

# European Community Land Trust Network

Title: Action 1. Social and environmental sustainability of CLTs

Date: 11 July 2022

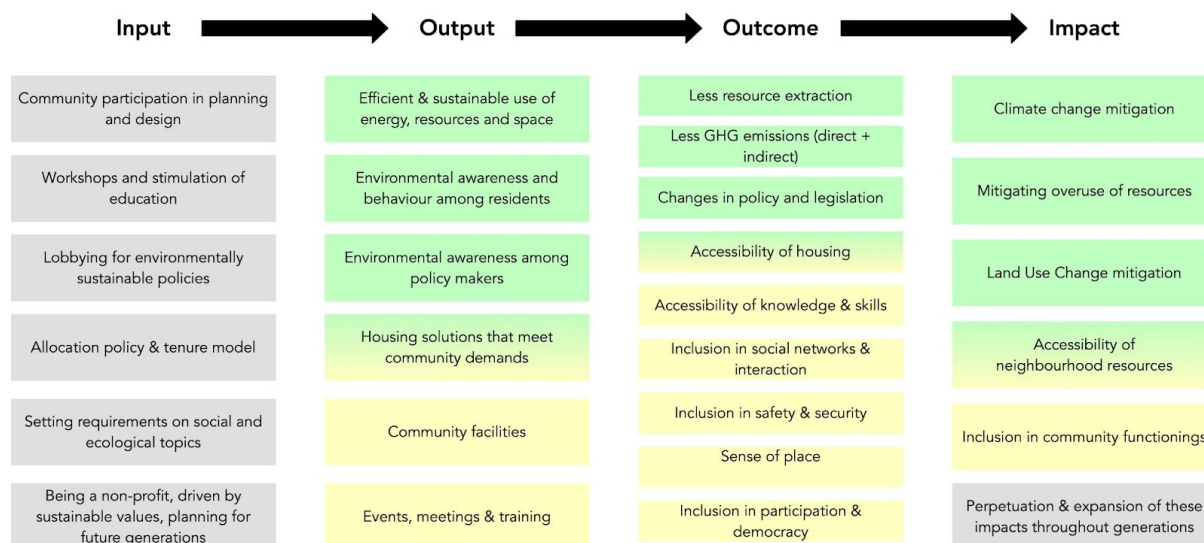


## Executive Summary

- Most of the environmental impact of CLTs happens in the use phase and **builds up in perpetuity**
- CLTs make social and environmental impact because they **include communities in the planning and design**
- CLTs set up **workshops for sustainable skills/behaviour**, lobby local authorities for **environmental policy** and set **high social and environmental requirements**
- 89% of surveyed CLTs have **sustainably designed buildings**
- Surveyed CLTs witness **increased environmental awareness** among residents (64%) and among policy makers (82%)
- The majority of all surveyed CLTs produce **less resource extraction** (71%), **less greenhouse gas emissions** (75%), **enhanced biodiversity** (61%), **more efficient land use** (75%), **stimulation of sustainable innovation** (82%) and **political awareness and support for environmental sustainability** (86%)

Community Land Trusts have recently been gaining interest in European countries, apart from England, where they have been prevalent for longer. While CLTs provide clear benefits in terms of affordability, this new interest also spreads to the further benefits in terms of social and environmental sustainability. The aim of this research was to gain insights into this topic, by identifying the ways in which CLTs (can potentially) achieve social and environmental sustainability. To do so, literature reviews, interviews, workshops with CLT practitioners, expert panel sessions and a survey have been conducted, providing qualitative and quantitative information on an under-researched topic.

To provide a format and framework for understanding sustainability and specifically impact, we chose to use a logic model. This model describes how certain activities and resources (inputs) lead to certain outputs (what is produced?). These outputs lead to outcomes (what changes derive from the outputs?) and ultimately impacts. This framework allowed us to structurally gather the inputs, outputs, outcomes and impacts of a CLT, while also identifying the relationships between them (which are often intertwined and complex). The inputs show which inherent CLT characteristics lead to impact, the outputs explain what happens exactly, the outputs can be measured in common impact measurement methods and the impact can easily be communicated to the world. We simplified the final result in order to make the model comprehensible, which resulted in the figure displayed below.



As any other schematic model, this logic model fails to represent the complex reality of sustainability that is created through CLTs. For example, the symbiotic relationships between social and environmental impacts can not be seen in this visualisation, just as the fact that the impact of a CLT increases over time as generations pass, because affordability and community development increases and earnings get reinvested in the community and in other CLTs.

Because the logic model only provides a broad overview, we have selected some key pathways that we found are the most important contributors to impact: 2 pathways for social and 2 for environmental sustainability. Additionally, the research findings led to the identification of several opportunities that can enhance the sustainability of CLTs. An overview of the key pathways and opportunities follows below.

### Key pathways for ecological impact

- Shared resources and shared spaces
  - In CLTs resources and/or spaces are often shared, leading to savings in energy use, raw material use, greenhouse gas emissions and land use change. Examples are the sharing of washing machines, tools, bikes, gardening facilities, a kitchen, common space, guest room, heating system or renewable energy production system (e.g. solar).
- The inclusion of future residents and community from the design and planning stage onwards
  - Future residents and community members often include wishes for a green environment, low-impact project, low energy consumption (due to costs) and shared spaces (due to cost & space). The inclusion process often leads to the repurposing of derelict buildings, reducing the need of raw materials for construction and provision of new infrastructure, while often also reducing residents' travel needs. Additionally, this process counters NIMBYism.

### **Key pathways for social impact**

- Accessibility of neighbourhood resources
  - Through the characteristics that are inherent in a CLT, housing, knowledge and skills become more accessible according to residents
- Inclusion in community functionings
  - CLTs improve residents' inclusion in social network & interaction, safety & security, sense of place and also slightly in participation & democracy

### **Opportunities**

Some opportunities have been identified to further enhance the impact of CLTs

- Utilise the forming of community and stewardship to stimulate environmental awareness and behaviour. This could also be done through design, for example assisting in recycling behaviour
- Encourage environmental behaviour and skills through workshops and education. Some examples include teaching about how to live energy efficiently, how to garden, how to maintain the building, repair clothes/furniture/appliances or how to ride a bicycle
- Facilitate financing mechanisms for investments with long-term returns. This would alleviate the trade-off between sustainable and affordable construction mechanisms (materials, circularity, energy production). It would also enable co-ownership and shared use of common resources such as tools, bicycles, washing machines or whole spaces.
- Stimulate open building design to encourage a sense of safety and community and stimulate the use of common areas in design
- Include options for buying houses alongside renting as well
- Focus the allocation policy on engagement with the neighbourhood
- Facilitate connections among the community (utilise online communication tools, community spaces and meetings with members)

# Table of contents

<b>Executive Summary</b>	<b>2</b>
<b>Table of contents</b>	<b>5</b>
<b>Introduction</b>	<b>7</b>
<b>Research approach and methodology</b>	<b>7</b>
Social sustainability approach	8
Environmental sustainability approach	8
<b>Findings from workshops and survey</b>	<b>9</b>
Findings on social sustainability	9
Findings on environmental sustainability	12
<b>Measuring and monitoring social and environmental sustainability</b>	<b>14</b>
Impact investment relies on measurable impact goals at the outcome level	15
Impact analysis	15
Role of the European CLT network	17
<b>A framework for social and environmental sustainability in CLTs</b>	<b>18</b>
A CLT impact model	18
Key pathways for social sustainability	19
Addition of needed vital resources	20
Setting up fitting CLT frameworks	20
(Co-)Design for interaction	20
Enabling a social network	21
Key pathways for environmental sustainability	21
Shared resources and shared spaces	21
The inclusion of future residents and community from the design and planning stage onwards	21
Environmental awareness and behavioural change	22
Workshops and education	22
<b>Conclusions</b>	<b>23</b>
<b>APPENDIX A. Literature review</b>	<b>26</b>
CLTs & social sustainability	27
CLTs & environmental sustainability	28
<b>APPENDIX B. Defining social &amp; environmental sustainability in the built environment</b>	<b>33</b>
<b>APPENDIX C. Notes on scope 1,2,3 emissions</b>	<b>34</b>
<b>APPENDIX D. Survey results</b>	<b>35</b>

<b>APPENDIX E. Example impact plan</b>	<b>37</b>
<b>APPENDIX F. Detailed logic model</b>	<b>39</b>

# 1. Introduction

Community Land Trusts traditionally focus on affordable housing and on alleviating social issues, both in urban and rural contexts. CLTs have demonstrated their added value across the world by securing affordable housing, building local capacity, and fostering social sustainability through their organisational frameworks and additional resources that they are able to supply.

However, intrinsic to CLTs are certain principles and characteristics that make them particularly effective in addressing issues of environmental sustainability as well, as we see reflected in various projects in Europe, from promoting passive housing (e.g. Closeburn Passivhouse Project in Scotland and l'Espoir in Brussels), to shared mobility and much more. These principles include stewardship, anti-speculation, focus on affordability, community-based development. We will elaborate on these principles and why they matter later on in this report.

With the increased emphasis on social and environmental sustainability, on a local, regional, and transnational level, an opportunity arises for CLTs to become drivers for enduring social change and address the climate crisis. However, how social and environmental sustainability can be effectively integrated in CLT developments, and how it can or should be measured and monitored, is not well understood. A better understanding of it would enable CLTs to learn from each other and to increase their collective impact, as well as to convince key stakeholders such as authorities, investors, and others.

The goal of this action is to assess how CLTs contribute to social and environmental sustainability of CLTs and to come up with a framework that provides a coherent picture of how this happens. Such a framework can be used to support CLT enabling organisations to facilitate CLT initiatives, to attract additional funding, and to be able to create an impact measurement instrument that monitors social and environmental sustainability.

