

**Equity within Limits: introducing the Convergence Mapping System.**

How organizations can work towards a more equitable and environmentally sustainable world

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## Abstract

The Convergence Mapping System was developed and tested in the CONVERGE research project<sup>1</sup>. Its objective is to show how various types of initiatives and organizations are managing to address the imperatives of both living within the limits of the planet and sharing its resources equitably.

In our paper we first introduce the CONVERGE project and its theoretical background. Our research focused on rights-based approaches to managing resources and originated with the carbon reduction framework called 'Contraction and Convergence'<sup>TM</sup> developed by Aubrey Meyer and the Global Commons Institute. Our objective was to link the scientifically-validated need to reduce (i.e. to contract) resource use with a justice-based approach to apportioning the responsibility for doing so (to converge). This focus was further strengthened by the need expressed in the literature – which was re-emphasized in the run up preparations for the Rio+20 UN Conference on Sustainable Development – to re-couple environmental goals with the goals of proponents of human development.

In the next section we follow with a description of the methodological approach taken when developing the Convergence Mapping System, which employs 2 five item scales and can be used to illustrate the 'limits' and 'equity' components of various sustainability and development initiatives.

Then, we introduce specific initiatives from different fields and of different scales (e.g. a small grass-roots carbon club, the EU level Covenant of Mayors initiative, a Bangladeshi Bank and a local exchange system) to show how the Mapping System can be used to visually represent them and be used to find ways to develop them in order to strengthen their limits/contraction elements and more strongly promote equity/convergence.

Finally, we present an overview of initiatives that are placed high on both scales and thus are explicitly assigning importance to both living within ecological and planetary limits and observing the principles of intra and intergenerational equity. We also provide an overview of the processes of convergence as they occur in the initiatives we studied. We conclude the paper with thoughts on how the mapping system can be used to move towards more convergence.

## Highlights

- Based on the literature, arguments are made for re-coupling Environment with Development.
- The term Convergence is adopted to denote the imperative of living equitably within limits.
- An analytical tool, the Convergence Mapping System is introduced to map Convergence efforts.
- Examples are given as to how the mapping system can be used to help move towards Convergence.

## Keywords

Sustainability; Contraction and Convergence; Case studies and initiatives; Limits; Equity

### 1. Introduction

*“Environment and development are not separate challenges; they are inexorably linked. Development cannot subsist upon a deteriorating environmental resource base; the environment cannot be protected when growth leaves out of account the costs of environmental destruction. These problems cannot be treated separately by fragmented institutions and policies. They are linked in a complex system of cause and effect.”*<sup>2</sup>

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<sup>1</sup> CONVERGE is funded by the European Commission's 7th Framework Programme. More information is available from <http://www.convergeproject.org>

<sup>2</sup> <http://www.un-documents.net/ocf-01.htm> (last accessed July 25th 2012)

The aim of the FP7 EU-funded CONVERGE project was to ‘re-think globalisation’ by developing the implications of a ‘Convergence’ approach to global development based on more equitable access to the life-support capacities of planet and fair livelihoods within planetary boundaries through a transdisciplinary systems approach (Fortnam et al. 2010). Convergence is defined as being a rights-based framework based on the principle that every global citizen has the right to a fair share of the Earth’s biocapacity and access to fundamental human rights. It advocates socio-ecological justice and calls for wealth, well-being and consumption to converge across and within nations to a level that the biosphere can support (see Figure 1).

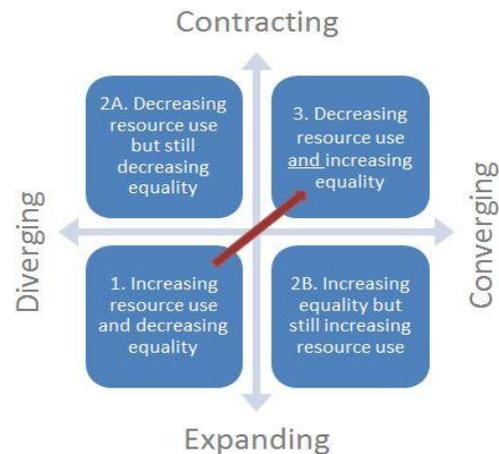


Figure 1: Schematic overview of the process of Convergence (Roderick in Vadovics and Milton 2012)

The CONVERGE project used pre-existing sustainability science as a foundation for investigating the issues concerning taking an equity-based approach to managing planetary resources. It started by addressing the issues surrounding the concept of per capita ‘allocation’ of the planetary commons but evolved to take a broader systems perspective about resource boundaries, allocation and modes of distribution and to make “a deeper inquiry about the conceptual frames, principles and processes which groups and organisations could use in order to guide joint approaches to sustainability” (Parker 2013).

Correspondingly, this paper has four main sections. Firstly, a description of the genesis of the CONVERGE project is provided which includes some detail about the concept of Contraction and Convergence™ (C&C™). This section illustrates how one project output, the Convergence Mapping System, fits into the overall project structure and the literature. Our objective was to link the scientifically-validated need to reduce (i.e. to contract) resource use with a justice-based approach to apportioning the responsibility for doing so (to converge), a need also expressed by others (see e.g. AtKisson 2012, Bührs 2008, Ehrlich and Ehrlich 2013, Jackson 2009, 2011, Kitzes et al. 2008, Latouche 2010, Pontin and Roderick 2007, Simms 2009, Victor 2008, UNDP 2012). Next, a brief discussion of some of the theory behind the project – Environment and Development-related literature – is provided. This is followed by a description of the methodological approach taken when developing the mapping system, which employs 2 five item scales and can be used to illustrate the ‘limits’ and ‘equity’ components of various sustainability and development initiatives<sup>3</sup>. Specific details are provided about the outcome of using the mapping system to examine a small grass-roots carbon club, an EU policy-driven carbon reduction initiative, a microfinance bank and a Local Exchange Trading System (LETS). It is hypothesised that such a mapping system, albeit qualitative in nature, may have many functions, such as raising awareness about the need for ‘joined-up’ approaches to development and promoting the more holistic development of sustainability and development initiatives which are better able to serve multiple goals.

