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Civil society for sustainable change: strategies of NGOs and active citizens to contribute to sustainability transitions

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According to the Kunming-Montreal Global Biodiversity Framework, a "Whole-of-Society" approach is needed to initiate transitions to a nature-positive society. Many look at civil society to initiate and accelerate such transitions. In this article, we investigate strategies from Civil Society Actors (CSAs) to contribute to transformative change, with specific focus on Tiny Forests and Beach Clean-Ups in the Netherlands. Results show that CSAs have a clear Theory of Change to achieve their goals, and act upon that vision through assembling power and resources, developing policy-relevant environmental knowledge, mobilising public support and media coverage and initiating innovative sustainable practices. Adopting mosaic governance approaches, CSAs strategically position themselves in social and institutional networks, connecting professionals and citizens for political leverage. However, our findings show that the step from local impact towards transition remains a large one and the contribution of CSAs should be valued as emergent, co-produced and part of a broader transition movement.

Keywords: active citizenship; whole-of-society; transformation; grassroots; marine litter; biodiversity

1. Introduction

Biodiversity loss, climate change, and environmental pollution threaten the future of our planet. Global platforms such as the Intergovernmental Panel on Climate Change (IPCC) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) emphasise the need for socio-ecological transitions in order to successfully address today's environmental problems (IPBES 2019; IPCC 2014). The notion of a transition refers to a reconfiguration of existing regimes and

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practices. Transition theory explicitly distinguishes between large-scale societal or governance changes and more incremental changes within existing power structures (Geels and Schot 2007). Current governance systems and policy structures are increasingly considered to be unsuccessful in addressing urgent environmental issues, yet the question of how just environmental transitions can be established is the subject of debate (Chambers *et al.* 2021). While many global and national agreements and targets have been formulated and formalised to address these issues, ambitions are often not achieved due to a gap between policy objectives and actual implementation. This implementation gap is partly related to a lack of commitment and collaboration amongst key stakeholders such as land owners, businesses, politicians and local communities (Howes *et al.* 2017). Consequently, many scholars have argued for collaborations across scales and networks to overcome existing lock-ins and build momentum for large-scale sustainability transitions (e.g. Scoones *et al.* 2020).

The recently adopted Kunming-Montreal Global Biodiversity Framework explicitly argues for the importance of non-state actors for halting the biodiversity loss through a "Whole-of-Society" approach, including civil society actors (Kok *et al.* 2022; CBD 2022). Related to changing modes of governance, civil society actors are increasingly seen as important agents of change (Hajer *et al.* 2015; Wagenaar *et al.* 2015; Buijs *et al.* 2019). Civil society actors (CSAs) range from highly institutionalised non-governmental organisations (NGOs) to informal place-based initiatives such as grassroots organisations. In social science literature, they have been conceptualised as active citizenship (Buijs *et al.* 2016), civic ecology (Krasny and Tidball 2012), social innovations (Moulaert *et al.* 2014), community-based initiatives (Aiken 2017), or environmental stewardship (Andersson, Enqvist, and Tengö 2017). CSAs usually function in a complex mosaic governance structure including citizens, NGOs and social enterprises (Buijs *et al.* 2019). Over time, locally organised active citizen groups may develop into national or even internationally renowned organisations and the distinction between active citizenship and NGOs may become blurred (Feenstra 2018). Furthermore, active citizens and NGOs are often strongly interdependent in the organisation of activities.

CSAs can play an important role in promoting local sustainability (Wagenaar *et al.* 2015; During, Van Assche, and Van Dam 2022; Frantzeskaki *et al.* 2016; Buijs *et al.* 2019). Extensive evidence exists on impacts of local NGOs and active citizens. This includes place making and place keeping of urban green (Dempsey and Burton 2012), improving local biodiversity (Dennis and James 2016), promoting the use of sustainable energy (Broska *et al.* 2022), providing environmental education (Bendt, Barthel, and Colding 2013), increasing social and ecological resilience (During, Van Assche, and Van Dam 2022), promoting climate change mitigation (Frantzeskaki *et al.* 2016), producing and providing food (van der Jagt *et al.* 2017) and disclosing the impacts of pollution (Gignac *et al.* 2022). Through their activities, CSAs not only realise tangible environmental benefits but can also put sustainability issues on the political and public agenda, contribute to knowledge development and inspire others to act (Mattijssen 2022).

CSAs' impacts are often based on co-developing situated knowledge about places and communities, the development of local and cross-scale networks and movement building (Krasny and Tidball 2012). In addition, through their embeddedness in local cultures, CSAs can situate and contextualise innovative practices to the local context (Krasny and Tidball 2012). However, it has been argued that actual impacts tend to be small-scale and fragmented, and rarely go beyond the local scale (Mattijssen, Buijs, and Elands 2018; Aiken 2017). Moreover, some argue that through working within

existing regimes without explicitly challenging them, such initiatives only reproduce existing power relations (Aiken 2017; Blühdorn and Deflorian 2019) with limited impact on existing governance regimes (Richardson *et al.* 2020).

Regardless of the actual impacts on governance regimes, it is clear that many CSAs have the ambition to contribute to transformative change and develop specific strategies. The objective of this article is to advance the understanding of the strategies CSAs use to contribute to sustainability transitions. In this, we focus on two well-known sustainability challenges: urban biodiversity and plastic litter in the environment. We do so through a comparative case study approach, using concepts from transition theory and theory of change.

2. Conceptual framework

2.1. Transitions and civil society initiatives

To explore the pathways CSAs use to influence broader regime shifts towards sustainability, we use insights from transition theory. Transition theory aims to understand how societal systems change over time, often with the aim of influencing processes of change towards a more sustainable future. In transition theory, the multi-level perspective is a central concept. This perspective distinguishes three levels of structure: (1) landscape, (2) regime and (3) niche (Rip and Kemp 1998; Loorbach 2010). The *landscape* refers to the most deep-rooted principles of our world and lives, including the climate, biodiversity, cultural beliefs, demography and macro-economy. The *regime* refers to the ensemble of generally accepted rules, common practices and prevailing administrative structures in society. *Niches* concern local projects and/or divergent practices that are not (yet) part of the prevailing regime (Rip and Kemp 1998; Loorbach 2010).