## 2. Research approach and methodology

In order to understand the impact of CLTs on social and environmental sustainability, the following research question was established:

*How do Community Land Trusts impact environmental and social sustainability of a neighbourhood?*

Contributing to this question there are three sub-questions:

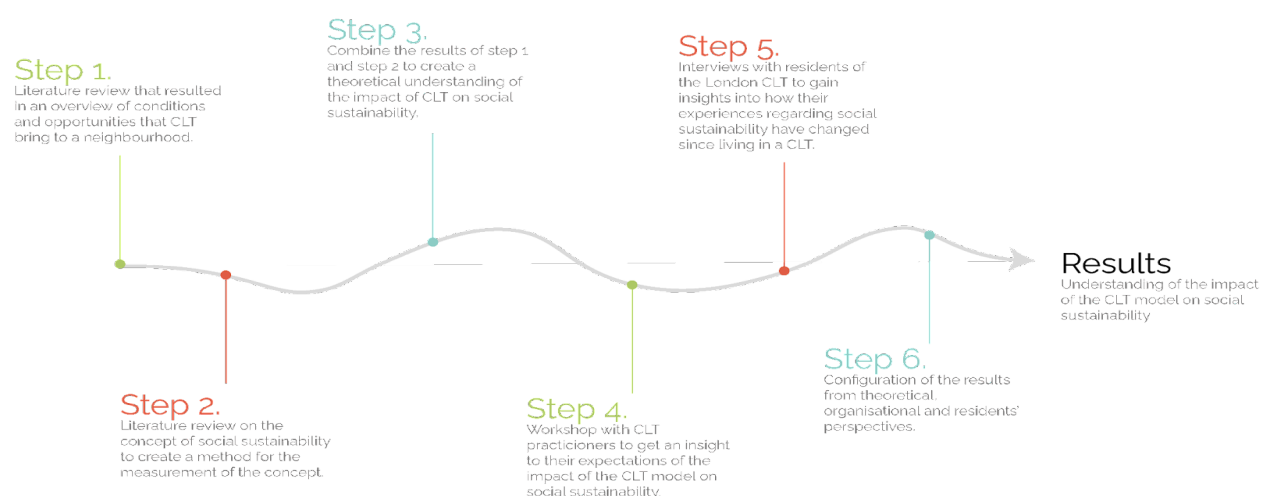
1. How does a CLT impact the social sustainability of a neighbourhood?
2. How does a CLT impact environmental sustainability?
3. Through which framework can the impact of a CLT on social and environmental sustainability be understood and measured?

Social and environmental sustainability are different, but often interrelated, concepts. An exploration into how we define social and environmental sustainability in the built environment can be found in Appendix B. In this research the social and environmental elements were addressed in parallel to one another, and results were compared, aligned for internal consistency, and where appropriate, combined.

### Social sustainability approach

The aim of the research on social sustainability was to gain an understanding of the level and manner CLTs can make an impact on the multifaceted concept of social sustainability from three different perspectives. The first perspective on the impact of CLT was theoretical. For this perspective a literature review was conducted to gain insights into the workings of the CLT model and to generate a measurement tool for social sustainability. Secondly, the perspective of organisations was constructed through a workshop with CLT practitioners. Lastly, the third perspective reviewed the impact of CLT on social sustainability through the experience of CLT residents. This was achieved by conducting a single-case study of the London CLT at their St Clements location in East London.

The results of each perspective were then brought together in a final theory on the impact of CLTs on social sustainability and for this report translated into a logic model, as displayed in the step by step depiction of the methodology in the figure below.



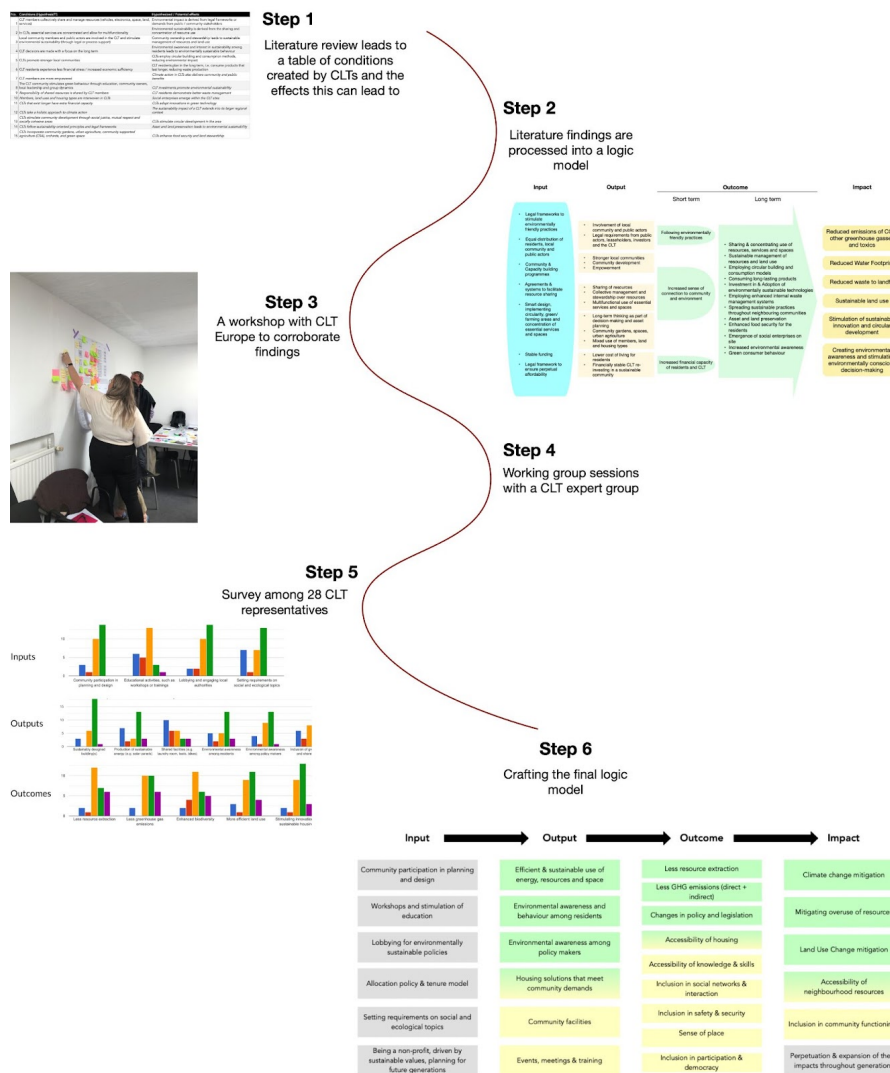
### Environmental sustainability approach

The aim of this strand of the research was to understand in what ways CLTs can contribute to environmental sustainability. It includes a literature review that explores (environmental) sustainability in relation to community-led housing and CLTs specifically, as well as more broadly to literature on commons in the built environment. We emphasised environmental sustainability beyond the design and build phase. Additionally, we looked at existing frameworks and methodologies used in the real estate sector to assess, monitor, and manage its impact.



The literature research has resulted in a first theoretical or conceptual framework that outlines various characteristics of CLTs in relation to sustainability. This framework was subsequently tested, validated, and improved by experts as well as CLT practitioners.

The development of the final model for environmental sustainability is visually represented in the figure below.



## 4. Findings from workshops and survey

Here we present a summary of the findings. Supporting data and other relevant information can be provided upon request.

### a. Findings on social sustainability

The table below presents the interesting and relevant findings from the organisational perspective, which were acquired through a workshop with CLT

practitioners in Brussels, and from the residents' perspective, which were gathered from semi-structured interviews with residents from the London CLT.

**Table 1. Findings for social sustainability (Mulder, 2022)**

<p>Workshop Brussels</p>	<ul style="list-style-type: none"> <li>● According to CLT practitioners, the added value of the CLT model besides affordable housing is:             <ul style="list-style-type: none"> <li>○ Providing residents the opportunity to to build up a community;</li> <li>○ Strengthening the societal position of certain socio-economic groups (low to middle-income groups).</li> </ul> </li> <li>● Making an impact on social sustainability is not only motivated by positive outcomes for the local community, but also by the desire to sustain the CLT movement through acquiring additional funding and/or adequate policy through this impact.</li> <li>● CLT practitioners agree that a CLT could have a possible positive effect on each element of social sustainability, from the accessibility of resources to inclusion in community functionings such as social networks, feelings of safety, etc.</li> <li>● How the CLT can make this impact in neighbourhoods:             <ul style="list-style-type: none"> <li>○ by adding community resources, such as collective facilities, events and training workshops</li> <li>○ Influencing people's social behaviour, such as their level of interaction, participation or sharing</li> <li>○ by influences the design of the housing and/or the surrounding environment</li> <li>○ By adding frameworks into place, such as an allocation policy or planning.</li> </ul> </li> <li>● To achieve this impact, CLT organisations themselves also need adequate resources, such as people, skills and funding among others.</li> </ul>
<p>Interviews with CLT residents</p>	<ul style="list-style-type: none"> <li>● The London CLT made a significant positive impact on the lives of the interviewed residents, and thus their experience of social sustainability in their neighbourhood by:             <ul style="list-style-type: none"> <li>○ Increasing their accessibility to adequate and affordable housing</li> <li>○ Increasing their ability to make connections and forms relationships with their neighbours</li> <li>○ Increasing their accessibility to local knowledge through asking their neighbours for help</li> <li>○ Increase their feelings of safety and security</li> <li>○ Increase their sense of community</li> </ul> </li> </ul>

	<ul style="list-style-type: none"><li>● The increase in housing accessibility was achieved through adding affordable, owner-occupied housing to the London housing stock.</li><li>● The increase in the accessibility of housing was followed with a stronger sense of housing security, as the residents were able to own their home which supplied them with a sense of permanence and stability.<ul style="list-style-type: none"><li>○ Housing security was deemed as one of the most important factors to the overall sense of security, besides financial security, and health and well-being.</li></ul></li><li>● Housing ownership strengthened the feeling of home for some residents, as they identified themselves with their environment more and consequently felt more responsible for it.</li><li>● The increase in the ability to make connections and form relationships was achieved through the allocation policy, which selected people based on shared values and was perceived as a bonding experience due to the shared feeling of luck, as well as through events held by the CLT before moving in.</li><li>● The making of connections and forming relationships was found to be one of the most vital elements to the concept of social sustainability, as it can enable other social functionings as well, such as asking your neighbours for help.</li><li>● The allocation policy also played a role in creating a sense of place, as it strengthened a sense of community through shared levels of participation and values.</li><li>● Other factors also played an important role to elements of social sustainability that CLT should or could take into account:<ul style="list-style-type: none"><li>○ Personal characteristics, such as preferences or time available, play an important role in the experience of social sustainability and the ability and willingness to connect, share, participate etc.</li><li>○ Family composition, such as having children, also plays an important role in the ability to make connections and set up social networks.</li><li>○ Online communication resources, such as Whatsapp groups and Facebook groups, also play an important role for elements of social sustainability, such as social networks, learning new knowledge and skills, voicing opinions and problems. These channels could be utilised by CLT organisations to improve their impact.</li></ul></li></ul>
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	<ul style="list-style-type: none"> <li>○ London CLT residents expressed their desire for a communal space as they felt that this would allow them to connect and learn from each other more. From experiences in a CLTB project it was concluded that such spaces can indeed be very beneficial to the community, even outside the CLT itself.</li> </ul>
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## b. Findings on environmental sustainability

The table below presents interesting and relevant findings from the workshop in Brussels, the working group meetings, and the survey results.