<sup>3</sup> A sustainability initiative as understood in the CONVERGE project is: an act and/or action intended to solve the problems created by unsustainable anthropogenic action. CONVERGE initiatives are also about creating opportunities for putting the principles of (1) living within ecological limits and (2) equity into practice. Initiatives may take the form of policies, community initiatives and even personal/household level action.

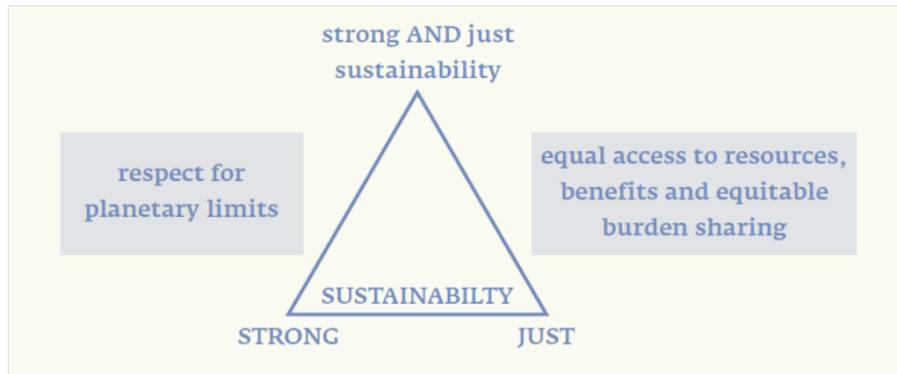


Figure 2: Framework and rationale for the CONVERGE project research (Vadovics and Milton 2013)

## 2. The concept of Contraction and Convergence™

‘Convergence’ has been a subject of study in economics literature since the mid-1980s in terms of trends in distribution of world per capita income and productivity (Abramovitz 1986, Baumol 1986, Sutcliffe 2005). However, the concept of Contraction and Convergence (C&C™) to which we refer in this document and from which the CONVERGE project originated comes from Aubrey Meyer and The Global Commons Institute (GCI). C&C™ is a global climate policy framework which has been proposed to the UN since 1990 by the Global Commons Institute as one way to manage and reduce anthropogenic carbon dioxide through a burden-sharing approach (Meyer 2000). C&C™ proposes combining recognition of planetary limits with an equity approach to distribution in the following format: (a) Establishing a full-term contraction budget (a ‘cap’) for global emissions consistent with stabilising atmospheric concentrations of greenhouse gases (GHGs) at a pre-agreed concentration maximum deemed to be safe by the UNFCCC, and: (b) The international sharing of this budget as a pre-distribution of entitlements that result from a negotiable rate of linear convergence to equal shares per person globally by an agreed date. The framework would be given flesh and blood through the setting of interim carbon reduction targets, drawing up of national de-carbonization strategies and a carbon trading scheme to allow a degree of flexibility to account for national differences in carbon intensity. The principle of C&C™ has been formally recognised in European Parliament resolutions (European Parliament 1998) and is supported by numerous policy makers, academics, NGOs and lay people. One of the advantages of the C&C™ proposal is the recognition that any effective and sustainable response to slowing the rise in carbon dioxide levels in the atmosphere inevitably requires addressing the issue of equity – who should reduce carbon emissions and by how much? C&C™ effectively slices the Gordian knot of allocating responsibility for cutting carbon dioxide emissions by proposing a global per capita allocation solution (a so-called ‘strong equity’ approach) which also takes account of the issue of the ‘historical responsibility’ of industrialised nations through its proposal for a negotiated rate of convergence. Many scientists and policymakers have come to consider this approach to be not only the most equitable but also the most pragmatic approach to managing climate change when compared to other carbon reduction regimes: according to Böhringer and Welsch (2004; see also Berk and den Elzen 2001) who examined the implications on economic welfare of various approaches to emissions reduction “a Converge approach to emissions trading stands out for offering the developing countries substantial incentives for participation in the international greenhouse gas abatement effort without imposing excessive burdens on industrialised countries” (p. 21.), and is therefore the most acceptable arrangement.

Despite criticisms of the approach (which focus on feasibility of implementation and potential demographic impacts<sup>4</sup>), the potentially severe impacts of climate change (IPCC 2007) and the

<sup>4</sup> Per capita based allocation rights might promote national pro-population growth policies. As a solution to this, Meyer (2000) suggests a cut off year after which population growth is no longer factored in to carbon allowances. Issues with implementation are addressed by Aldy (2005).

resounding lack of success of alternative approaches to decreasing carbon emissions continue to make the C&C™ approach attractive. Furthermore, the need to recognise ecosystem limits and ensure more equal access to resources and the benefits they provide (as well as to more equally share burdens) has become more pronounced. Equity driven approaches, such as the C&C™ proposition suggest a way to meet these needs.