The term *transition* refers to a structural change in which the current "regime" is fundamentally adjusted (Geels and Schot 2007). A transition rarely originates from a single actor: it usually takes shape through an interplay between authorities, businesses and all kinds of CSAs. Transition theory therefore emphasises that regime shifts often result from a complex and unpredictable process in which shifting power relations take centre stage (Grin 2010; Frantzeskaki *et al.* 2016). Regime shifts critically depend on the joint agency of various actors towards a desired outcome, as well as on the power structures in which these agencies evolve (Avelino 2017). Following Arts and van Tatenhove (2004), we emphasise that the power of CSAs to contribute to transitions does not only depend on their *relational power* to directly influence the behaviours of other actors. Also important are *dispositional power* – CSAs' ability to employ various resources to act and exert agency, and *structural power* – CSAs' ability to change structural power relationships that determine, for example, the legitimacy of actors and policies. CSAs especially challenge structural power relations through the *discursive power* of developing innovative and/or critical narratives and subsequently mobilising a constituency for these narratives to change dominant cultural values or political visions and perspectives on sustainability pathways (Svarstad, Benjaminsen, and Overå 2018; Dorst *et al.* 2021). Although the dispersed nature of power and agency may limit simple attributions of regime change to the agency of individual actors, taking power into consideration may be helpful to understand the diversity of strategies and impacts of CSAs.

CSAs are often conceptualised at the niche level. However, for these niches to have an actual impact on the regime, they must move beyond their local scale of implementation. To scrutinise the impact of CSAs on potential regime shifts, we look at three different pathways of scaling through which CSAs can promote an impact

Table 1. Summary of transition pathways, type of contribution and associated engagement modes.

Scaling pathway	Type of contribution	Associated engagement mode
Scaling out	Multiplication and connecting	Knowledge building, movement building
Scaling up	Regime shifts	Knowledge building, movement building
Scaling deep	Changing values and norms	Knowledge building, culture building

beyond the local level: (1) *scaling out*, (2) *scaling up*, and (3) *scaling deep* (Lam *et al.* 2020; Moore, Riddell, and Vocisano 2015; Frantzeskaki *et al.* 2016).

Scaling out refers to growing on site, in surface area or people involved, through replication at other locations and with other people, or through connecting with other existing initiatives which overlap in aims and approaches (Naber *et al.* 2017; Lam *et al.* 2020). NGOs can play a major role in the scaling out of CSAs, especially in connecting across sites, linking people and practices to build momentum for change at a larger scale (Buijs *et al.* 2019). *Scaling up* is about the contribution to shifts in existing governance regimes (Lam *et al.* 2020). This, for instance, happens when CSAs inspire changes in public policy or across corporate practices. Power dynamics are crucial to contribute to regime shifts, and the agency of CSAs to contribute to regime shifts through scaling up or out critically depends on their relational, dispositional and discursive power (Avelino 2017; Grin 2010). In this light, network building and learning by doing are key for actual impacts (Naber *et al.* 2017). *Scaling deep* refers to the contributions of CSAs to change cultural values and norms (Moore, Riddell, and Vocisano 2015). CSAs can stimulate and enact value change at the local level, facilitating discussions about sustainability and the expression of values and identities through hands-on practices (Bennett *et al.* 2016). Changing deep-rooted worldviews and paradigms is considered to be the hardest but most influential leverage point for sustainability changes and typically requires dispositional and discursive power (Ives *et al.* 2018; Richardson *et al.* 2020). All three pathways are dependent on intertwined networks of actors, discourses, rules and regulations for scaling (Bouzarovski and Haarstad 2019). New ideas, practices and collaborations travel through such networks and together may contribute to regime change.

The three "scaling pathways" closely align with three paths that Krasny (2018) identified for extending the impact of civic ecology practices to beyond the local level: (1) knowledge building, (2) culture building, and (3) movement building. To avoid confusion with the "transition pathways," we will refer to these pathways as "engagement modes." *Knowledge building* occurs when participants are engaged in research and monitoring as part of their initiative and through their interactions during their engagement. *Culture building* happens when the initiative becomes a regular and visible occurrence in a community, and becomes linked to social norms, values, attitudes and behaviour. *Movement building* takes place when initiatives contribute to governance networks or social movements, such as urban agriculture (Jorgensen, Krasny, and Baztan 2021). Knowledge-building is part of all three scaling pathways, culture-building is closely linked to scaling deep and movement building is associated with both scaling out and scaling up (Table 1).

2.2. *Theory of change*

To explore what strategies CSAs use to contribute to sustainability transitions, we use a Theory of Change (ToC) framework. ToC was developed in the context of

evaluation research. Its foundations lie the 1970s, when there was an increasing need to not only assess whether there was an impact of an intervention, but to also explain why or why not this impact was achieved. ToC subsequently also developed in a more action-oriented direction. This includes conscious and continuous joint reflection by the stakeholders involved, which is seen as a catalyst for achieving positive action or transitions through social learning and taking informed actions (Maru *et al.* 2018; Rolfe 2019). ToC enabled us to reflect with CSAs on how they aim to promote sustainability transitions and discuss how they perceive the success and failure of their strategies. The core of a ToC approach is to create a visual, narrative model of an intervention and its envisioned outcomes and impacts (Rolfe 2019). In this way, it is made clear what the underlying assumptions are behind these envisioned results (Morra Imas and Rist 2009; Rolfe 2019). ToC refers to a process in which stakeholders design interventions based on a theory they have developed themselves, including a rationale for how this is implemented (Maru *et al.* 2018). Monitoring and evaluation are an essential part of the ToC approach (Maru *et al.* 2018; Rolfe 2019). The value of a ToC is twofold. On the one hand, it helps stakeholders (and evaluators) to collaborate on a shared vision with long-term goals, including how they are achieved, and how they are monitored. On the other hand, it visualises the beliefs about why the project, programme or policy is likely to succeed in achieving its objectives (Morra Imas and Rist 2009). In this way, it can assist critical analysis of underlying assumptions. Thus, ToC has both practical and scientific value.

