature on supporting and diffusing innovation. For example, could incubators for social innovations bring benefits from clustering and critical mass? What is the scope for 'policy test sites' where normal regulatory rules are relaxed to allow experimentation, testing and failure? What happens when small scale projects grow and become translated to more mainstream settings? How can these processes be managed without alienating the value-driven activists who instigated them as *alternatives* to the mainstream? These dynamic diffusion processes are the subject of ongoing research, and it is hoped that future studies will provide a greater understanding of the ways in which initiatives of this type can be supported and harnessed to achieve wider policy goals for low-carbon communities.

REFERENCES

- BBC (2002) *Air Miles 'Threaten Dollar's Dominance'* Business News, 3/5/02
<<http://news.bbc.co.uk/1/hi/business/1966290.stm>>
- BBC (2009) *You And Yours*, Radio 4, 16th March.
- Boyle, D. (1993) *What Is New Economics?*, (New Economics Foundation, London.)
- Boyle, D. (ed) (2002) *The Money Changers: Currency Reform From Aristotle To E-Cash*, Earthscan, London.
- Burns, S. (2004) *Exploring Co-Production: An overview of past, present and future*, New Economics Foundation, London.
- Cahn, E. (2000) *No More Throwaway People: The co-production imperative* (Washington, Essential Books)
- Cahn, E. and Rowe, J. (1992) *Time Dollars*, (Family Resource Coalition of America Chicago) [second edition, 1998]
- Carbon Trust (2006) *The Carbon Emissions Generated In All That We Consume* (Carbon Trust, London)
- Daly, H. and Cobb, J (1990) *For The Common Good*, Greenprint Press, London
- DEFRA (2003) *Changing Patterns: UK Government Framework for Sustainable Consumption and Production*, (Defra, London).
- Dobson, A. (2003) *Citizenship And The Environment*, (Oxford University Press, Oxford).
- Douthwaite, R. (1996) *Short Circuit: Strengthening local economies for security in an unstable world*, (Green Books, Totnes, UK)
- Druckman, A., Bradley, P., Papathanasopoulou, E. and Jackson, T. (2008) 'Measuring progress towards carbon reduction in the UK' *Ecological Economics* Vol 66(4) pp. 594-604
- Ekins, P. (ed) (1986) *The Living Economy: A New Economics in the Making*, (Routledge, London).
- Geels, F.W. (2002), *Understanding the Dynamics of Technological Transitions* Twente University Press, Enschede.

- Gelleri, C. (2009) 'Chiemgauer Regiomoney: Theory and practice of a local currency' *International Journal of Community Currency Research* Vol 13, pp.61-75
www.uea.ac.uk/env/ijccr/
- HMG (2008) *Climate Change Act 2008* (The Stationery Office, London)
- IPCC, 2007: Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A.(eds.)]. IPCC, Geneva, Switzerland
- Jackson, T. (2007) 'Consuming Paradise? Towards a social and cultural psychology of sustainable consumption' in T. Jackson, (ed) *The Earthscan Reader In Sustainable Consumption* (Earthscan, London) pp.367-395
- Jackson, T. (2009) *Prosperity Without Growth? The transition to a sustainable economy* (London: Sustainable Development Commission)
- Jacobs, J. (1984) *Cities And The Wealth Of Nations: Principles of economic life*, (Random House, London).
- Keynes, J. M. (1936) *The General Theory Of Employment, Interest And Money*, Macmillan, London [1973 edition]
- Liettaer, B. (2001) *The Future Of Money: Creating new wealth, work and a wiser world*, Century, London.
- Lipsey, R. and Harbury, C. (1992) *First Principles of Economics* 2nd edition (Oxford: Oxford University Press)
- Lutz, M. (1999) *Economics For The Common Good: Two centuries of social economic thought in the humanistic tradition*, (Routledge, London).
- Maniates, M. (2002) 'Individualization: Plant a tree, buy a bike, save the world?' in T. Princen, M. Maniates and K. Konca (eds) *Confronting Consumption* (MIT Press, London), pp.43-66
- Max-Neef, M. (1992) 'Development and Human Needs' in Ekins, P. and Max-Neef, M. (eds) *Real-Life Economics: Understanding Wealth Creation* (Routledge, London).
- Robertson, J. (1999) *The New Economics Of Sustainable Development: A briefing for policymakers*, (Kogan Page, London).
- Ryan-Collins, J., Stephens, L. and Coote, A. (2008) *The New Wealth Of Time: How time banking helps people build better public services* (New Economics Foundation, London)
- Schot, J. and F. Geels (2008) Strategic niche management and sustainable innovation journeys: theory, findings, research agenda, and policy *Technology Analysis and Strategic Management* 20, 5: 537-554
- Schumacher, E. F. (1973) *Small Is Beautiful: A study of economics as if people mattered*, Vintage, London (1993 edition)
- Seyfang, G. (2000) The Euro, The Pound And The Shell In Our Pockets: Rationales For Complementary Currencies In A Global Economy, *New Political Economy*, Vol 5, No 2, pp 227-246
- Seyfang, G. (2001) 'Community Currencies: Small Change for a Green Economy' *Environment and Planning A* Vol 33 (6), pp.975-996
- Seyfang, G. (2002) 'Tackling Social Exclusion With Community Currencies: Learning from LETS to time banks' *International Journal of Community Currency Research* Vol 6
<http://www.uea.ac.uk/env/ijccr/>