### **2.1. The need for a ‘Limits’ approach**

Historically, a focus on increasing the efficiency of both the production and consumption of products has been a strong trend in both research and policy making (see, e.g. Sachs et al. 2010, or Knight and Rosa 2011, Victor 2012 for a review) although an increasing body of research points out that this focus is not sufficient for a variety of reasons, the first of which concerns the well-known ‘rebound effect’; examples of which are numerous (Weizsäcker et al. 1998, Ropke 1999). Researchers have also argued that making efficiency improvements will prove sufficient to increase incomes and by then implementing appropriate market and policy measures the state of the environment will eventually improve (see e.g. Vincent and Panayotou 1997) as is suggested by the environmental Kuznets curve (Archibald et al. 2004). In contrast to this view, other researchers conclude that environmental deterioration cannot be de-coupled from growth in consumption (Perrings and Ansuategi 2000, Knight and Rosa 2011). Instead, it can be said that more affluent countries can afford to create cleaner immediate environments but that, partly due to their trading relationships, they produce long-lasting negative environmental impacts at the global level and less affluent regions (exporting countries) suffer from worsening local environmental impacts. A majority of evidence suggests that the ‘efficiency’ approach tried so far a) has not led to a decrease in overall environmental impact (see e.g. Vitousek et al. 1986, WWF et al. 2006, 2012); b) has not clearly lead to general increases in well-being (Jackson and Marks 1999, Constanza et al. 2004, NEF 2004, Venetoulis and Cobb 2004, Worldwatch Institute 2004, Marks et al. 2006, Abdallah et al. 2012) and, c) has not led to the meeting of important development-related targets (e.g. reducing the proportion of the population that are undernourished or are without access to clean drinking water) (Raworth 2012).

Thus the need to re-conceptualize well-being and critique material consumption has been gaining strength. Substantial contributions to this end have already been made by new economics (see e.g. Ekins and Max-Neef 1992, NEF 2004, Boyle and Simms 2009), humanistic economics (Lutz and Lux 1988) as well as in work related to the measurement of well-being (Frey and Stutzer 2002 and 2007, Marks et al. 2006), alternative forms of capital (Mulder 2006) and the field of psychology (e.g. Kasser 2008 and 2009).

Due to the concerns mentioned above, along with the current focus on the phenomenon of peak fossil fuels and the impacts of global climate change which are now being experienced by people at large, research into the concept of non-renewable resource and ecological limits and planetary boundaries has intensified. In a seminal paper, Rockström and his colleagues (2009a and 2009b) identified nine important planetary boundaries which should not be transgressed to maintain a “safe operating space for humanity” (2009b: 1) and argue that the first three boundaries listed above may have already been transgressed. This work has inspired a great deal of further research and discussion about the nature and existence of planetary boundaries. Two of the most important conclusions arising from these are that, on the one hand, it is likely that more boundaries have already been crossed (e.g. freshwater consumption (Molina 2009) and phosphorus inputs (Sverdrup and Ragnarsdottir 2011, Carpenter and Bennett 2011) and, on the other, that global boundaries, although very important, are not sufficiently well-defined and sub-boundary and/or local boundaries need to be identified to allow for more precise analysis (Molina 2009, Bass 2009). Considerable research has also been carried out in order to assess the long-term availability of non-renewable materials<sup>5</sup>, a description of which goes beyond the scope of this paper but the common conclusion is that, as with critical Earth system processes, humanity is reaching – or has already reached – many non-renewable material resource limits. For humanity to stay within planetary boundaries a focus on increasing resource efficiency must be supplemented with

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<sup>5</sup>For a summary of literature see Ragnarsdottir et al. 2012; metals: Ragnarsdottir 2008; fossil fuels: Hopkins 2008

equal or greater emphasis on creating alternative models and levels of production and consumption. Evidence suggests that ‘contraction’ of overall levels of resource use is necessary, along with ecosystem restoration. However, as of the time of writing there are no internationally-agreed on legislative or policy instruments which require actors (at the global, national or local level) to attempt to observe planetary boundaries and/or resource limits; the difficulty of defining thresholds and apportioning responsibility for resource use or the impacts of resource use has been highlighted in relation to climate-related policymaking, and discussions of central planning approaches to resource management are not always scientific in nature.

## **2.2. The need for an ‘Equity’ approach**

Normative concerns about human development have not always been harmonised with approaches to managing resources and sustainability (Hayward 2006, Melamed et al. 2012, Raworth 2012, UNRISD 2012). Demands have become louder for the technocratic global pro-growth paradigm to be refocused into a normative approach to development and sustainability, an approach that Meadows et al. (1992: 10) call “the last and most daunting step toward sustainability”; one which “requires solutions to the pressing problems that underlie much of the psychological and cultural commitment to growth: the problems of poverty, unemployment, and unmet nonmaterial needs”.

The normative rationale for a more equitable approach towards development is clear. Although efforts are being made towards meeting the eight Millennium Development Goals for 2015, progress is mixed. A recent report by OXFAM states that “an explosion in extreme wealth and income is exacerbating inequality and hindering the world’s ability to tackle poverty” (2013: 2.) and that “the \$240 billion net income in 2012 of the richest 100 billionaires would be enough to make extreme poverty history four times over”. Similarly to other authors (e.g. Wilkinson and Pickett 2009) the report contends that the development of the last 30 years has led to a situation of wealth and income extremes which is economically inefficient, politically corrosive, socially divisive, environmentally destructive and unethical.

The following arguments have been advanced to support the proposition that a focus on the social dimension must be behind efforts to improve environmental quality, and development in general: 1) that countries with a) more equal income distribution b) greater civil liberties and political rights c) higher literacy levels and/or d) a more equal distribution of land tend to have higher environmental quality; 2) that environmental problems have disproportionately high effects on the poor (compounded by the fact that globally and nationally the poor are not the biggest polluters) – a question of environmental justice; 3) that regions with low levels of socio-economic development and environmental quality have a higher probability of turning into conflict zones which can cause associated, sometimes significant, costs outside of their immediate zone of impact; 4) that emerging sustainability policy (e.g. from the United Nations Conference on Environment and Development in 2002 and the Rio+20 Conference on Sustainable Development of 2012) stress the need for a) precautionary and b) ethically-driven approaches to sustainability (Agyeman et al. 2003, Homer-Dixon 1994, OXFAM 2013).