In a ToC model, resources, activities, output, intended outcomes and impacts are all interrelated. Contextual factors (e.g. the political context, policy, macro-economic factors) also influence the ToC model, and monitoring and evaluation must always take this into account (Steins and Edwards 1999; Morra Imas and Rist 2009). For our data collection and analysis, we adapted a so-called logic model template to evaluate a ToC originally developed by the W.K. Kellogg Foundation, to evaluate interventions within the framework of their charity programmes (Kellogg Foundation 2004; Morra Imas and Rist 2009). Figure 1 shows its different interrelated components.

3. Methods

Our study is based on comparative case study research of CSAs in the urban and the marine environment. For the former, we selected Tiny Forests (TFs), a concept of densely vegetated mini urban forests specifically designed for small-sized urban biodiversity development. Although the concept of Tiny Forest in the Netherlands is developed by IVN – an NGO – they are also initiated by local residents and/or schools. Typically, local communities take full responsibility for care and maintenance after plantation of the forest. In the marine environment, we studied several beach clean-up (BCUs) initiatives, where community groups and small-scale NGOs collect litter on beaches or riverbanks. The different BCUs vary in spatial, temporal and organisational scale, ranging from small-scale NGOs to small-scale, local grassroots. Representatives from both sides of this spectrum are included in the interviews.

Primary data were collected through 19 open-ended interviews (Supplementary material 1) with volunteers, grassroots and the two NGOs. The interviews were carried out between June 2019 and February 2020 following the Dutch and Wageningen University ethical guidelines for non-interventionist human research with informed consent from all participants. Interviews focused on describing the organisation or
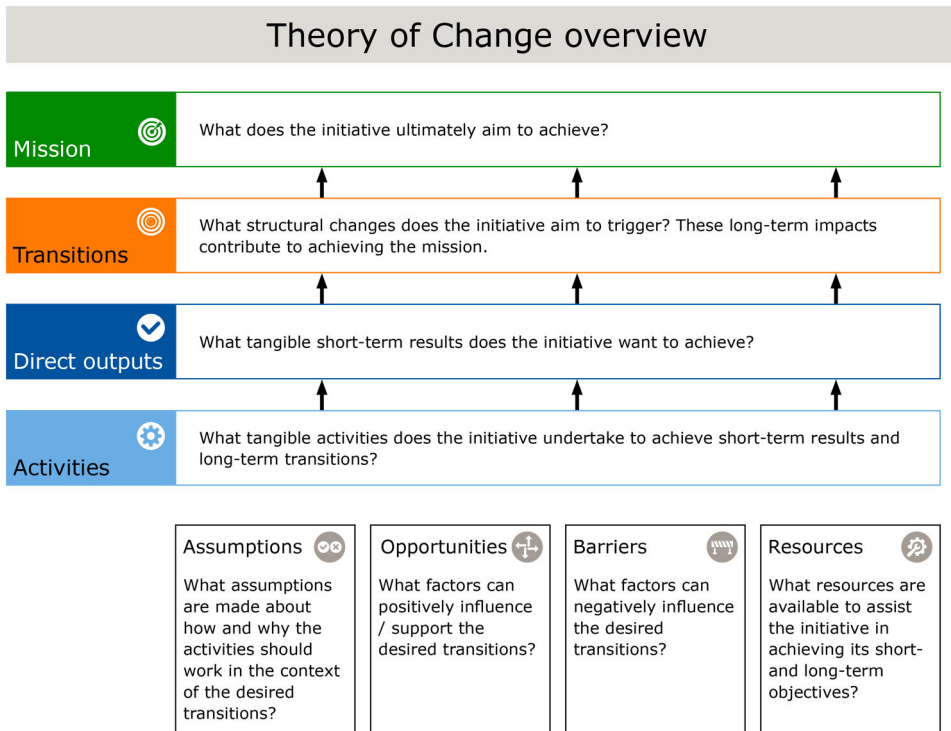
Figure 1. Theory of change diagram. Inspired by (Kellogg Foundation 2004; Morra Imas and Rist 2009).

initiative and its activities, identifying the different ToC components, investigating collaboration within networks as well as the discourses, resources, coalitions of actors and any rules that play a role therein. All interviews were fully transcribed; each transcript and the full report including quotes were shared with the interviewee for consent. Transcriptions were coded using Atlas.TI software. As part of the beach clean-up case, we also used raw data from the annual Boskalis Beach Clean-up Tour (BBCT) citizen participant survey for the years 2013–2019, including three additional questions based on our interview results. Data were kindly provided by the organiser, *Stichting De Noordzee* (North Sea Foundation, SDN). To validate our findings and further refine the outcomes of the study and stimulate social learning through the constructed theory of change, we organised two online workshops in October 2020 and March 2021 with respectively 10 and 6 stakeholders from both cases (Supplementary material 1).