**Table 2. Findings for environmental sustainability**

<p>Workshop Brussels</p>	<ul style="list-style-type: none"> <li>● CLT characteristics are at the base of the pathways that lead to sustainability in CLTs. These characteristics make community-based problems a driver of CLT projects. A big example case is how energy poverty leads to sustainable housing solutions with low energy demands.</li> <li>● Lots of retrofit taking place, saving derelict buildings from destruction, saving the resources, heritage and connection to the neighbourhood that they possess. This is often a result of involvement of and requests by future residents/local communities.</li> <li>● Financial incentive is a strong motivation for CLTs to adopt energy efficient homes / passive houses.</li> <li>● Resource sharing (transportation methods, spaces, utilities) is already taking place, in particular among CLTs in Belgium.</li> <li>● The inclusion of future residents and communities is considered to be crucial in how a CLT harnesses environmental sustainability.</li> <li>● Workshops and educational programmes can encourage sustainability and environmental awareness in CLTs, both in the planning phase and the use phase. Workshops could be about the green design of a building, but also about how to use the thermostat, how to maintain the garden or manage shared resources.</li> </ul>
<p>2 Working group meetings</p>	<ul style="list-style-type: none"> <li>● CLTs can enable citizen inspired action, such as the CLTB example where the community organised a system to gain access to bicycles and bicycle training.</li> <li>● Often, CLTs provide the vehicle used by local communities to revitalise and take into use disused and vacant buildings and lots.</li> <li>● When considering impact for CLTs, a longer term vision can and should be considered, with regards to the long-term</li> </ul>

	<p>ambitions of CLTs. Impact does not only occur in the construction phase or the first few years, but over generations to come.</p> <ul style="list-style-type: none"> <li>● Changing individual and collective behaviour through the social processes part of any CLT offers a lot of potential to reduce negative impacts, e.g. through transportation choices, waste recycling or general environmental consciousness.</li> <li>● CLT practitioners sometimes see affordability and sustainability as a trade-off to be made.</li> <li>● CLTs also make an impact through negotiating with local authorities (e.g. through lobbying for reduced parking spaces per resident or car free developments, but also by influencing local area development).</li> <li>● A focus on the improvement of skills is suggested as an interesting avenue to support both residents and CLT enabling organisations in achieving environmental sustainability. Monthly seminars could be an effective tool for CLT professionals to learn from each other, while location-specific workshops could teach new knowledge and skills that can stimulate both social and environmental sustainability (e.g. repairing things, heating your house efficiently, riding a bicycle).</li> <li>● There is potential to increase biodiversity through green spaces/communal gardening in CLTs.</li> </ul>
<p>Survey results</p>	<ul style="list-style-type: none"> <li>● 28 Survey respondents             <ul style="list-style-type: none"> <li>○ Representatives of urban, rural and mixed CLTs ranging from 6 to 300 residents</li> </ul> </li> <li>● For inputs, outputs and outcomes of the logic model, their occurrence within CLTs were tested with the respondents using a likert scale. For each of these elements (except shared facilities), the most voted option was either that it occurred 'to some extent' or 'to a great extent'</li> <li>● The inputs showed a very strong corroboration in the survey results, the outcomes slightly less strong and the outcomes least strong, with 'shared facilities' getting little evidence from the survey</li> <li>● Examples for the logic model elements are provided by the survey. A selection is included in Appendix D, more examples are available upon request.</li> <li>● Results from the likert scale data on element occurrence are included in Appendix D.</li> <li>● The survey also provided insights into why CLTs are best equipped to catalyse environmental sustainability             <ul style="list-style-type: none"> <li>○ Because they are not driven by profit</li> <li>○ Because they are rooted in local communities</li> <li>○ Because they stimulate education, creativity and innovation</li> </ul> </li> </ul>

## 5. Measuring and monitoring social and environmental sustainability

Social impact investors, in real estate and beyond, often make use of so-called logic models that define how investments (could) lead to impact. As suggested by the Institute of Corporate Governance (ICG), one needs to distinguish between outputs, outcomes, and impact:

1. **Outputs.** The offers and products, or their use by the relevant target group can be described as outputs.
2. **Outcomes.** Outcomes are only achieved when the outputs of the target group open up new capacities and possibilities and lead to changed perspectives and forms of behaviour. An investment is only effective through outcomes.
3. **Impact.** Ideally, outcomes ensure lasting, positive change on a societal level - the ultimate purpose of impact investing.

They emphasise that impact only occurs from the outcome level onwards and refers to the change in the life situation that has occurred in the target group. For this reason, when developing impact goals it is important to define the target group precisely and to know its needs, capabilities and to understand how change occurs.



Figure C - Phineo staircase, as found in ICG (2022)

To apply this to a CLT scenario:

1. An impact investor cofunds the development of a CLT organisation and assets, including homes in a neighbourhood where real estate prices are rising;
2. The CLT can now offer affordable homes to neighbourhood residents, including families whose adult kids are still living at home due to the lack of affordable housing;

3. Residents of the neighbourhood have more opportunity to remain in their neighbourhood, and that influences their commitment to invest in their relationships with the community and their neighbours, leading to strong social cohesion, also between new and existing residents.
- 4.

### **5.1. Impact investment relies on measurable impact goals at the outcome level**

Impact planning means defining the social and/or environmental impact goals of the investment and to develop an impact plan. The “Sustainable Development Goals of the United Nations” (SDGs) form a good overarching framework for the selection of strategic impact goals. Subsequently, these must be supplemented by concrete (SMART) sub-goals which are easy to put into operation. *Usually, the focus of Impact Investing is on measurable impact goals at the outcome level.* There are pragmatic reasons for this. Changes at the impact level are often difficult to understand in practice: factors overlap, effects are delayed and may be difficult to attribute to a particular investment. Outcomes are clearer and often easier to measure. An example impact plan is included in the appendices.

The question of how the impact goals can best be achieved with the available and applied resources can be answered by means of a sound impact plan. The impact logic can best be developed step by step. Thinking backwards from the “end” - i.e. the desired impact - the impact plan answers the following questions:

1. Impact. What is the ideal social state of affairs? What social or environmental problem should be solved? The impact category represents the long-term, high-level impacts, often using SDGs (Sustainable Development Goals) as a foundation.
2. Outcomes. What changes (skills, lifestyle) are necessary for the target group to bring them closer to the desired ideal social situation? The outcome describes the (desired) effects that the outputs have. The outcomes also relate or conform to the outcomes you can find in common ESG and impact measurement models such as JRI, IRIS+ or the GRI standards (explained in next section).
3. Outputs. What activities can be used to bring about the desired changes in the target group? The outputs actually represent measurable and tangible results of the inputs.
4. Inputs. What resources are needed to perform these activities? The input includes activities that are inherent in the CLT model and the resources required to do these activities. In this research, with a focus on social and environmental sustainability.

### **5.2. Impact analysis**

The impact analysis is an instrument for monitoring progress. The ongoing impact analysis in the investment process requires the regular evaluation of indicators (key performance indicators, KPIs) at the output and outcome levels. Monitoring impact has different reasons and goals: first to understand if indeed impact is realised (on the output and outcome level), secondly an impact

assessment can be used during the planning phase to describe the initial situation and to quantify the requirements, and thirdly as an instrument for learning and control. Impact analysis provides the necessary input for reporting and progress, and when aggregated, sometimes it can be used at portfolio level or to compare investments. Example database for standardised KPIs for numerous impact issues: the GIIN's IRIS+ database, GRI (Global Reporting Initiative) and JII (Joint Impact Indicators).

The five impact dimensions described by the Impact Management Project (IMP) create an overarching methodological framework for a common and widely accepted understanding of impact, its recording and control. It provides a common framework for recording effects. The IRIS+ standards and IMP standards [are aligned](#). It defines impact along 5 dimensions:

- What. What outcome occurs in the period? How important is the outcome to the people (or planet) experiencing them?
- Who. Who experiences the outcome? How underserved are the affected stakeholders in relation to the outcome?
- How Much. How much of the outcome occurs - across scale, depth and duration?
- Contribution. Would this change likely have happened anyway?
- Risk. What is the risk to people and the planet that does not occur as expected?

The current framework that CLT organisations could apply to analyse their impact is the Social Impact Measurement Tool developed by the National CLT Network of England and Wales (Interreg NWE SHICC, 2021). As the name already suggests, this tool is used to assess social impact, which includes indicators spanning across five different principles: 1) increasing equity, 2) building local capacity and capability, 3) challenging the status quo, 4) controlling land and creating homes, and 5) fostering sustainability. Aspects of both environmental and social sustainability are taken into account within this tool, but it does also encompass a range of measurements that focus on other dimensions.