A ‘just’ approach to sustainability requires that environment-related responsibilities are more equitably shared by reducing individual or national shares of production or consumption-based carbon emissions, or taking equal responsibility for maintaining biocapacity. Equitable development may also be thought of in terms of ‘fair shares’ (or in terms of ‘rights to well-being’ – e.g. the right to have an ecological footprint which is broadly equivalent to the sustainable global, national or local average, or rights to social benefits derived from the consumption of resources). Hayward (2006: 1) calls for such an environmental justice approach to be enshrined into resource management regimes more generally when he states that “a just allocation of responsibilities for emissions reductions must take due account of the human rights of the worst off, but this does not entail granting them emissions rights; rather it entails a recognition of the wider ranging redistributive responsibilities of those who have already benefited from an excess of emissions for which the poor have not been responsible”.

While some initial progress has been made with quantifying planetary boundaries (see section 2.1. above) apportioning rights and responsibilities to resources through applying an ethical framework is problematic for many reasons. The concepts of Environmental Justice (Ikeme 2003), Environmental Debt (Paredis et al. 2006, Goeminne G, Paredis E. 2010, Simms 2009), Environmental Space/Resource Budgeting (Bühns 2008, Kitzes et al. 2008, Spangenberg 2002), and the Global Commons (Debarbieux and Price 2008, Ostrom 2008) have been employed to address this issue but are beyond the scope of this review. An alternative to proposals for ‘capping and sharing’ the use of certain planetary resources using various equity-based principles (see Jackson 2011, McLaren 2003) a more typical approach to fostering more equitable development is to clearly identify and implement a basic set of non-negotiable rights which are sufficient to provide a decent human existence and implement transformative policies and programmes that support the meeting of these needs. Sachs (2003) writes that equity can be envisioned as meaning ‘equal subsistence rights’, which encompasses what individuals need to develop as living beings: clean air and drinkable water, elementary health provision, adequate nourishment and clothing and a roof over one’s head. Spangenberg (2002) distinguishes a triptych of minimum human rights; a physical minimum (necessary preconditions for mere survival), a basic need minimum (which would cover crucial needs for an active and healthy life including basic social standards and a social participation minimum (the minimum needed to lead a dignified life). Similar needs-based rights are enshrined in the Universal Declaration of Human Rights (see Article 25).

These proposals are compatible with Rawls’s (1972) theory of justice which posits that each person should have an equal right to the most extensive basic liberty compatible with a similar liberty for others, and that social and economic inequalities are to be arranged so that “they are to be of the greatest benefit to the least-advantaged members of society” (the difference principle) and that “offices and positions must be open to everyone under conditions of fair equality of opportunity” (Rawls ‘Theory of Justice’, 1972: 303). A recent paper from OXFAM (Raworth 2012) suggests that it may be useful to examine the concept of not only planetary boundaries but a planetary social foundation in terms of the proportion of the population who have access to 11 basic developmental indicators (such as food security, adequate income, improved water and sanitation, health, etc.). A strong emphasis on public participation in framing sustainability is also called for.

The concept of ‘Just Sustainability’ has been proposed (Agyeman 2005) to address what has been called the ‘equity deficit’ of (environmental) sustainability. This conception of sustainable development specifies the synergetic promotion of four focal areas: 1. improving the quality of life and well-being; 2. meeting the needs of both present and future generations (intra- and intergenerational equity); 3. fostering justice and equity in terms of recognition, process, procedure and outcome; and, 4. recognising and acting on the need for society to live within ecosystem limits (‘one planet living’).

Evidence, as summarized above, indicates that equitable social development and well-being can be and need to be decoupled from resource consumption, although for this to become reality requires major changes to policy, businesses, institutions and individual behaviours. This focus on the social side of development may still allow for ‘green growth’ in developing nations while allowing for a well-being focused transformation of socio-economic structures in richer nations. Our aim in the CONVERGE project was to explore whether, and if so, in what form equity-based resource allocation regimes already exist in policy and practice, as well as to construct an analytical tool designed to illustrate how various types of initiatives and organizations are managing to address the imperatives of both living within the limits of the planet and sharing its resources more equitably.

### **3. Methodology**

The Convergence Mapping System was constructed after identifying through literature research and empirical methods communities of different sizes who appeared to be engaging in Convergence-type activities (i.e. were making attempts to address resource limits from a sink or source perspective, were addressing the issue of how Earth’s biocapacity is shared, or were promoting access to fundamental human rights). It should be emphasized that the aim of this stage of research was *not to assemble a*

*representative database of initiatives* but rather to *illustrate the diversity of existing approaches to Convergence*. As a result, apart from identifying initiatives in industrialised and industrialising regions as well as countries in transition, care was taken to include policy led (top-down) and grassroots (bottom-up) initiatives in the database.

The primary focus or theme of the initiatives was also deliberately selected for diversity - initiatives that were chosen for further analysis included those with a focus on carbon and/or global climate change-related topics, water, agriculture, food and microfinance. The nature of the activities undertaken within these initiatives was also diverse and included soil conservation, microfinance, environmental education and attempts at voluntary simplicity.

The 4 step initiative selection process initially involved creating an initial draft list of about 200 initiatives which were of interest. These (mainly environmental sustainability-themed) initiatives were suggested through a process of brainstorming by the research team and a review of general sustainability and development literature. In Round 2, data was then collected about a short-listed 51 initiatives that were selected from this larger list according to their interest to the researchers regarding Convergence related principles and diversity of approaches towards Convergence. Following this (Round 3), the dataset/number of initiatives was further reduced in size to 28 through an evaluation process with three main criteria: 1. How the initiatives addressed the issue of limits/contraction (if and how they recognised resource, ecosystem, or planetary limits in their documentation or activities and if they employed limits/contraction targets and indicators); 2. If and how they addressed equity/convergence in their documentation or activities and if they used any indicators to do this; and, 3. Their scale and potential impact. Other factors included whether initiatives represented both ‘old’ and ‘new’ Europe, industrialized and industrializing countries, the grass-roots and community (bottom-up) and the policy level (top-down). The final set of initiatives contained examples from Hungary, Iceland, India, Sweden, and the UK as well as from India, Bangladesh and the U.S.