4. Case studies

4.1. Case 1: tiny forests

4.1.1. Description

Tiny Forests is a national programme of the Dutch Institute for Nature Education and Sustainability (IVN, *Instituut voor Natuureducatie en Duurzaamheid*). IVN is an NGO which aims to bring citizens (children and adults) closer to nature. They operate nationwide, through regional and local departments which engage in various activities

Theory of Change "Tiny Forests (IVN)"

Mission — Restoring the balance between people and nature / protection of biodiversity

Transitions
- More urban nature and biodiversity
- Increased social cohesion
- Pro-conservation (nature friendly) behavioural change

Direct outputs
- Tiny Forests
- Exposing people to nature
- Aware citizens (incl. children)

Activities
- Building a community
- Joint planting of Tiny Forests
- Education

Assumptions
- Indigenous plants contribute more to biodiversity
- Exposure to nature leads to increased awareness
- Awareness leads to better care for biodiversity

Opportunities
- Societal attention for nature experiences/playing outside
- Attention for urban green spaces by local councils

Barriers
- Dependency on external parties
- Temporary project funding; focus on Transition (biodiversity) that needs time to develop
- Uncertainties about continuity
- Limited resources for guidance

Resources
- Land (estate)
- Funding
- Manpower
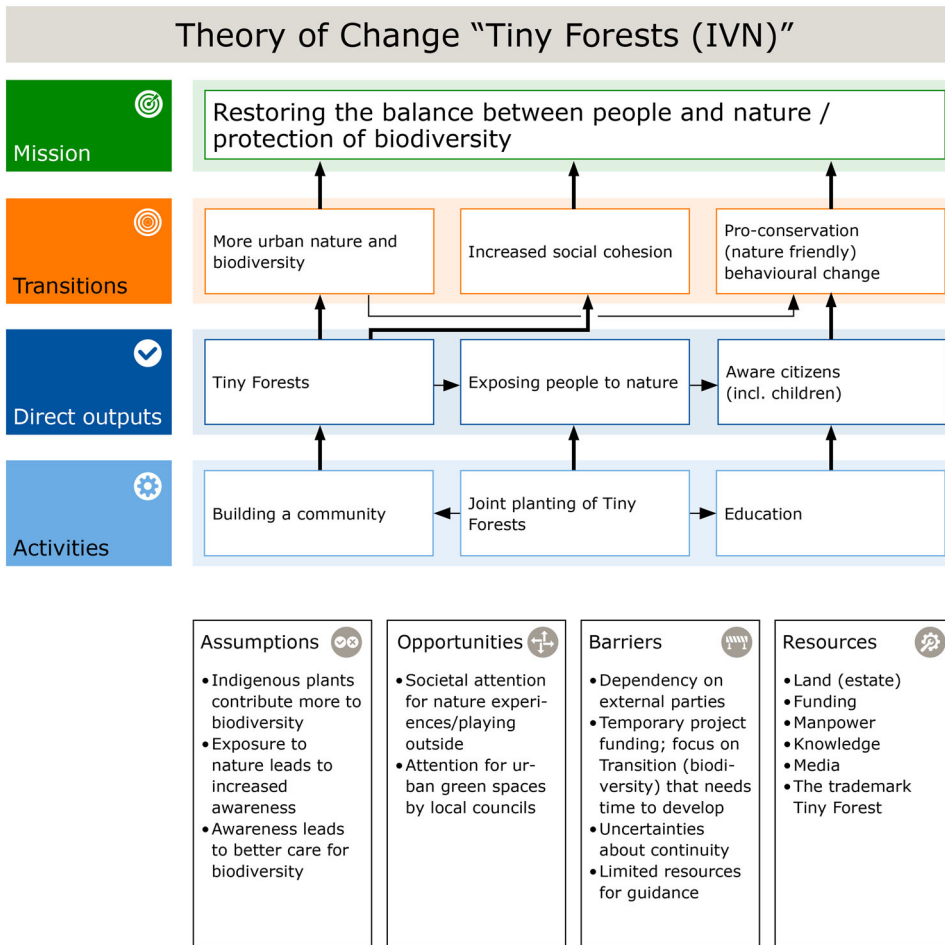- Knowledge
- Media
- The trademark Tiny Forest

Figure 2. Theory of change tiny forest programme.

and projects related to, for example, environmental education, sustainable recreation in nature and bringing nature into the neighbourhood. Funding for these activities is collected through grants, donations, membership fees and revenues from activities. The Tiny Forest® (TF) programme encourages citizen groups and schools to locally plant and sustainably manage a dense, indigenous forest the size of a tennis court (Bleichrodt 2022). TFs are 30 times more densely vegetated than natural forests and contain significantly more biodiversity (Ottburg *et al.* 2017). Until 2022, over 160 TFs have been planted across the Netherlands (Bleichrodt 2022). The city of Almere has the largest number of TFs (nine in total as of October 2022). Using Almere as a case study, we reconstructed the ToC for the TF initiative (Figure 2). Below we will describe the different ToC components, their interrelationships and critical success factors.

4.1.2. Activities

The Tiny Forests programme focuses around one core activity: the planting of TFs and their management, involving local residents and school children. The initiative for a

TF must be taken by groups of citizens, who submit an application to IVN. This can be done in collaboration with, for instance, local schools or the city council. Apart from planting the forest itself, it also creates an environment for other activities that are part of the TF concept: providing an outdoor classroom and managing local nature collaboratively as community members.

4.1.3.   Mission, transitions and direct outputs

The ToC of IVN is that local TF projects will contribute to *transitions* to more sustainable cities, increased connectedness with nature and pro-conservation behaviour. In this way, TFs contribute to the *mission* of restoring the balance between people and nature and protecting biodiversity. While IVN's staff and coordinators more explicitly aim for transitions at policy (municipal) and cultural (general public) level, volunteering citizens, according to interviewees from IVN, are in general more focused on the short-term aspects of the activity, such as creating more green space in their neighbourhood together with their community. *Direct outputs* of the TFs are more urban green spaces (TFs), exposing people to nature and creating awareness amongst adults and children. These different outputs are interconnected. For example, contact between people and nature can also directly lead to pro-conservation attitudes amongst citizens. By making the link with social aspects, people who are not necessarily driven by green motives may also become involved: "A green neighbourhood also becomes a social neighbourhood. By creating green areas together, the neighbourhood becomes more social; and you create a place where you can meet and relax. […] Sometimes you participate because it happens in your area and not necessarily because you are green minded." (IVN representative). And although these *direct outputs* described by volunteers are geared at the local scale, they still align with IVN's *mission* and *transitions* aims such as increasing urban nature and social coherence.

