RESEARCH
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INITIATIVES

Potential of Community-based Sustainability Initiatives to Mitigate Climate Change - Results from TESS

About the TESS project

TESS (Towards European Societal Sustainability) is a European research project exploring the role of community-based initiatives (CBIs) in creating a sustainable, low-carbon Europe. The project is grounded in a diversity of disciplines, analytical approaches and methods. It brings together natural and social scientists, employs qualitative and quantitative methodologies, and develops tools for understanding the environmental, social, political, economic and innovation impacts of CBIs in the field of sustainability.

In this project CBIs are defined as initiatives aiming to serve the environmental and social sustainability needs and interests of (mostly) place-based communities. They may operate for profit or not. The results presented in this brief draw from a survey of 63 such CBIs in Finland, Germany, Italy, Romania, Scotland, and Spain.

These initiatives work in a wide range of sectors: producing and distributing organic food, recuperating food waste, recycling and reusing materials, promoting sustainable transportation, generating and distributing renewable energy and establishing adequate administrative frameworks or infrastructure in their surroundings.

Developing a method to quantify CBIs' emission reductions

Many of the existing CBIs across Europe are already delivering key services in the food, energy, transport and waste processing domain and are simultaneously reducing greenhouse gas (GHG) emissions. However, a systematic and quantitative assessment of their climate change mitigation potential across a wide range of sectors was previously missing.

Considering the limited amount of GHG-relevant data typically documented by CBIs, a novel and simplified method was developed that compares the goods and services produced by the different initiatives' activities against a baseline scenario. It depicts how the production of these same goods and services would have been achieved in their absence. As a result, the method does not provide the total emissions caused by a specific initiative, but rather an estimate of the avoided GHG emissions compared to a baseline scenario for each activity, accounting for an average person's consumption behaviour in each country. For example, if an initiative is engaged in the production of local, organic produce, the difference in GHG emissions that are emitted between organic and conventional agricultural production systems is calculated (see Figure 1).