In Round 4 of the process, detailed data about these initiatives was collected between September 2010 and July 2012 using a semi-structured survey format and a diversity of investigative techniques including field work, unstructured and semi-structured interviews and document reviews. Data was collected about Convergence elements, potential barriers and challenges to the success of the initiatives and their potential for replicability and up-scaling and other factors (location of the initiative, beneficiaries and participants, organisational structure, presence of limits/contraction and equity/convergence related features, indicators, evolution of the initiative, observations about hindering and facilitating factors and a preliminary assessment of how the initiative’s activities relate to Convergence criteria and principles, etc.). (Vadovics and Milton 2012)

The Convergence Mapping System developed to illustrate the features of these initiatives uses an ascending 5 item scale which can be used to quantify activity in the areas of ‘limits/boundaries/contraction’ and ‘equity/convergence’. The 5 item scale for ‘equity/convergence’ borrowed on work by Agyeman about ‘just sustainability’ (2005) as well as work by Roderick and Jones (2008). The equity/limits scale was created based on our own earlier work (Vadovics 2009) and following a literature review process. The more active an initiative the higher the score awarded to it (e.g. if an initiative explicitly recognised planetary boundaries or specific resource limits in its documentation, was working towards meeting those limits and using indicators to evaluate progress it was awarded the highest score on the ‘limits’ scale). Using the scores for the initiatives for both scales, an initiative could be mapped on a 2 dimensional space. This process was repeated for all 28 initiatives. Initiative appraisals are necessarily somewhat subjective but nonetheless illustrative. The scales used in the mapping system are provided in the Appendices.

#### **4. Results and Discussion**

It should be re-emphasised here that the aim of this research was not to assemble and analyse a representative database of initiatives, but to illustrate the **diversity of existing approaches to Convergence**. Thus, apart from identifying initiatives in industrialised and industrialising regions as well as countries in transition, the initiatives selected are very different in terms of their goals, size,

administrative structure, beneficiaries and participants and ages. Some of the 28 initiatives examined in the project had as their goal reducing the use of resources; others had a focus on promoting equity. Some address both issues simultaneously and are therefore good examples of coupling of contraction (reduction in resource use and respecting planetary limits) and convergence (promotion of equity) processes. (Vadovics and Milton 2012)

Even though the initiatives researched show great diversity, as can be seen in the Initiative Map included in the Appendices, they can be clearly located in the top right hand quadrant of Figure 1 by using the 2 scales, and thus help to understand the concepts as well as practice of Convergence. Below, we introduce five initiatives in some detail, highlighting their equity/convergence and limits/contraction elements. Figure 3 shows where they are located on the Convergence Map.

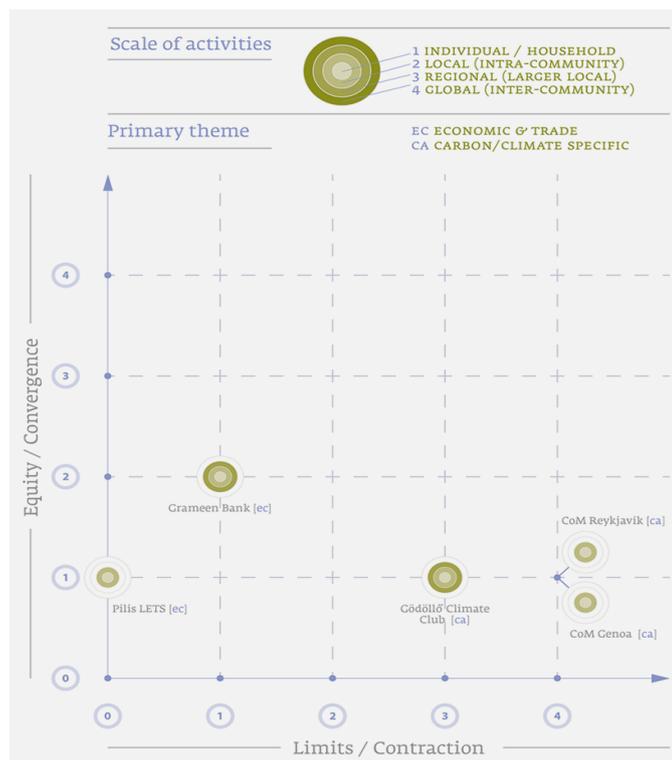


Figure 3: The Convergence Map of the initiatives introduced in the paper

#### 4.1. The Gödöllő Climate Club<sup>6</sup>

The Gödöllő Climate Club is a small, voluntary, grassroots group initiated in 2009 by GreenDependent Association in the town of Gödöllő in Hungary, with the primary goal of reducing the carbon footprint of its members. The club was initiated as a pilot project within an EU FP7 research project called Changing Behaviour which investigated how to induce long-term behaviour change related to energy use. The pilot project was successful as the club has met ever since, attracting an increasing number of people.

The Gödöllő Climate Club meets monthly and members discuss climate change and energy-related issues, ideas and concerns in an informal setting. Club members keep track of their consumption and emissions with the help of a carbon calculator developed by GreenDependent which was tested by club members. They also calculate the footprints of club events and occasionally plant fruit trees in a local community garden to offset the emissions. The Club also organizes community events like seed swaps, earth day programmes, etc.