In practice, the tool has been applied by the CLTB and the London CLT. However, both have applied different indicators and measurements from the provided tool as this tool allows organisations to choose which measurements they want to track according to their own organisational objectives and operations. While the practice of impact measurement had been regarded as time and resource consuming during the Brussels workshop, this tool could be useful for CLT organisations to track their own progress over time by applying the tool at set instances. It could then aid CLT in learning from and controlling their own CLT operations. However, as different organisations apply different indicators, comparing the impact of CLTs around Europe is more difficult, meaning that learning and control could maybe not be easily upscaled to other CLTs around Europe, and that a benchmark for impact of CLTs is not attained through the current application of the tool.



### 5.3. Role of the European CLT network

In their report on impact measurement and management, the EVPA<sup>1</sup> (European Venture Philanthropy Association) recommends investors to take a proactive approach in helping organisations to elaborate or create their Theory of Change, as a starting point for setting up a thorough impact measurement and management system. Also; *“in their early stage of development, investors for impact try not to overburden the investees requiring an excessively elaborated Theory of Change. Instead, they may start defining clear objectives, selecting the main outcomes to focus on and developing two or three impact indicators to measure.”* (p.31). This means that the burden of impact assessment and measurement should be less at the individual CLTs or local CLT organisations, and more at a higher level, including investment level and the result of a co-creative process involving various stakeholders.

Learning from experiences at CLTB and SHICC, where an impact measurement tool was created and used, and drawing from the literature on this topic, we have the following recommendations for the European CLT network in relation to impact measurement and management.

- Together with its members, funders, and other stakeholders, the CLT Europe network should establish a theory of change or logic model that underpins its actions, investments, and goals and supports it in developing impact plans - this report provides an initial model that can be used;
- Impact analysis and reporting should be proportionate to the investment;
- Collaboration between key stakeholders in establishing the impact plan is key: CLT funding organisations and investors need to sit with CLT initiatives or the network to establish a coherent, realistic impact management plan;
- The impact strategy and management should be integral part of the investment process, which also helps to develop a better understanding of how and where impact is likely to occur;
- Benchmarks can be important when establishing impact goals and indicators - this can be a role for the European CLT network, to establish these metrics and to map out impact over time across their members.

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<sup>1</sup> “NAVIGATING IMPACT MEASUREMENT AND MANAGEMENT: HOW TO INTEGRATE IMPACT THROUGHOUT THE INVESTMENT JOURNEY” [https://evpa.eu.com/uploads/publications/EVPA\\_Navigating\\_IMM\\_report\\_2021.pdf](https://evpa.eu.com/uploads/publications/EVPA_Navigating_IMM_report_2021.pdf)

## 6. A framework for social and environmental sustainability in CLTs

The literature review and empirical research have demonstrated various pathways and relationships between characteristics of CLTs and social and environmental sustainability. These insights have been used to develop a logic model for CLTs that can be used as follows:

- To describe how CLTs impact social and environmental sustainability;
- To support the design and development of CLTs to maximise social and environmental sustainability;
- To support the creation of metrics to measure, manage or monitor impact.

As described in the previous section, an impact (or logic) model aims to describe how certain activities and resources lead to certain outcomes by using causal relationships. Impact models have a myriad of applications, and are commonly used by initiatives or organisations to define how impact is achieved. An example of such an impact/logic model can be found in Appendix E. There are many ways to describe and use a logic model, as categories can be in or excluded and as it has close resemblance with similar or identical methods with different names, such as a theory of change, road map or causal chain.

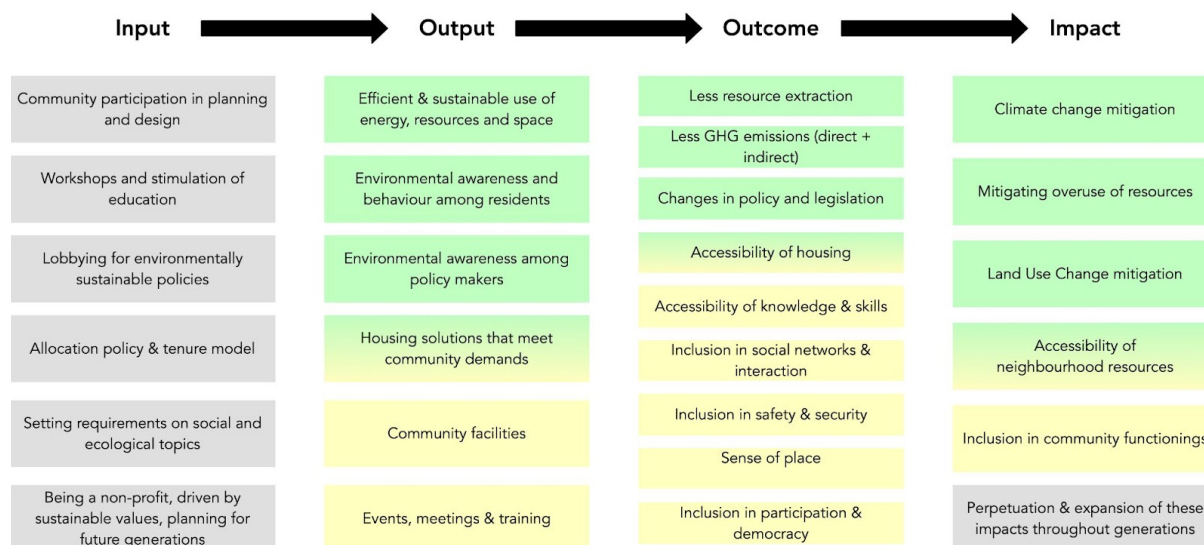
The format of a logic model has various purposes and uses:

- You can use it to show the flow of a specific impact pathway (e.g. community participation -> solar panels -> GHG savings -> climate change mitigation)
- You can use the 'input' category to demonstrate what unique CLT characteristics specifically lead to impact. These inputs are inherent to CLTs and are at the basis of the impact that is created
- The 'output' category is in fact much more complex than visualised here. It can be used to show how impact is created
- The 'outcome' category is relevant for impact investors, as these align with measurable units from impact measurement frameworks such as GRI, JII and IRIS+
- The 'impact' category is clear and easy to communicate

### a. A CLT impact model

The CLT impact model in the figure below combines our research into social and environmental sustainability of CLTs. Green elements relate to environmental sustainability, the yellow colour to social sustainability. For each of the 'green' elements found under 'input', 'output' and 'outcome', they have been backed by the (mostly large) majority of the 28 CLT representative respondents of our survey. For each of the 'yellow' elements, they have been derived from interviews with 6 CLT residents and additional focus groups and expert panels with CLT practitioners. The figure displays no lines or arrows indicating how different elements impact each other, because the interconnectedness is too complex to display in a figure. However, it must be noted that these relationships between input, output, outcomes, and impact matter and so the image below is just a

graphic representation of the various elements that we found to influence social and environmental sustainability. A more expansive and detailed version of the environmental logic model is included in Appendix F, as well as more background on the social logic model.



The model in this figure includes both social and ecological impacts, but these are of course also interrelated. For example, choosing energy efficient buildings improves social sustainability through lower dwelling costs and environmental sustainability through decreased use of non-renewable energy sources. Also, an uplift in social conditions can lead to behaviour that benefits environmental sustainability. Hence, the model is more dynamic than displayed here, with social and environmental impacts influencing each other.

Additionally, this model only shows the impact pathways of a single CLT, but not the extent of this impact. Imagine that this impact occurs for one generation of a single CLT and its surroundings, then moves to the next generation and the next and so forth. At some point, the CLT will generate earnings, which can be sustainably reinvested in the community and also in the development of new CLTs in the area, which then start the same long-term process. Therefore, the impact of one single CLT only grows exponentially over time.

The following sections describe a number of key pathways based on the findings. These can be considered as recommendations for CLT initiatives, policy makers, and other stakeholders involved in financing, designing, developing, supporting, and managing CLTs.

## b. Key pathways for social sustainability

The pathways through which CLTs are able to make an impact on social sustainability have been examined from a theoretical, organisational and residents' perspective. We summarise four key pathways below.

### **Addition of needed vital resources**

First and foremost, the CLT model is a development method for affordable housing. As theorised in the literature review but also observed in the case of the London CLT, by providing such housing to neighbourhoods around Europe, the accessibility of affordable housing can be increased for certain socio-economic groups. This fulfils their basic need of adequate housing and is vital to a socially sustainable neighbourhood.

However, the CLT model also offers the opportunity for the realisation of other resources that could benefit CLT residents as well as the wider community. Resources that could be beneficial to social sustainability depend on the needs of the neighbourhood: CLT could question which essential, educational, recreational, or transportation resources are lacking within the area and think about if and how a CLT could fulfil this need.

A great example of an additional resource is a communal space, as this offers residents a place to come together. It also opens up space where other less tangible resources, such as workshops and events, can be provided. Workshops could offer a great opportunity to broaden the accessibility of knowledge and skills to residents, while events allow residents to connect and set up a social network. Online communication resources, such as Whatsapp groups and Facebook groups can provide significant benefits, in terms of interconnectedness, knowledge sharing, help-seeking and finding, and sharing opinions and problems.

What should be noted is that within this consideration of providing resources, equity should be taken into account to make an optimal positive impact on social sustainability. This means that exclusion should be limited as much as possible, opening up resources to CLT residents, but also the wider community.

### **Setting up fitting CLT frameworks**

The implementation of CLT frameworks that are fitting to the local context is the second pathway to enabling a positive impact on social sustainability. Through these frameworks, the perceptions of residents, such as responsibility, and behaviour of residents, such as the level of connecting, participating and sharing, can be enabled in a way that fosters social sustainability practices. The frameworks that have been identified through the interviews with residents are the tenure model (housing ownership), the allocation policy (selection on connection to neighbourhood and participation), and the planning.