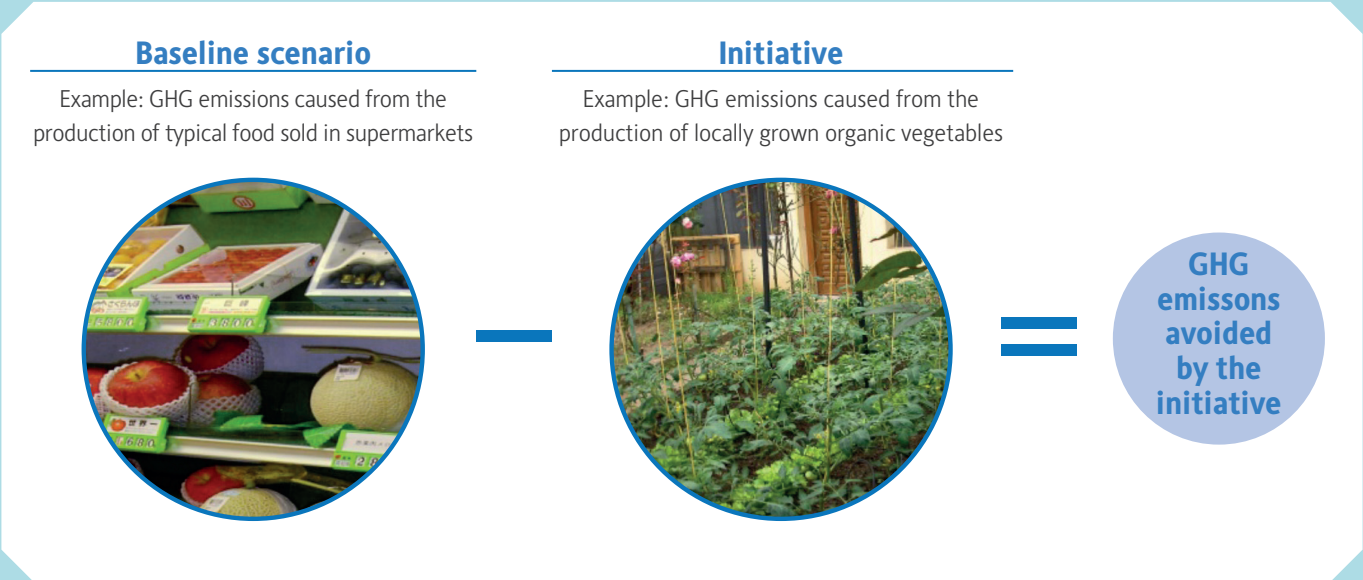

Figure 1: Rationale behind the assessment: Comparison of a project activity with a baseline scenario, for example the activity "Growing organic food"

Results and Policy Implications

Results are based on the total GHG reductions compared to the specific baseline scenario and on the total reductions expressed as a fraction of the beneficiary's carbon footprint. The latter indicator answers the question "to what extent is the average citizen's carbon footprint reduced if he or she were a beneficiary of a specific CBI"?

Based on these two indicators, the activities that show the highest GHG mitigation potential are initiatives engaged in the activities of heat and electricity generation, personal transport and provision of vegetarian or vegan meals.

Although the emissions reduced in the energy domain vary depending on the specific heat and electricity mix of the countries considered, large overall reductions are observed across all of the initiatives engaged in these activities.

For example, providing electricity from renewable energy sources can reduce the carbon footprint of the CBIs´ beneficiaries by a quarter. By supporting more sustainable means of personal transport (e.g. cycling) high reductions per beneficiary are also possible (around 11%).

Under current conditions, the use of electric vehicles powered through the national electricity-mix does not reduce GHG emissions in countries with a GHG-intensive electricity mix. However, this is expected to change as the share of renewable energies present in different countries' national mix increases in future. An increase in sustainable transport requires the provision of infrastructure, e.g. for cycling or for electrical vehicles, which may need further public support.

For the food domain TESS results suggest that what you eat is much more relevant than how it is produced: by consuming vegan and vegetarian meals, beneficiaries of the analysed CBIs can reduce their GHG footprint by around 7%. Also, the redistribution of still-edible food from supermarkets has a large relevance for climate mitigation. The potential of initiatives engaged in providing locally-produced organic food is far lower when compared to initiatives engaged in providing meals with less animal products. However, many CBIs are often more centred on other aims such as building a community or reconnecting with nature within an urban environment, rather than climate change mitigation.