4.1.4.   Assumptions

The most important *assumption* behind the TF programme and IVN's initiatives in general is that contact between people and nature has important added value for both: awareness leads to more care for biodiversity, but this biodiversity is also important for human wellbeing. TFs focus specifically on native species, the *assumption* being that native species and high-density planting make a greater contribution to biodiversity. This *assumption* is the subject of a longitudinal study, and preliminary results seem to indicate this is indeed the case (Ottburg *et al.* 2017). Another *assumption* is that TFs will create a snowball effect, stimulating "a green movement." All TFs in the Netherlands combined cover only a few hectares. Urban biodiversity impacts are hence primarily local and small-scale. The *assumption* is, however, that the impact is not so much about the surface area of TFs, but about reaching large numbers of people, including school children, strengthening their connectedness with nature and the effect on impacting nature-conscious behaviour in the longer term.

4.1.5.   Resources

The TF programme received a substantial financial contribution from the Dutch Postcode Lottery in 2018. This was a crucial resource for hiring additional paid staff

to enable the rapid growth in the number of newly planted TFs. In addition to financing, other key *resources* for realising TFs are the availability of land, guidance and manpower for planting and maintenance. "[We need] twenty thousand euros per Tiny Forest. And that includes our guidance, including soil preparation, planting material, everything" [IVN representative]. Other *resources* are knowledge about nature education and the specific planting method, as well as public relations experience; effective media coverage could potentially lead to new initiatives. Moreover, networks are an essential *resource* to make TFs successful. TFs are often initiated by an existing group of citizens who are already involved in nature conservation at local level.

4.1.6. Influential factors

Influential factors can be divided into opportunities and barriers for achieving the desired *mission*, *transitions* and *direct outputs*. Opportunities are provided by the growing attention in society to the importance of playing outside (in green areas) for children living in urban areas and experiencing nature for human well-being in general, as well as increased recognition of the biodiversity crisis, including threats to species such as bees. Municipalities in urban areas include increasing access to green spaces as part of the policy agenda. This is important as IVN's TF programme relies on local volunteers, schools and municipalities for its success. This dependence on external parties is, however, also a barrier to the programme: both IVN and volunteers need the cooperation of a large number of local actors and not all of these are willing or able to support the initiative. Another barrier is the funding time span. The programme has grown significantly, while funding from the Postcode Lottery is only for four years. Funding to provide guidance and education to local TF initiatives beyond the planting stage is limited, particularly as the number of TFs has increased. A related barrier is continuity. Biodiversity takes more than four years to develop.

> Hopefully the volunteers are enthusiastic enough for [the Tiny Forest] to continue. But I don't dare to make very hard promises right now, because you can also see that schools are busy. You can see that there are many changes. So that's a real challenge for us [at IVN] too. If we withdraw as project leaders, we have to trust that the municipality knows where to find initiators and a school and that the network must remain alive. (IVN representative)

This shows that the TF programme's long-term success depends on whether the network of the municipality, schools and volunteers is sufficiently robust to ensure continuity. It is still too early to conclude how this will work in practice.

4.1.7. Critical success factors

Stakeholders identified four key factors driving the success of the TF programme. First, starting and maintaining a TF is a tangible activity with a visible result. Second, a TF is connected to a local neighbourhood and is cared for with and for its inhabitants. Third, it is a nationwide concept and therefore has critical mass. Finally, funding from the Postcode Lottery has been key to the programme's roll-out.

4.2. Case 2: beach clean-ups

4.2.1. Description

Several Dutch organisations and local initiatives are involved in beach and river clean-ups (BCUs). One of the largest and oldest initiatives is the Boskalis Beach Clean-up Tour (BBCT), organised since 2013 by *Stichting De Noordzee* (North Sea Foundation; SDN), an NGO which focuses on the protection of the North Sea through evidence-based advocacy. During their annual BBCT, over a period of two weeks in summer, groups of citizens accompanied by SDN volunteers clean the entire coastline of the Netherlands. SDN also gathers data on the type of beach litter collected as part of a structural monitoring programme commissioned by Dutch authorities. The information gained through these monitoring efforts not only provides the Dutch government with insights into the composition and trends in beach litter but also supports SDN's advocacy aimed at better legislation regarding (plastic) litter at national and European level. This data collection project inspired the BBCT initiative, which is open to all members of the public and focuses on raising awareness and generating media attention for the "plastic soup" problem. The success of "the BBCT model" has inspired many other BCUs. Smaller initiatives such as *Grondstofjutters* and *Coastbusters* are also involved in advocacy at local or regional level and several beach clubs organise small BCUs and no longer use plastic themselves. In addition, SDN works together with two other large NGOs, the Plastic Soup Foundation (PSF) and IVN, in the national Clean Rivers Initiative. Many of these clean-up initiatives are linked, resulting in a complex network from local to national initiatives involving many different types of organisations (NGOs, hospitality, government, companies). The different BCU cases provided the basis for the construction of a shared ToC shown in Figure 3. Below, we will discuss its interrelated components and its critical factors.

4.2.2. Activities

The core *activity* of BCU initiatives are the actual clean-ups. These clean-ups are, however, heterogeneous in nature. The BCT is an annual one-off nationwide event involving hundreds of volunteer citizens while others take place weekly with a smaller fixed group of people. The Clean Rivers project is nationwide but trains its participants to become "river litter researchers": citizens are not only involved in cleaning up litter but also registering it. Participants can also follow an advocacy training so that they can effectively lobby (local) politics on plastic waste management. The BCU as the core *activity* forms the basis for two other activities: media outreach and advocacy by linking each BCU to a specific plastic-related issue. For example, during the BBCT in 2018 and 2019 participants were asked to send a postcard to their local council in support of SDN's campaign to ban balloon releases, as such balloons and plastic ropes attached to them are a form of litter often found during clean-ups and are a known source of mortality amongst sea birds (Kühn *et al.* 2021).