- Seyfang, G. (2003) 'Growing Cohesive Communities, One Favour At A Time: Social exclusion, active citizenship and time banks', *International Journal of Urban and Regional Research*, Vol 27 (3) pp.699-706
- Seyfang, G. (2004a) Time Banks: Rewarding community self-help in the inner city? *Community Development Journal* Vol 39 (1) pp 62-71
- Seyfang, G. (2004b) Working Outside The Box: Community currencies, time banks and social inclusion, *Journal of Social Policy* Vol 33(1) pp.49-71
- Seyfang, G. (2005) 'Shopping for Sustainability: Can sustainable consumption promote ecological citizenship?', *Environmental Politics*, Vol 14(2) pp 290-306.
- Seyfang, G. (2006a) 'Harnessing the Potential of the Social Economy? Time Banks and UK Public Policy' *International Journal of Sociology and Social Policy* Vol 26 (9/10) pp. 430-443
- Seyfang, G. (2006b) 'New Institutions for Sustainable Consumption: An evaluation of community currencies' *Regional Studies* Vol 40(7) pp.781-791
- Seyfang, G. (2009) *The New Economics Of Sustainable Consumption: Seeds of change* (Palgrave Macmillan, Basingstoke)
- Seyfang, G. and Smith, K. (2002) *The Time Of Our Lives: Using time banking for neighbourhood renewal and community capacity-building* (New Economics Foundation, London).
- Seyfang, G. and Smith, A. (2007) 'Grassroots Innovations for Sustainable Development: towards a new research and policy agenda' in *Environmental Politics* Vol 16(4) pp. 584-603
- Shove, E., (2003) *Comfort, Cleanliness and Convenience: The Social Organization of Normality*, (Berg Publishers, Oxford)
- Smith, A. (2007) Translating sustainabilities between green niches and socio-technical regimes *Technology Analysis & Strategic Management* 9, 4: 427-450
- Southerton, D., Chappells, H. and Van Vliet, V. (2004) *Sustainable Consumption: The implications of changing infrastructures of provision*, (Edward Elgar, Aldershot)
- Transition Town Lewes (2008) *The Lewes Pound: What is it?* <<http://www.thelewespound.org/what.html>>, accessed 8/4/09
- Wackernagel, M. and Rees, W. (1996) *Our Ecological Footprint: Reducing human impact on the earth*, (New Society Publishers, Philadelphia)
- Whitmarsh, L., O'Neill, S., Seyfang, G. and Lorenzoni, I. (2009 forthcoming) 'Carbon Capability: Understanding, ability and motivation for reducing carbon emissions' in Stibbe, A. (ed) *The Handbook of Sustainability Literacy: skills for surviving and thriving in the twentyfirst century* (Green Books)
- Williams, C. C., Aldridge, T., Tooke, J., Lee, R., Leyshon, A. and Thrift, N. (2001) *Bridges into Work: an evaluation of Local Exchange Trading Schemes (LETS)*. Policy Press: Bristol.