<sup>6</sup> Each of the initiatives are introduced in more details in Vadovics and Milton (2012) available from <http://www.convergenceproject.org/equityandlimitsebook> (last accessed April 2013)

More recently, club members have decided to become more active in the local community in order to raise awareness of what they do, attract more members, and motivate community level change towards more climate-friendly living.

#### **4.1.1. Convergence elements**

The primary aim of the initiative is to *contract* or reduce the carbon footprint of the climate club members. However, members also support each other in reducing one another's footprints, sharing skills and knowledge in lower carbon living and promoting awareness and practical action in the wider community through organizing and participating in community events in the town of Gödöllő in Hungary. For the time being no specific contraction targets have been defined.

Reducing carbon footprints is not only about reducing one's own impact but also about sharing the resources available to humanity with others, both at the local and global level. As Gödöllő, the home town of the club, has a twin town in Indonesia, some of the club members have the more long-term goal of establishing a link with the community there.

Convergence in the club is also happening in terms of collecting and sharing information, and exchanging certain goods and services (e.g. plants and seeds; car-sharing between members). Decisions are made in a participatory way, taking into account everyone's opinions and ideas

#### **4.2. Covenant of Mayors (CoM), the cities of Genoa and Reykjavik**

In 2008 the EU Climate and Energy Package was accepted and the European Commission launched the CoM "*to endorse and support the efforts deployed by local authorities in the implementation of sustainable energy policies*".<sup>7</sup> Municipalities must play a key role in mitigating carbon emissions - it is estimated that 80% of Europe's energy consumption and CO<sub>2</sub> emissions are associated with urban activity<sup>8</sup>. CoM signatories are required to create adequate administrative structures for making municipal carbon reductions, undertake a Baseline Emission Inventory (of energy consumption and CO<sub>2</sub> emissions) and present, implement and monitor results of the city SEAP (Sustainable Energy Action Plan). Genoa joined the CoM programme in 2009, and Reykjavik in 2011, and both have officially accepted and published SEAPs.

#### **4.2.1. Convergence elements**

As signatories to the CoM, the municipalities of Genoa and Reykjavik explicitly recognise limits and goals in line with the 2007 unilateral commitment by the EU to cut Europe's emissions by at least 20% of 1990 levels by 2020 to attempt to limit climate-change induced global average temperature rises to max. 2°C. They both prepared an inventory of current energy use and CO<sub>2</sub> emissions and have defined their own programmes, goals, indicators and quantitative targets for reducing urban emissions and have pledged to report on progress.

The literature on and programmes of these initiatives do not explicitly refer to equity or social justice. However, there is some focus on procedures for increasing stakeholder involvement in the sub projects of the Genoa CoM: it recognises that reducing "*emissions will be achievable only if local stakeholders, citizens and their groupings share responsibility*" thereby "*allowing citizens to benefit directly from the opportunities and advantages offered by a more intelligent use of energy...*".<sup>9</sup> One of the 7 primary themes of the Reykjavik SEAP is awareness-raising activities; city employees and schoolchildren are specified as being targets. In this sense, the rights of Reykjavik's citizens are being considered procedurally in terms of consultation, transparency and accountability of the SEAP implementation process and substantively in terms of the benefits of infrastructural and energy-related improvements to the city. Very similar elements are found in the Reykjavik CoM.

#### **4.3. Grameen Bank**

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<sup>7</sup> [http://www.eumayors.eu/about/covenant-of-mayors\\_en.html](http://www.eumayors.eu/about/covenant-of-mayors_en.html) (last accessed July 2012)

<sup>8</sup> [http://www.eumayors.eu/index\\_en.html](http://www.eumayors.eu/index_en.html) (last accessed May 2012)

<sup>9</sup> [http://www.eumayors.eu/about/signatories\\_en.html?city\\_id=1842&seap](http://www.eumayors.eu/about/signatories_en.html?city_id=1842&seap) (last accessed June 2012)

The Bangladeshi-based Grameen Bank is a microfinance and community development organisation (established as a bank in 1983) set up to target the rural poor – it was founded with the primary goal of alleviating poverty through providing micro loans to individuals excluded from using traditional banking services. The initiative was originally started by Muhammad Yunus who lent his own personal money to poor householders in the rural Bangladeshi village of Jobra in 1976.

Grameen bank provides zero collateral micro-loans to the low-income demographic, primarily rural Bangladeshis (usually women – who make up 97% of the current loan portfolio). Loans are typically in the order of 100-1000 Taki (a few dollars to tens of dollars) and lenders are supported through peer pressure to abide by the principles of solidarity lending and a set of values known as the 16 Decisions<sup>10</sup> (which include prescriptions about environmental protection and promoting social justice).

#### **4.3.1. Convergence elements**

The primary aim of the initiative is socio-economic empowerment. Escaping from poverty may mean that the ecological footprints of Grameen borrowers increase rather than decrease. It is understood that *'equity within planetary limits'* requires a decrease in the environmental footprints of some citizens but corresponding growth in others. The literature of the initiative does not specifically refer to ecosystem limits but the 16 Decisions which each Grameen borrower pledges to abide by do cover environment-related issues (such as limiting family size, keeping the environment clean and the use of disease-limiting sanitation facilities).

Although intra and intergenerational equity are not specifically referred to in the initiative literature, Grameen has equity/convergence at its heart, seeing credit *"as a human right"*. The initiative explicitly seeks to empower the low income fraction of the population it works with according to the principles and practice of social justice. The principle of social justice is also embedded horizontally through the initiative in the 16 Decisions, where borrowers pledge to work with each other in a democratic and ethical manner towards common goals.