### **(Co-)Design for interaction**

The experience of the built environment for the residents also makes an impact on social sustainability. An open building design with common (outdoor) spaces could add to the feelings of safety and security, but also to the level of casual interaction possible which in turn is relevant to the making of connections. However, for this pathway it is also advised to take into account the context as design preferences can vary between cultures. It could be beneficial to include future residents in the design process of the dwelling and site. Through this

inclusion, not only could the design elicit a positive impact on social sustainability, but it could also broaden residents' knowledge and skills.

### **Enabling a social network**

Building forth on all aforementioned pathways, enabling connection between residents has been found to be critical to other community functions connected to social sustainability. By fostering this behaviour of residents through resources, frameworks, and design the feelings of safety and security, a sense of place, participation, and the accessibility of knowledge and skills for CLT residents can all increase.

## **c. Key pathways for environmental sustainability**

In the workshops with CLT experts, the working groups, and a survey, we identified four key pathways for environmental sustainability, summarised below. The first two emerged as existing pathways in many CLTs, the latter being identified as having significant potential to contribute to environmental sustainability, but not yet commonplace within CTLs. Underpinning it all is the long term perspective that is so key to the community land trust model, and informs the decisions and design choices being made.

### **Shared resources and shared spaces**

Although it is not a prerequisite for a CLT, many CLTs include some form of sharing resources. This can vary from the sharing of washing machines to tools to bicycles and meals, but it can also be about shared common spaces, gardens or guest rooms that you can book. All these sharing options decrease the need for space and/or resources, both in the construction phase and the use phase of the CLT. Therefore, these sharing models lead to a reduction in primary production, greenhouse gas emissions and land-use change.

### **The inclusion of future residents and community from the design and planning stage onwards**

Many CLTs include the local community and/or the future residents in the planning & design phase. Some CLTs do not include them at all until the construction is finished. The inclusion of local community and future residents brings many benefits for the environmental outputs of the CLT. Firstly, engaging with local communities often leads to the inclusion of lay knowledge of infrastructure, buildings, rights and heritage. In many examples this has led to the repurposing of old derelict buildings that are already perfectly embedded in local infrastructure. Among other benefits, it reduces the need to extract new primary material for construction and for infrastructure. Secondly, by involving future residents at an early stage, a need to reduce energy costs, a positive environmental impact of their living environment, the inclusion of green spaces, shared gardens, community facilities and shared resources are all implemented from an early stage, contributing to environmental sustainability.

## **Environmental awareness and behavioural change**

Alavosius & Newsome (2011) describe cooperatives as a tried and tested way to encourage large-scale behavioural change, which can have positive effects on environmentally sustainable behaviour. CLTs provide conditions to form community bonds, empower people, provide financial stability and a sense of belonging, which could turn into collective awareness and action, and sustainable lifestyle choices. Although still debated, Zannakis et al. (2019) found that *“green consumer behaviours are positively related to subjectively evaluated resources such as feelings of economic sufficiency”*. CLTs also can influence the relationship that residents have with land. Instead of just living somewhere in a city or rural area, they are now collective owners and collectively responsible for the wellbeing of their land, both now and in the future. They become stewards of the land, and more broadly, the planet.

These influences would all need more extensive study to understand the depth and breadth of their impact. Simultaneously, the potential of this pathway would require more exploring through experimentation. Many respondents expressed that they see a lot of potential in the impact that can be made through community building and changing behaviours and would like to understand in which ways this could become reality.

## **Workshops and education**

In our empirical findings this came out very strongly: many CLTs incorporate some kind of training or education as part of its activities. There are many different ways in which this can be turned into an instrument for environmental sustainability. It starts in the planning stage: here, the aim is to co-create housing plans with residents and community or more generally to create organisational skills and abilities. Educating the participants about sustainable options and explaining the (dis)advantages to the users and the environment can result in the co-creative processes leading to more environmentally sustainable building decisions.

However, education and workshops can also have an impact at a later stage, when people are living in a CLT. We found examples showing how CLTs provide education on how to limit the energy consumption of your house (close windows etc.), but also on how to use a bicycle and how to grow food in the shared garden. This can be taken further to teach skills about building maintenance and repair skills for clothes, furniture or appliances. Teaching such skills to community members can increase community engagement, social sustainability and environmental sustainability.

## 7. Conclusions

CLTs provide social and environmental benefits, as demonstrated by many projects where residents and communities work towards social justice, create opportunities for specific target groups, and build sustainable housing. However, the underlying principles of CLTs can be utilised more effectively towards social and environmental goals. Our first recommendation therefore is to see these principles as a design framework for social and environmental sustainability. A means rather than an end. They form the starting point for designers and architects and developers to integrate these goals in projects.

A second recommendation is to take a cautious approach towards impact measurement, and to take a co-creative, long term approach that involves stakeholders at various levels and roles in establishing impact measurement and management systems. Do not overestimate what can be measured through impact assessments in the short run, and also trust the principles and characteristics of CLTs to provide stewardship of resources, buildings, and neighbourhoods in the long run. Some attempts to do short term impact measurements failed due to the limited objectivity of self-reporting approaches and lack of time/interest to engage in these activities. The most value expressed by organisations involved in setting up and managing CLTs was to use impact monitoring for learning what works and what doesn't, and also to report to key stakeholders and investors. An appropriate approach towards impact measurement and management takes into account the principles that underpin impact and tries to further understand and uncover them.

Thirdly, collaboration and collective ownership as key CLT principles can be used to experiment with and implement all kinds of sustainable strategies where you need people to work together or collectively act and adopt measures towards social and environmental sustainability. Trying to introduce such measures afterwards, when decisions have been made, is much more complex. CLTs offer a way to do this right from the outset. A potential benefit of a CLT is self-organisation. Through collective ownership, residents become stewards of their own environment and take (some) matters in their own hands, leading to a sense of ownership, control, and collective responsibility.

Fourthly, the European CLT Network organisation should incorporate a research programme on defining and understanding optimal pathways for both social and environmental sustainability, and translate those into design principles and requirements to be used or adopted by any new CLT in its organisation.

Fifthly, we received feedback that often affordability and sustainability were at odds with each other, due to startup costs. Accessibility to financial resources has shown to be a limiting factor with regard to choosing the most sustainable options: Setting up resource-sharing programs (i.e. bike sharing) requires start-up costs, but is both financially and environmentally beneficial in the long run. Similarly, choosing truly sustainable construction methods and energy efficiency require higher initial cost, regardless of the long-term benefits.

Finally, we recommend adopting and implementing the CLT impact (or logic) model in further developments and validating its predictive value through longitudinal studies and other types of research. Individual pathways can become part of local strategies, while the overarching framework, definitions, metrics and methodologies require more centralised coordination, such that different CLTs in Europe can make use of it and different strategies and approaches can be compared and analysed.



# APPENDICES

## I. APPENDIX A. Literature review

According to Hardin's example of the 'tragedy of the commons', a common-pool resource that is accessible to all is at risk of deteriorating because of a 'free rider effect'. This describes that if a resource has open individual benefits but collective externalised costs, an individual has no incentive to avoid negative consequences and could therefore act as a 'freerider' in using the resource. The philosophy is that if the individual would refrain from resource use to avoid the consequences, someone else would step in and cause the consequence regardless. However, if the individuals are united in sharing both the benefits and the consequences of a certain resource, it will be in everyone's interest to find a balance where the benefits are obtained without causing negative consequences (Ostrom, 1990). This is what is known as a commons-based approach. This approach has been adopted in many forms, including housing practices throughout history, with recent examples of community-led housing, housing co-operatives and community land trusts.

The Community Land Trust model has been around for over 50 years, but its principles are even older. Letchworth Garden City is a town that was constructed as a CLT in 1903. It is well-known for its design that uniquely blends living and garden in one space. In 2004, surpluses of the land trust were at £1,7bln, which was all reinvested in the community and city fabric, allowing all residents to benefit from the land. In Burlington, USA, the commons of land saw escalating housing prices that kept community members from being able to afford living there. A CLT was set up in 1983 supported by municipal government leadership, community members and housing advocacy groups. This allowed community members to be stewards of their collectively shared and owned land, which still continues to ensure that housing is affordable for all incomes, while also preserving community use of the land through health centres, green spaces etc. Co-Op City in New York, USA is a demonstration of how successful co-operative housing can be. With 35 apartment buildings and 55.000 residents it is an example of the size that a housing co-operative can reach. Since its initiation in 1968 it still continues to provide perpetually affordable housing to all its members, while also hosting local businesses and community facilities.

To better understand how CLTs could contribute to social and environmental sustainability, we first define the unique characteristics of CLTs.

In exploring social and environmental sustainability of CLTs, we looked at what characterises CLTs. These CLT characteristics can be summarised as follows:

1. **Dual ownership model:** In the CLT model the ownership of land is separated from the ownership of the dwellings built in said land resulting in a dual ownership model. The land is owned by the organisation of the CLT, while the dwelling is owned by the CLT resident (owner-occupied housing) or a not-for-profit association or cooperative (rental housing). To make use of the land, the CLT resident leases the land from the CLT through a ground lease. This ground lease can take up the form of a monthly rent or royalty that is paid to the CLT.

2. **Perpetual affordability:** The perpetual affordability of housing is made possible by the retention of the value of the initial investment into the land by the organisation in a trust and a control mechanism, often a resale formula, that is set into place by the organisation. This is done to combat speculation in resale prices and to offer a fair trade-off between the legitimate expectations of sellers and the maintenance of housing accessibility.
3. **Community managed:** A CLT is a community-led organisation, as the community forms a significant part in the tripartite governance model that is distinctive for a CLT. That is to say that the governance model is formed by parts of the CLT residents, representatives from the public authorities and representatives from civil society. This collaboration ensures that short-term interests of the members and residents of the CLT and the long-term interests of the larger community are balanced.
4. **Stewardship:** The final characteristic called stewardship has a close relationship with the other characteristics. Besides a CLT being a community-led organisation, it is also community-based, as the local community of a certain area or a specific socio-economic group is often the main focus for the organisation. The CLT organisation is committed to maintaining and sustaining the project, which is why they often offer training and support to its residents if necessary. This can extend into community development work, such as supporting residents' initiatives and providing workshops. This two-way approach of focusing on and involving the local residents in the governance model ensures meeting the needs of the community by enabling local community empowerment and democratic management of assets.