4.2.3. Mission, transitions and direct outputs

The shared *mission* of the BCU initiatives is to have zero plastic litter in the natural environment. Besides a shared *mission*, these initiatives aim at achieving *transitions* at three actor levels: citizens, companies and policy. At citizen level, more awareness of

Theory of Change "Beach Clean-ups"

Mission
No more plastic in the environment

Transitions

Citizens
Reduced use of plastic
Active involvement in waste separation
Less litter in the environment

Companies
Changes in products (less plastic, alternative materials, enhanced recyclability)

Government
Policy changes (e.g. ban on balloon contests, deposit refund system for small plastic bottles)

Direct outputs

(Temporarily) clean beaches
Aware citizens

Media attention

Political discussion

Activities

Beach clean-ups

Media outreach

Advocacy / lobbying

Assumptions
- Plastic soup threatens biodiversity
- Aware citizens deal more consciously with waste
- Companies and governments are responsive to advocacy

Opportunities
- Plastic soup discussion (many initiatives, powerful images, scientific attention, etc.)
- Health effects of microplastics
- Increasing policy attention for nature and the environment
- Government support for 'the participatory society'

Barriers

Resources
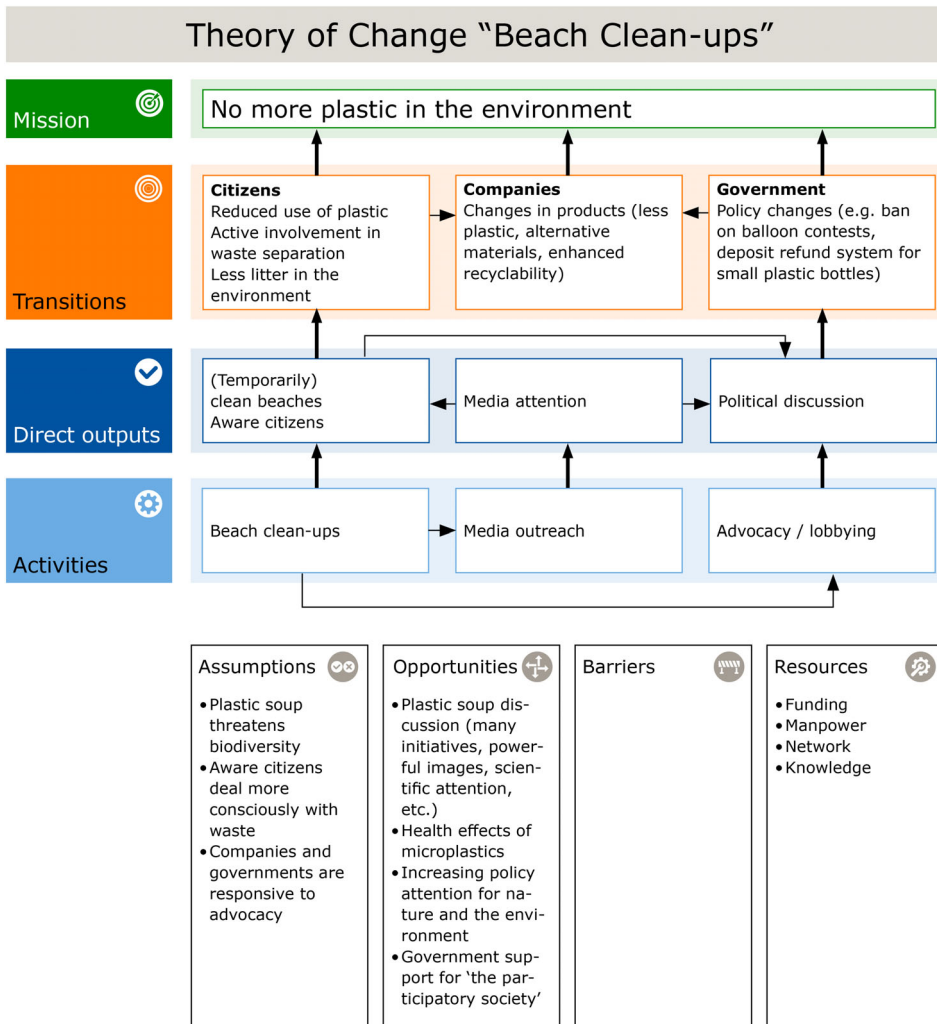- Funding
- Manpower
- Network
- Knowledge

Figure 3.   Theory of change beach clean-ups.

the marine litter problem should lead to a *transition* towards decreased plastic use and active involvement in recycling, resulting in less litter in the environment. Indeed, 75% of the post-BBCT questionnaire respondents (2019, $n = 291$) believe their participation will lead to a general reduction in "plastic soup"; some respondents commented that media attention is the main mechanism behind this. However, while in all questionnaires since 2013 "contributing to a solution for the plastic soup" is the most frequently given motivation for participation, another participation driver is the "outdoors and social nature of the BBCT" (Tamis and De Koning 2020). At company level, more public awareness and regulations from government should induce transitional changes in relation to product packaging where plastic is still the standard. And finally, at policy level, regulatory changes should lead to incentivising recycling and use of alternatives to plastic packaging and (single-use) products at all different levels.