#### **4.4. Pilis Local Exchange and Trading System (LETS)**

The Pilis LETS is a self-established informal community which is designed to connect locals who have certain needs with other locals who have the knowledge/time/capacity to carry out the work/provide the product or service to satisfy these needs.

The most important aim of the Pilis LETS is to increase local resilience – especially economic and social – and the self-sufficiency of the local community in response to global challenges such as the economic downturn and a scarcity of resources - most importantly food, land and fossil fuel. As under the current socio-economic system those who do not have money cannot survive and prosper, the Pilis LETS offers to those who have skills, talents and diligence but a lack of money a chance to participate, as well as contribute to the well-being of their communities.

#### **4.4.1. Convergence elements**

The Pilis LETS is not primarily about motivating individuals and communities to observe planetary and resource limits and/or to lower ecological footprints. There is no mention of ecosystem or planetary limits in their core mission statement or in their prominent, contemporary published materials, even though the establishment of the initiative was partly motivated by global resource scarcity challenges.

Furthermore, in this system one can easily "buy" products and/or services that could be considered surplus to the basic demands of daily living. There are no explicit requirements about the quality, environmental-friendliness, healthiness, etc. of offered services and goods – the main provisions are simply that they are local and offered by members of the local community.

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<sup>10</sup> [http://www.grameen-info.org/index.php?option=com\\_content&task=view&id=22&Itemid=109](http://www.grameen-info.org/index.php?option=com_content&task=view&id=22&Itemid=109) (last accessed April 2013)

Local currency initiatives can contribute to increasing social equity and to encouraging fairer trade to a great extent. They can also help strengthen the local economy and the social capital which exists in the community. Although there is no mention of equity or justice in the core mission statement of Pilis LETS, promoting equity and providing more equal opportunities (employment, easier access to goods and services) for all are the focus of activity. Through encouraging and actively promoting local self-sufficiency in providing food as well as education and social services, the initiative helps create a more sustainable and resilient local community.

It is not intended that the results of the initiative mapping can be used for ranking the initiatives using the ‘scores’ awarded them; they are rather given for **descriptive purposes** – to illustrate where a certain initiative stands in relation to its limits/contraction and equity/convergence activities at a certain point in time. Apart from being used for descriptive purposes, the results of mapping could also be used **to identify and evaluate different developmental paths** for an initiative. Indeed, the mapping system could be used as a self-assessment tool for assisting initiatives as well as organizations to see where they stand in relation to addressing the issues of limits/contraction and equity/convergence, and how they could move forward (see Table 1 which contains examples of the initiatives introduced above).

<b>Initiative name</b>	<b>Action required to strengthen limits/contraction elements</b>	<b>Action required to more strengthen equity/convergence elements</b>
<b>Gödöllő Climate Club</b>	Attempt where possible to use best available science for formulating targets and indicators.	Incorporate explicit references to the need for inter and intra-generational equity into initiative documents and activities. Review activities in the light of incorporating equity/convergence-related features into activities.
<b>CoM Cities, Genoa and Reykjavík</b>	Consider how to make the pre-existing ‘contraction’ elements more relevant and effective at an individual/local level (e.g. by defining carbon targets for local government employees’ offices, districts or vehicle fleets).	As a first step, analyse the equity/convergence related challenges these initiatives face. Identify how to leverage contraction efforts for maximum gains in equity. Incorporate and publicise explicit references to the need for inter and intra-generational equity in initiative documents.
<b>Grameen Bank</b>	Recognize explicitly how limits are relevant for the Bank and its activities. Formulate or incorporate relevant resource-related targets and indicators to strategic documents – where possible selected based on best available science.	Explicitly provide reference to promoting ‘justice’ and ‘equity’ in core initiative documents. Investigate how concepts of Environmental Justice are relevant to financing activities.
<b>Pilis LETS</b>	As a first step, consider how planetary and resource limits are relevant to the initiative, then recognize them explicitly and finally, attempt to define (or discuss as a group) relevant targets and indicators (e.g. at an individual/local level).	Refer to ‘justice’ and ‘equity’ explicitly in core initiative documents. Consider how to incorporate a stronger ethical component into the initiative (e.g. offer free services/discounts to disadvantaged members).

Table 1: Examples of how the initiatives introduced in the paper could move in a more strongly Convergence direction

## 5. Conclusions and closing thoughts

In our database of 28 initiatives, there are 5 that score high on both scales (please refer to the Initiative Map in the Appendices). The Converging World helps provide community-owned renewable energy, the Ombudsman for Future Generations was a well-resourced part of the policy-making apparatus of the Hungarian state until recent times, responsible for representing/advocating for environmental justice, while Whistler 2020 is a community-developed and implemented sustainability planning

approach for a small resort in Canada. Navdanya, meanwhile, promotes supports alternatives to mainstream, corporate agricultural practices in various ways, primarily in India. Finally, SCAD, in their kitchen gardens initiatives helps communities to satisfy their needs in an environmentally sustainable way through the establishment of organic kitchen gardens and the planting of fruit trees, both with the involvement of the local community.

These initiatives, and those introduced above, are significantly different from each other in size, scope of activities, sources of funding and governance. They are each utilising different mechanisms to foster equality and justice but are all in some way explicitly working towards creating a 'fairer' world and are making a concerted and documented effort to promote members' own ideas about what is ethically 'the right thing to do' concerning how natural resources are managed.