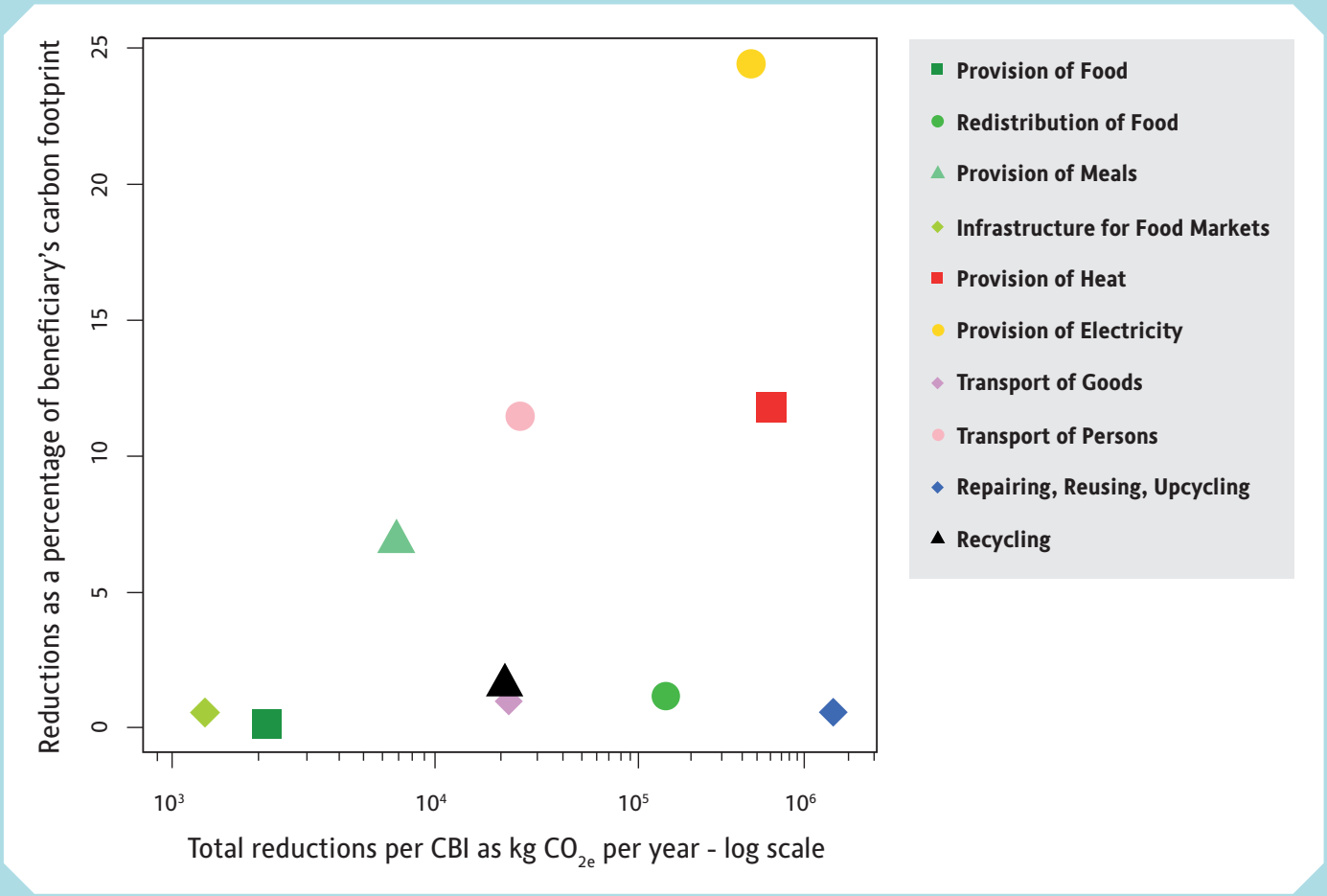

Figure 2: Absolute emissions reductions and reductions as a percentage of the beneficiaries' carbon footprint achieved through different activities of CBIs

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Contribution of CBIs to the low-carbon transition

Although the GHG reductions achieved by the selected CBIs vary considerably across activities, overall the results show a large potential for climate change mitigation from this type of community-based initiatives. If 5% of European citizens engaged as beneficiaries of CBIs similar to the ones sampled, almost 85% of the EU-28 countries would meet the target of reducing GHG emissions by 20% by 2020 (considering the food/agriculture, waste, energy and transport domains).

However, many of the quantified sustainability activities may incur in the so-called "rebound effects" from changes in beneficiaries' behaviour, which has the potential to partially or totally offset the quantified emission reductions. For example, beneficiaries achieving financial savings could increase their consumption of other more resource intensive goods. Such effects have not been included in the analysis, since they require an analysis of the consumption behaviours of the beneficiaries, which is beyond the scope of the CBIs themselves.

In contrast to the negative impact of the "rebound effect", many of the considered activities may lead indirectly to larger environmental impacts than would be expected. For example, raising awareness of the climate implications of personal diets may induce a behaviour shift. This would exceed the direct emission reductions achieved by preparing vegetarian meals which were quantified for CBIs. Further research could investigate these links between CBIs' sustainability activities and their beneficiaries' individual behaviour. Examining these indirect effects would help to complete the picture of how CBIs influence both society and individuals in terms of sustainability and how to maximise their impacts.

Online tool Track-It!

The methods developed for the TESS project have been translated into an online tool – Track-It! – which allows CBIs engaged in similar activities to those described above to estimate the GHG emissions avoided through their work. The tool may be accessed via the website ***http://www.sustainable-communities.eu/track-it/***

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Where do you find more information?

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