### **A. CLTs & social sustainability**

From previous studies performed by Fromm (2021) and Lang (2019), it could be gathered that commons-based approaches to housing that are similar to the CLT model, such as collaborative housing projects, have a positive effect on elements of social sustainability. Fromm stated that such projects could build extensive community networks through the practice of collaboration, and also foster an increased feeling of safety due to these networks. Lang's findings built forth on the building of community networks, stating that this practice contributes to a greater social cohesion. In addition, he states that these types of housing models have the ability to increase the accessibility of housing for certain socioeconomic groups, benefiting the overall principle of social equity, which is vital to the concept of social sustainability.

These two studies paint a promising picture when it comes to the possible positive impact of the CLT model on social sustainability, and lended themselves to a more comprehensive theoretical analysis of the characteristics of the CLT model in comparison to literature on the different elements of social sustainability. From this analysis, the following theoretical pathways for a CLT to make a positive impact on social sustainability have been identified:

1. **Provision of affordable housing:** Improving the accessibility of affordable housing for low or middle-income households through the development

and maintenance of housing that is provided at a price under market value due to fighting speculation.

2. Provision of *perpetually* affordable housing: Through the provision of housing, CLT could also provide security to residents in the form of housing. And as the affordability is protected for the future, also for generations to come. This would especially play an important factor for residents that move from deprived housing conditions into CLT housing. This is due to the fact that deprived housing conditions can cause a range of negative effects on elements of social sustainability, such as lower quality of life, poorer accessibility of facilities and jobs, and social networks (Winston, Kennedy & Carlow, 2019). However, the range of this positive effect does depend on the previous housing context of the CLT resident.
3. Providing additional facilities: As mentioned in the definition of social sustainability, the accessibility of other facilities, essential, educational or recreational, are essential to the concept of social sustainability. By the CLT providing facilities in either category could increase the accessibility of these facilities for the residents.
4. Resident participation in the development and maintenance of housing: A study by Michels found that involving citizens in decision making can have a positive effect on the development of knowledge and skills of citizens, together with an increase in feelings of responsibility, and participation within society and democracy (2011). As these elements are all indicators for social sustainability on a neighbourhood scale, involving residents within the development and maintenance of housing can be beneficial.
5. Wide community empowerment: Through resident betterment practices CLT could provide activities and events for the community that aid the interaction between community members and facilitate connection between them. According to Stevenson, such events could also be beneficial to a sense of community, as it can be an opportunity to create a community identity and values (2021).
6. Bringing diversity to the neighbourhood: CLT could provide housing within neighbourhoods for certain socio-economic groups that might be less represented within the neighbourhood. Bringing this diversity to the community population could aid in the making of connections and forming relationships outside of people's usual setting and boundaries (Lang, 2019).

However, when it comes to the last pathway, bringing diversity to the neighbourhood, CLT could also make a possible **negative** impact on the social sustainability of the neighbourhood, as the literature is not conclusive on the effect of diversity within neighbourhoods. The negative impact could be a hindrance of social connections and a sense of community (Tóth et al., 2021).

Overall, the theoretical impact of CLTs on social sustainability paints a promising picture for the model.

## B. CLTs & environmental sustainability

Commons-based approaches to living and housing influence environmental sustainability in various ways. A multiple case study by Macaulay & Dalglish

(2021) highlights 6 ways through which Scottish community landowners contribute to climate action: Managing carbon sinks; Reducing emissions from buildings & waste; Renewable energy generation; Reducing food-related emissions; Reducing transport emissions and Adapting to climate change. Interestingly, many solutions championed by community owners actually ensure benefits for climate, community and the public. This is all nested in the holistic approach that is taken and the local leadership role that these communities fill. As the authors state, *“Community owners are able to show leadership because, as trusted community organisations which are already known for their work to benefit local people, they can inspire, encourage and support climate action and behaviour change within their localities.”*

This highlights the role of behavioural change, stimulated by cooperatives, in contributing to environmental sustainability. Alavosius & Newsome (2011) mention cooperatives as a tried and tested way to stimulate large-scale behavioural change, which can have positive effects on environmentally sustainable behaviour. Through an alternative model for ownership, education, user control and proportional distribution of benefits, cooperatives can stimulate green behaviour. Additionally, the control granted to consumers in these arrangements promotes a better distribution of accountability for the negative effects of production as it aligns producers and the consuming public towards altering green practices (Alavosius & Newsome, 2011). For example, in the Hood River Conservation Project citizens cooperated with the local power company to retrofit houses and reduce energy consumption, which avoided the need for an additional (coal-powered) power plant. The avoided costs were subsequently invested in the natural environment to be enjoyed by all.

The collective nature of cooperative housing models offer various possible environmental benefits. Impact can be made through communal use of facilities or resources like energy, appliances, food, mobility and skills. Through a local timebanking model, skills can be used more effectively in a community, which can make things like repairs or sustainable food more attainable (see for example the Co-Operate research). The focus on longevity encourages the use of long-lasting, repairable, and maintainable buildings and materials. CLTs are interested not just in meeting short-term needs of people, but offer the right governance model to stimulate meeting the needs of people in the long term as well, e.g. investing in shared solar energy and green infrastructure and community gardens as part of a CLT (Grannis, 2021). The longer temporal scale, along with purposive, co-created design decisions are the underlying drivers for the ripple effect across the environmental, social and economic sustainability of CLTs, according to Ramos (2020).

An extensive literature review resulted in 12 ‘pathways’ to environmental sustainability for CLTs or housing cooperatives. These pathways are described in the table below.

#	Pathway	Description	Source(s)
1	Community-led Resources	Facilitates a common pool of resources, which can enhance biodiversity, air and water quality and / or space efficiency. “Co-created collectively managed resources plant the seed to engendering community ownership and stewardship of these resources.”	Ramos (2020)
2	Demographically diverse residents	A mixed income development ensures financial viability and equity while financially aiding in delivering higher quality places including provisions for innovations in green technology. “The opportunities for demographically diverse residents are fostered when the integration of a mix of tenures - that caters to permanent affordable housing, social housing and market rate housing - are provided to meet their needs, particularly their diverse socio-economic housing requirements located within a socio spatial equitable location.”	Ramos (2020)
3	Concentrated mixed land use & housing types	Reduces heat loss while concentrating essential services such as gas and water mains use land, resources and capital and revenue costs most efficiently. Additionally, an argument can be made for the emergence of social enterprises due to mixed housing types, as illustrated by this quote: “Interweaving land uses and housing types create robust neighbourhoods that promote walkability and resource efficiency, but for CLTs it uniquely promotes social enterprises within their sites.”	Ramos (2020)
4	Accessibility	Reduces the reliance on private vehicle ownership and use. “Multimodal transport options for low to medium income households are critical to ensuring a city’s resources are shared equitably while creating resilience and self-sufficiency.	Ramos (2020)
5	Focus on longevity	The CLT financial model ensures affordability and fair ownership over the long term (Burger, 2021). This enables decisions to be made for long-term financial and environmental sustainability within the community, such as design decisions that are meant to last (Co-Operate). These decisions can lead to the design of a structure that is based upon the principles of the circular economy.	Burger (2021), Co-Operate

<p>6</p> <p>Inclusion of local community and involvement of a governmental actor</p>	<p>Local community members that are not residents of CLT housing are nevertheless included in a CLT. This stimulates taking impacts on a wider and longer temporal scale into consideration in decision-making. This structure can enlarge the scale of the environmental impact to a neighbourhood scale. Additionally, by involving a public actor, there will be an active agent for sustainable action in the CLT.</p>	<p>Own experience</p>
<p>7</p> <p>Community development and member education</p>	<p>Community Land Trusts make citizens regain control over land use decisions, and therefore contributes to community development by stimulating social justice and mutual respect (UN-HABITAT, 2012). According to a research project by SHICC (Sustainable Housing for Inclusive and Cohesive Cities), they help create socially cohesive urban areas (EU, 2020) and Saegert &amp; Winkel (2001) state that housing co-op members are more likely to be engaged citizens. As Butot (2017) states, stronger community development can lead to a stronger sense of environmental awareness. This can happen through the collective ownership of both the benefits and negative effects of local resource use (Alavosius &amp; Newsome, 2011), a deeper sense of understanding of local embeddedness in community and environment (Kiessel, 2018), forces of collective decision-making and education between cooperation members (Alavosius &amp; Newsome, 2011)</p>	<p>Alavosius &amp; Newsome (2011), UN-HABITAT (2012), Butot (2017), Kiessel (2018), EU (2020)</p>
<p>8</p> <p>Stewardship through ownership &amp; responsibility for the coming generations</p>	<p>Besides a CLT being a community-led organisation, it is also community-based (Davis, 2006, p.19), as the local community of a certain area or a specific socio-economic group is often the main focus for the organisation (Engelsman, Rowe &amp; Southern, 2018, p. 105). This two-way approach of focusing on and involving the local residents in the governance model ensures meeting the needs of the community by enabling local community empowerment and democratic management of assets (Moore &amp; McKee, 2012), as displayed in figure 12. However, Lowe &amp; Thaden argue that the stewardship within CLT can move beyond the tripartite governance structure. They have linked stewardship to the betterment of three main objectives of the CLT model: 1) resident betterment, 2) asset preservation, and 3) community control of land (2016). These objectives focus on empowering the community of the CLT and, sometimes, the community beyond the CLT.</p>	<p>Davis (2006), Moore &amp; McKee (2012), Engelsman, Rowe &amp; Southern (2018), Lowe &amp; Thaden (2012)</p>