The 'right thing to do' is interpreted to be the normative element of Convergence at the initiative scale, which relates to promoting social justice and equity. This could be identified in the activities and processes of the initiatives studied in the following forms:

- Attempts to more equally share the benefits of the consumption of resources in terms of access to the resources themselves or the services they provide. This may include the existence of a specific redistribution tool (for example, The Converging World's provision of (renewable) energy to rural Indians from donations/carbon offsetting in industrialized countries), or Navdanya's very successful non-profit work promoting greater food security and food sovereignty for Indian farmers.
- Attempts to shoulder the costs of resource use or invest extra in order to uphold the principles of social justice and equality (sometimes known as 'burden-sharing'). For example, Gödöllő's community-based Climate Club members meet regularly to discuss and implement action to reduce member's carbon footprints.
- A high level of participation in decision-making about community values, infrastructural investments and activities (i.e. procedural, rather than substantive/distributional justice). For example, the town of Whistler's stakeholder-based sustainability-visioning process. Increasing stakeholder representation (e.g. legal support and advocacy of citizen's environmental rights such as that provided by the Ombudsman for Future Generations in Hungary) can also be included in this category.

In practice, the processes and activities of initiatives are often complex and can include a variety of these 'convergence' elements.

Further research is needed with a specific focus on cross-fertilization between limits/contraction and equity/convergence to determine how it occurs and how it can be facilitated, as well as to identify more examples which explicitly focus on both of these aspects of sustainability.

Facilitating cross-fertilization and a more holistic approach towards sustainability is especially important in the light of recent literature which calls for more integration between the social and environmental aspects of sustainability. As aptly concluded by Kate Raworth: "*Humanity's challenge in the 21st century is to eradicate poverty and achieve prosperity for all within the means of the planet's limited natural resources.* (2012: 6)

It is our hope that the mapping system introduced here can contribute to achieving this aim in various ways. It can be used as an engagement or self-assessment tool to discuss the positioning of different Environment and Development initiatives as well as organizations to help them reflect on their own efforts and commitment. The mapping system can also be employed to find ways in which they could be developed to better promote the observance of limits/contraction and equity/convergence. The approach does not claim to produce answers as to how different positions and organisations might cooperate - in order to assist joined-up thinking and action - as these will need to be highly specific and contextualised. The wider Convergence toolkit will contain systems approaches to assist with joint problem analysis and decision making. (Parker 2013, Vadovics and Milton 2012)

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## APPENDICES

### A. Scales Used in the Convergence Mapping System

#### 1.1. Limits/Contraction

-1	<b>Mention of</b> resource, ecosystem or planetary limits or boundaries in core mission statement or in prominent, contemporary textual, or programmatic material <b>BUT no obvious mechanism for, or attempts to,</b> reduce consumption of resources or reduce pollution. Initiative activities may even contribute to increases in resource consumption/pollution.
0	<b>No mention</b> of resource, ecosystem or planetary limits or boundaries in core mission statement or in prominent, contemporary textual or programmatic material. The initiative's main goals are not related to reducing consumption of resources or of reducing pollution in any obvious way.
1	<b>Implicit.</b> No explicit mention of resource, ecosystem or planetary limits or boundaries in mission statement. May have limited mentions of limits and resource issues in associated prominent, contemporary textual, policy or programmatic material. However, despite the lack of formal references to limits, the initiative is involved in activities to reduce resource consumption and/or decrease pollution.
2	<b>Explicit.</b> Resource, ecosystem or planetary limits or boundaries are mentioned in core mission statement or/and in prominent, contemporary textual or programmatic material and the initiative is clearly engaged in attempts to reduce consumption and/or reduce pollution. Specific quantitative reduction targets or goals may or may not be defined.
3	<b>Explicit + Targets/Indicators.</b> Core mission statement/prominent, contemporary textual or programmatic material relates to resource, ecosystem or planetary limits or boundaries and reducing consumption. Specific limits are identified and/or specific contraction targets are detailed. There are transparent and accountable methods for contracting resource use and tracking results (e.g. use of indicators).
4	<b>Explicit + Targets that are defined based on available (scientific) information</b> about resource, ecosystem or planetary limits or boundaries. Clear efforts are being made to connect limits-related science with practice. Transparent and accountable methods for contracting resource use and tracking the results (e.g. use of indicators) are in place.

#### 1.2. Equity/Convergence

-1	<b>Mention of</b> 'equity' or 'justice' in core mission statement or in prominent, contemporary textual, or programmatic material <b>BUT no indication of activities</b> relating to promoting equity or justice. Initiative activities may even contribute to increasing inequality/hindering justice.
0	<b>No mention of</b> 'equity' or 'justice' in core mission statement or in prominent, contemporary textual, or programmatic material. No evidence of an equity/justice/re-distributional focus to the initiative's activities.
1	<b>Implicit.</b> No explicit mention of 'equity' or 'justice' in core mission statement or in prominent, contemporary textual, or programmatic material. The initiative's activities involve attempts to address the issue of justice/equity.
2	No mention of 'equity' or 'justice' in core mission statement. <b>Limited mention</b> (once or twice) in prominent, contemporary textual, or programmatic material. The initiative's activities involve attempts to address the issue of justice/equity.
3	'Equity' or 'justice' <b>mentioned and reference given to either intergenerational or intragenerational equity</b> in core mission statement. Limited mention (once or twice) in prominent, contemporary textual, or programmatic material. The initiative's activities have a focus on addressing the issue of justice/equity.
4	<b>Core mission statement relates to both intra- and intergenerational equity and justice</b> and/or 'justice' and 'equity' occur in same sentence in prominent, contemporary textual, or programmatic material. The initiative's activities have a focus on the issue of justice/equity.

## B. The Initiatives Map

# Initiatives Map

Scale of activities



Primary theme

AC	AGRICULTURE, LAND & FOOD	FA	FAITH
CA	CARBON/CLIMATE SPECIFIC	FU	FUTURE GENERATIONS
CO	CONSUMPTION	IN	INDUSTRIAL & TECHNOLOGICAL
EC	ECONOMIC & TRADE	OT	OTHER
ED	EDUCATIONAL	UR	URBAN