Contributions to actual transitions are difficult to substantiate within the limited scope of this article. However, with the BCU being one of the key actors in media and politics advocating against plastic waste, a recent study into the emergence of Dutch municipal bans or discouragement of balloon releases found evidence for a link between advocacy *activities* such the "ban the balloon release" campaign linked to the BBCT in 2018 and 2019 (Biekart, Steins, and Strietman 2022). Between 2018 and 2020, the percentage of Dutch municipalities that banned balloon releases grew from 5% to 45%. Moreover, 28% adopted a discouragement policy. In 2020, balloons and plastic ropes attached to them disappeared from the top 5 marine litter categories in the Dutch monitoring programme (SDN 2021). Similarly, the national policy decision to introduce a deposit refund system on small plastic drinks bottles has been influenced by advocacy *activities* by CSAs using BCU results, as was highlighted in an interview with a government representative. A *transition* towards better separation of waste (for improved recycling) and litter reduction as part of EU legislation is already part of current practice in the Dutch waste processing system. While participants of the BBCT indicate that their participation resulted in reduced use of plastic products and better waste separation (sixty-two per cent of the respondents to the post-BBCT questionnaire (2019, $n = 291$) (Tamis and De Koning 2020), we have not been able to investigate whether this is actually the case. *Direct outputs* of BCUs are participation, public awareness and (temporarily) cleaner beaches. As described above in the section on transitions, participation and public awareness can lead to the envisioned transitions. In the BBCT alone, almost 14,500 citizens participated over the period 2013–2019 (BeachCleanupTour 2021), generating a lot of national and local media attention as well as social media attention by participants. "It is fair to say that we mobilise politicians through the public. In our experience this is how it works" (PSF representative). Although cleaner beaches are not an explicit goal for some of the BCU organisations, beaches are significantly cleaner in areas where BCUs take place regularly.

4.2.4. Assumptions

The most important *assumption* underlying the TOC of the BCUs is that companies and policy actors are influenced by media attention, advocacy and consumer preferences to adopt sustainability measures. A second assumption suggests that physically encountering marine litter is an important stimulus for people to really become aware of the plastic waste problem. A final assumption is that aware citizens will also behave in a more pro-environmental manner.

4.2.5. Resources

Key *resource*s for BCUs are funding, manpower, a network and knowledge. Funding is particularly important for individual BCU initiatives coordinated by larger organisations such as SDN, IVN and PSF and their collective Clean River Initiative. The Dutch Postcode Lottery is a key source of support for these. To reduce costs, all initiatives depend on volunteers, who locally coordinate *activities*. Involving volunteers also serves another purpose: "the cost aspect is certainly important […] but […] with the rise of social media, [working with volunteers] is also a way of reaching more citizens" (SDN representative).

Another key *resource* is the network. BCU initiatives work closely together, with clear roles for the individual organisations. Larger organisations focus on influencing national and European policy, while smaller ones target local governments. The network is used for sharing knowledge, human resources, and access to funding. "Research is the strength of SDN, IVN is good at participatory approaches, and PSF is good at finding solutions" (PSF representative). Finally, knowledge plays an important role. The BCUs originate from a data collection project about marine litter for research, which inspired the organisation of the first national beach clean-up (BBCT), contributing to public awareness, data collection and growing awareness and knowledge about adverse impacts of marine litter. BCUs are thus legitimised by knowledge, but also contributes to an improved knowledge base about (trends in) the composition, and general sources of beach litter. One way of doing this is by training volunteers in monitoring methods. Even smaller local initiatives like *Grondstofjutters* organised, through their network, access to a science coordinator.

4.2.6. Influential factors

Influencing factors are mainly embedded in the policy and societal context. The Dutch policy focus on "the participatory society," which envisages a strong role for citizens' initiatives, connects well to the BCU approach. Also, there is increasing policy attention for nature and the environment, and in particular "the plastic soup." An example is the European ban on single-use plastics in 2019 (EC 2019). The cumulative effect from the different *activities* by the different BCU initiatives results in more (media) attention for the impacts of plastic. Growing attention by the scientific community and the wider public for the plastic problem increases the legitimacy of the BCU initiatives. Increasing attention on microplastics and potential health effects is seen by a PSF representative as a factor that can strengthen attention to the marine litter problem from a different angle.

4.2.7. Critical success factors

Stakeholders identified six critical success factors that drive the BCU model. First, it is a tangible and visible activity. Second, citizen participation in a clean-up is very easy. Third, participants are part of a national concept that has become very popular as a result of the fourth factor: particularly the BBCT clean-up generates significant nationwide (social) media attention. Fifth, funding from the Postcode Lottery facilitates organisation of the two national clean-up projects, which indirectly benefits the smaller initiatives. And, finally, the data collection from the BCUs assists effective lobbying for policy changes.

4.3. Brief case study comparison

A comparison of the ToC of the TF programme and the BCUs results in a number of differences and similarities (Table 2). We explore these further in our discussion of how citizens' initiatives aim to contribute to transitions.

Table 2. Main similarities and differences in the ToC approaches and key success factors of IVN Tiny Forests and beach clean-ups. Numbering for reference purposes.

Theory of change	
Similarities	Differences
S1 Clear ToC.	D1. TFs focus on scaling out and scaling deep; BCUs focus on scaling up and to a lesser extent on scaling deep.
S2 Complex mix of actors, including individual citizens, NGOs and government.	
S3 Dependency on external funding.	D2. TFs do not focus on institutional transitions; BCUs do.
S4 Public awareness (knowledge building) as basis for change.	D3.TF see increasing awareness amongst citizens as a goal in itself; for the BCUs this is a means to mobilize citizens and legitimize advocacy.
S5 Participating citizens and volunteers have shorter-term and sometimes different goals compared to the organising NGOs.	D4.TF aims at a tangible place-based outputs (urban biodiversity); for the BCU the tangible place-based output is merely a means to an end to achieve an institutional transition.
S6 Social nature of activity, i.e., participants doing "something for the environment" together with others.	D5.IVN needs land (estate) to achieve its aims; a BCU can be done anywhere on a public beach or riverside.
	D6. BCUs make strategic use of media in support of their aims; for IVN this is less of a focus.
Key success factors	
Similarities	Differences
S7 Practical and tangible activity, with a strong connection to the natural environment.	D7.TF connection is more local (neighbourhood) than the BCUs
S8 Social aspect of activity.	D8. Larger BCUs (BBCT and Clean Rivers Initiative) generate much wider outreach through media attention.
S9 Availability of funding.	
S10 Outreach beyond the participants.	D9. TF advocacy at municipal level and not at national level; larger BCUs target national and European level.
S11 Outreach supports advocacy work.	
S12 Appealing change narrative.	