<p>9 Empowerment through the security of housing and financial gain</p>	<p>Financial structure -&gt; perpetual affordability + financial gain through shared resources -&gt; financially empowered residents. This could form a link to more sustainable behaviour, even though it can also lead to less sustainable behaviour. Zannakis et al. (2019) : “The results suggest that green consumer behaviours are positively related to subjectively evaluated resources such as feelings of economic sufficiency and other, more “relational” resources, including social networks and emotional support.”</p>	<p>Zannakis (2019)</p>
<p>10 Promoting sustainability through CLT principles and legal framework</p>	<p>The National Community Landtrust Network in the United States promotes sustainability through its principles. Through the principles of ‘community stewardship of land’ and ‘perpetual sustainability’ they enforce land stewardship for affordable housing, community-supported agriculture and green spaces, while creating buildings, organisations and programs that are sustainable in the long-term. By embracing such principles and integrating them into a CLT’s legal framework, sustainability can be stimulated by CLTs on a long term</p>	<p>CLT Network UK, CLT Network USA</p>
<p>11 Contributing to food security and local farming practices</p>	<p>CLTs are also contributing an element of food security, with a growing number of CLTs also incorporating community gardens, urban agriculture, community supported agriculture (CSA), orchards, and green space into their portfolios of properties (UN-HABITAT, 2012). Local agriculture and implementation of green spaces are forms of environmentally sustainable land use</p>	<p>UN-HABITAT (2012)</p>
<p>12 Circular and localised economy</p>	<p>Because a CLT encompasses more than just the residents, but also the community, it is more likely for creatives and/or businesses to find each other and find collaborative new ways to use or dispose of their resources more efficiently. According to the SHICC project authors, “the resources mobilised by CLTs (land, but also social and economic values, etc.) are recovered and reinvested locally for the benefit of residents and local communities” (EU, 2020). Additionally, Burger (2021) found that the CLT model empowers cooperative thinking, provides an alternative land development narrative and facilitates more full and complete use of space, all contributing to circular area development.</p>	<p>Burger (2021)</p>



## II. APPENDIX B. Defining social & environmental sustainability in the built environment

On a neighbourhood level, the concept of social sustainability encompasses the extent to which a neighbourhood provides the needed *resources* and supports the *social functioning* and health of a community, while adhering to the societal precondition of *equity*. *Equity* acknowledges that people are different and ensures everyone has access to the same treatment, opportunities, and advancement. *Equity* aims to identify and eliminate barriers that prevent the full participation of some groups. The *resources* are both tangible resources, such as a school, supermarket, public transport, GP, playing areas) and intangible resources, such as expertise. The *social functioning* and health of the community can be understood in terms of sense of place and community, safety and security, participation, and social interaction.

*Environmental sustainability* of the built environment, i.e. cities or neighbourhoods, refers to their capacity to meet the needs of the present but in a way that ensures future generations have the natural resources available to live an equal, if not better, way of life as current generations. The built environment (housing and infrastructure) constitutes a category with a significant impact on environmental sustainability. While it takes up only 1% of global land use, 38% of global climate emissions are attributed to the built environment, and responsible for 30% of European waste production and 42% of global resource extraction (Circle Economy, 2022). At the same time, 90% of people's time is spent in buildings.

The impact of the built environment on environmental sustainability can thus be addressed through resource use, emissions, land use and the way the built environment sustains (un)sustainable behaviour of people. To include and better address externalities of (economic) activities and operations, researchers and practitioners often distinguish between scope 1, 2, and 3 emissions. Scope 1, being the direct emissions of the reporting organisation, resulting from the activities under control by an organisation, e.g. office heating and transportation emissions. Scope 2 emissions refer to the emissions resulting from energy being purchased by the organisation for heating, cooling, home appliances, etc, but not emitted directly. Scope 3 emissions, often being the largest and most difficult to address, include all indirect emissions resulting from activities linked to or part of the value chain, but are not owned by the reporting organisation, e.g. investments, purchased goods, waste and all emissions occurring upstream and downstream. For example, it can be argued that scope 3 emissions of a CLT initiative (as the reporting organisation) could include 'downstream' behaviour of its residents such as maintaining green space, sharing mobility, or separating waste, as these are the result of design decisions made in the design and implementation phase

as well as agreements between the members of the CLT. See also Appendix C for a more detailed description of Scope 3 emissions.

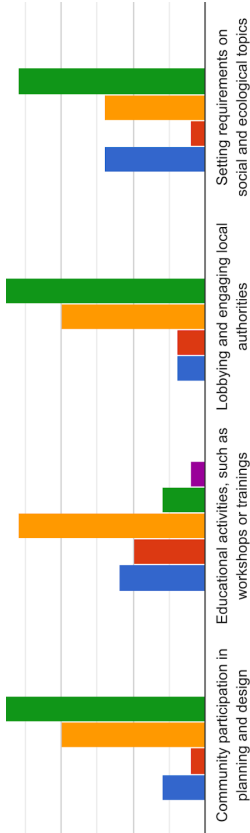
As the majority of human emissions are caused in the 'use phase' of the built environment (beyond design and development) (Porcelijn, 2021), it's important to include 'downstream scope 3' emissions in assessing environmental sustainability, and to focus on reducing unsustainable and unnecessary consumption and effective resource sharing when developing sustainable neighbourhoods.

### **III. APPENDIX C. Notes on scope 1,2,3 emissions**

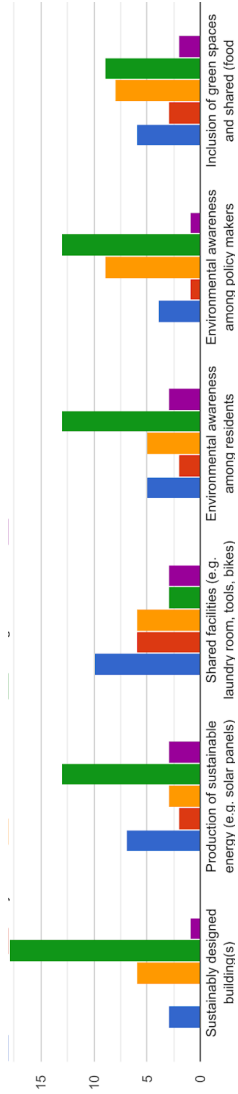
Between scope 1/2 emissions and scope 3 downstream emissions, it is difficult to capture an image of how the sustainability impacts of the built environment are distributed, as data availability and distribution differ per time, scale and region. Contributing to this is the lack of data on Scope 3 emissions through human interaction. To provide an indication of the share of emissions that occur downstream in Scope 3, we use the 2021 reporting data from Landsec, the largest real estate and investment company in the United Kingdom. They calculated that their Scope 3 emissions (both up- and downstream) fulfilled 86,7% of their total emissions, where 39,9% of the total emissions were caused by downstream use of energy. This is excluding all other downstream emissions, such as occupant transportation or consumption. The UK Green Building Council calculated for UK architects, developers and property managers that their scope 3 emissions respectively form 65%, 87% and 99% of their total emissions. These numbers take into account up- and downstream emissions, where again, only the energy use of occupants is considered for the downstream emissions. If the general sustainable behaviour of occupants is measured and upstream emissions are left out, these numbers would look different, but unfortunately, such data is not available. However, the abovementioned figures demonstrate the magnitude of the Scope 3 emissions of the built environment. Note that GHG Emissions are standard calculated using the Global Warming Potential over 100 years (GWP 100)

## IV. APPENDIX D. Survey results

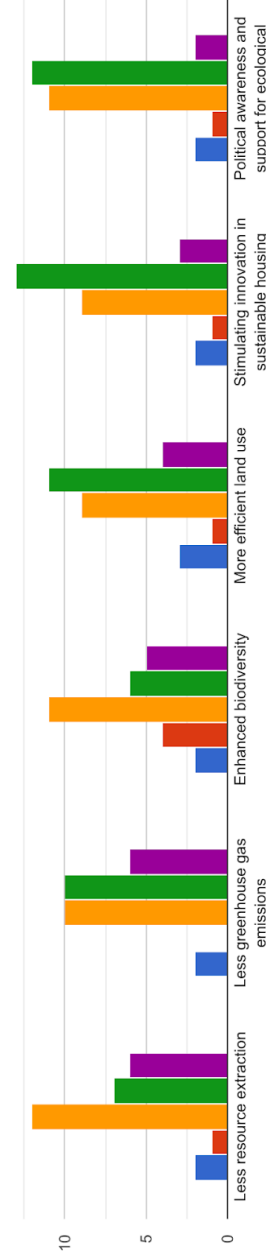
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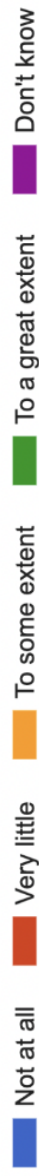
### OUTPUTS:



### OUTCOMES:



### Legend:



## Selected examples from survey results, divided over the 4 input categories

### Community participation in planning and design

- Discussions about sustainable design and low dwelling costs, leading to renewable energy systems, efficient appliances and communal resource sharing (community fridges and utility rooms - NW3 CLT
- More biodiversity surrounding the construction - Transition Homes CLT
- Outdoor/shared space for growing food - Community Action Isle of Wight
- Using panels from timber and straw - Hereford CLT
- Building entirely to Passivhaus standards. - Kendal CLT

### Educational activities, such as workshops or trainings

- Minimising energy use - majority of respondents
- Foraging to learn about biodiversity - Transition Homes CLT
- Learning how to ride a bike - CLT Brussels

### Lobbying and engaging local authorities

- Community heating programme with district energy - NW3 CLT
- Reducing the required parking spaces at their CLT - Transition Homes CLT
- Making Community Led Housing integral to the local housing strategy in ways such as a CLH land disposal policy - Kendal CLT

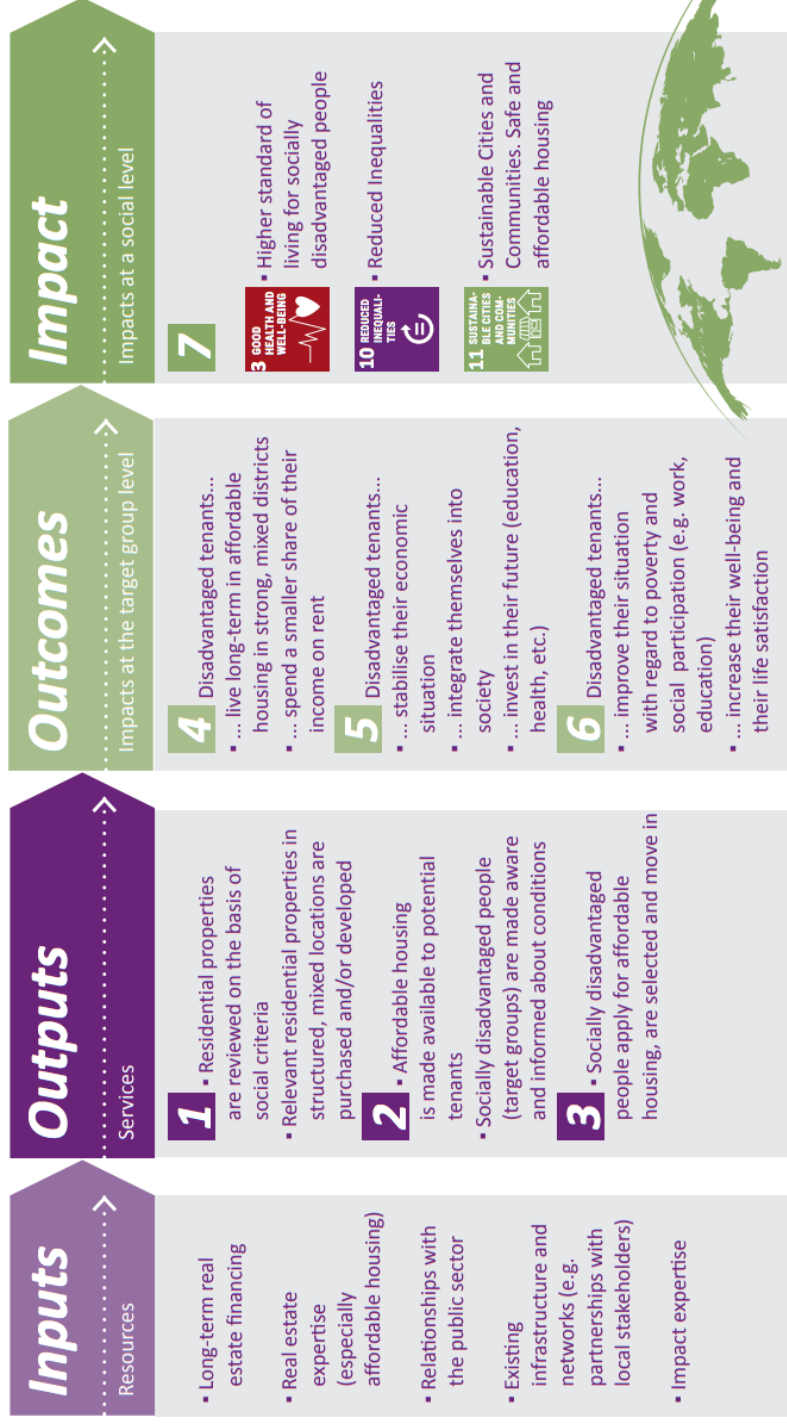
### Setting requirements on social and ecological topics

- Estimated carbon capture of 730kgs atmospheric carbon / sq m of building. This would provide a 16 year 'head start' on Building Regulation requirements - Hereford CLT
- Passivhaus standards - Kendal CLT
- Design & Build partner with B Corp status - Eastbourne CLT
- Biodiversity net gain - Transition Homes CLT
- BREEAM HQM excellence standards - NW3 CLT

\* More examples are available upon request

## V. APPENDIX E. Example impact plan

We follow the ICG recommendations on impact investing, and include here their approach / example of an impact plan for affordable housing, as an example of how investors in CLTs can address this topic. The ICG specifically mentions affordable housing as a crucial impact area for investors and emphasises the importance of integrating the needs of different target groups in the impact plan. It means one needs to understand these needs. An example impact plan (high-level) for affordable housing is shown below.

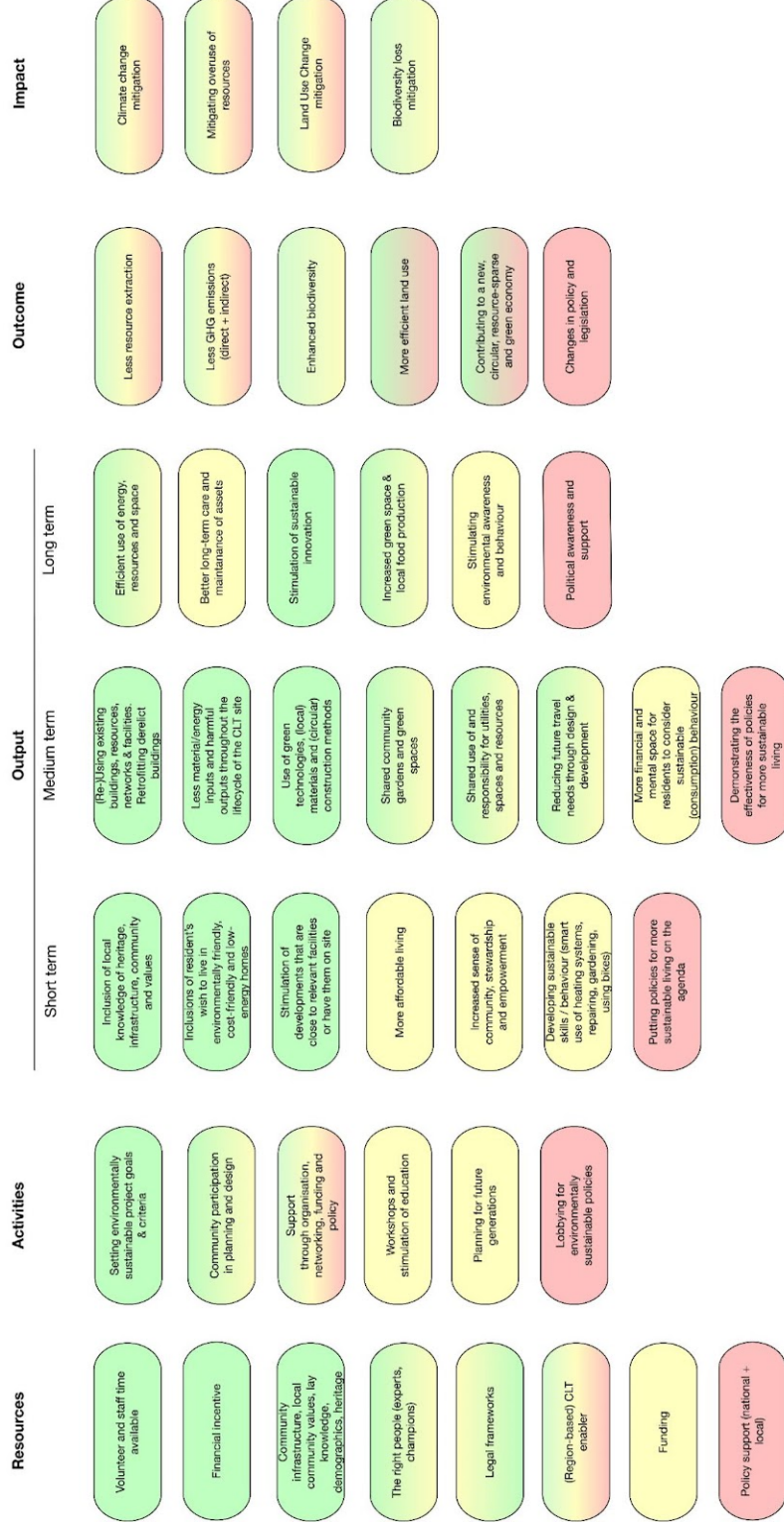


The area of impact of affordable housing can be broken down into a number of impact goals, which represent various aspects and success factors. Under each goal, some (not all) relevant KPIs are included as illustration:

- Creation and maintenance of affordable (and/or social) living spaces, defined by e.g.
  - Affordable/social housing units
  - Area of affordable/social housing units
  - Persons who live in affordable/social housing units
- Supplying disadvantaged target groups with affordable housing
  - Households with persons with non income-dependent disadvantage
  - Households with income-related disadvantage
- Improving the income situation for target groups
  - Difference in rent compared to the usual local rent
  - Housing cost burden rate
- Creating stable living situations
  - Annual rent increase
  - Duration of the additional price and occupancy commitment
  - Duration of the lease/fluctuation rate
- Improving the life situation of disadvantaged target groups
  - Number/proportion of people/households for whom the quality of the situation has improved
  - Satisfaction with living environment and living conditions
  - Availability and quality of social support services

## VI. APPENDIX F. Detailed logic model

### A) Logic model on environmental sustainability



- B) Research findings that form the ground for the logic model on social sustainability  
 More information backing and explaining these findings and their integration in the logic model can be found in the thesis report 'Social Sustainability through Community Land Trusts' by Betsy Mulder (2022).

## Theoretical

## Organisational

*According to organisations from the European CLT network*

Accessibility of housing
Accessibility of essential facilities
Accessibility of recreational facilities
Accessibility of educational facilities
Accessibility of transportation facilities
Accessibility of financial funds
Accessibility of knowledge & skills
Inclusion in social networks & interaction
Inclusion in participation & democracy
Inclusion in safety & security
Inclusion in sense of place

## Residents'

*According to residents from the London CLT*

Accessibility of housing
Accessibility of essential facilities
Accessibility of recreational facilities
Accessibility of educational facilities
Accessibility of transportation facilities
Accessibility of financial funds
Accessibility of knowledge & skills
Inclusion in social networks & interaction
Inclusion in participation & democracy
Inclusion in safety & security
Inclusion in sense of place