5. Discussion

5.1. *Hybrid mixes of transition pathways to achieve regime shifts*

Civil Society Actors are increasingly regarded as important agents of change in transitions towards a more sustainable future (Wagenaar *et al.* 2015; Kok *et al.* 2022; CBD 2022; Buijs *et al.* 2022). Scientific understanding of the strategies CSAs use to contribute to sustainable transitions is, however, still poor (Richardson *et al.* 2020). While our focus is on strategies towards transitions and we did not do an explicit impact assessment, our case studies suggest that the CSAs have an impact. IVN successfully realised over 160 Tiny Forests, planted in collaboration with volunteers, schools, and municipalities. Beach Clean Up initiatives have removed much litter from the environment and associated advocacy activities influenced local and national policy discourses on plastic waste (e.g. balloons, refund system for small plastic bottles).

It should be noted that a transition is an emergent and co-produced process with many different drivers (Chilvers and Longhurst 2016), making it difficult to clearly identify contributions from individual events or innovative practices (Dorst *et al.* 2021). Focusing on the strategies CSAs use, we find a hybrid mix of transition pathways and engagement modes (Table 1) CSAs use to contribute to sustainability

transitions. Even so, our two cases differ significantly in the mix of transition pathways on which they focus, with TFs aiming at achieving transitions through mobilising the grassroots level and BCUs aiming at regime actors (Table 2, D1–3). TFs focus on nature connectedness as a root driver for sustainable changes and focus on education and awareness raising. TFs thus have a strong focus on scaling deep, using the discursive power of generating alternative discourses and practices to mobilise support within schools and local communities to strengthen the connectedness to nature amongst children and adults. Reconnecting people with nature and stimulating sustainability norms and values is often considered an important leverage point for sustainable change, and can build critical mass for larger transitions towards more urban biodiversity and sustainable cities (Ives *et al.* 2018). The engagement modes of knowledge building and culture building are key components of the scaling deep pathway TF has taken. However, scaling deep also requires critical mass. Therefore, scaling out is an important additional pathway to enlarge the impact of TFs, which is done through the involvement of new local actors and replication to new sites across the country. Here, in addition to discursive power, relational power is especially relevant and IVN has been successful in agenda-setting for stimulating inclusive biodiversity policies in over 60 municipalities. The deliberate focus on involving an increasing number of citizens illustrates that IVN's engagement mode leans on movement building, with the visibility of the 160 Tiny Forests as an inspiring resource to promote TFs in other cities (Cf. Bouzarovski and Haarstad 2019). This contributed to scaling out to other municipalities, but also to stimulating schools and nurseries to expand educational activities and outdoor learning.

Compared to TF, BCUs have a more explicit focus on realising institutional change at the regime level (national and European), destabilising the established socio-technical regime of waste collection and advocating for a deposit-based regime. In this, the local, short-term impact of cleaning beaches is merely a means to an end objective: limiting the use of and littering by plastics (Cf. Jorgensen, Krasny, and Baztan 2021). BCUs thus have a strong focus on transitions through scaling up and through knowledge building. Through collecting marine litter with volunteers, identifying important sources of pollution and strategically disseminating results in reports and media, they explicitly aim to change the existing socio-technical regime of use and production of plastic as the root cause of plastic litter on land and in water. Knowledge developed through collecting marine waste is an important source of dispositional power for BCUs, and SDN is recognised as an important knowledge broker by governments and media. Such knowledge also provides discursive power: reporting the collected litter helps the BCUs to substantiate their critique on the current plastic regime, promote more sustainable practices and build pressure on businesses and governments through advocacy work. BCU activities are replicated to other sites, including rivers and cities, which could be characterised as scaling out (Jorgensen, Krasny, and Baztan 2021). We stress that for the CSAs involved, the BCUs in themselves are predominantly a method to increase public support, visibility and political traction to increase pressure on existing regimes. The perhaps unintended snowball effect that resulted from the annual BBCT as an activity does, however, contribute to a growing (international) "marine litter movement" (Jorgensen, Krasny, and Baztan 2021). While the BCU CSAs recognise that participating in clean-up activities increases awareness of the plastic problem and may lead to changes in the behaviour of volunteers, scaling deep and culture building is not a prime objective of the activities (Table 2, D3).

5.2.   *A mix of CSA strategies made visible by applying a ToC framework*

Employing a Theory of Change framework provided important insights into the strategies CSAs developed to achieve their aims. Both CSAs have developed strategies on how to contribute to sustainability transitions, based on the available resources, such as networks and knowledge, as well as appealing narratives (Table 2, S1).

For both, building strategic engagements with relevant networks is a key strategy as part of their envisioned transition paths. The NGOs involved in the CSAs deliberately position themselves in broader social and institutional networks in order to promote regime shifts. In doing so, the citizens with whom they work are important to achieve the desired transitions: a strong connection between participating citizens, the NGOs and other actors is crucial here. This strategy to have impact beyond the local level sheds new light on earlier studies, which suggest that many citizens' initiatives are mainly focused on local results (Mattijssen, Buijs, and Elands 2018) and have limited impact on governance regimes (Richardson *et al.* 2020). While the above might be true for many local initiatives, the NGOs behind TF and BCU initiatives both strategically mobilise the mosaic of networks that may be able to change the regimes of plastic packaging (BCU) and urban greening (TF). They do so by enrolling powerful actors (e.g. businesses, authorities, media, funding organisations), engaging with important target groups (e.g. volunteers, schools, families, young people) and, specifically for the BCUs, teaming up with peer initiatives and organisations towards a common objective (Table 2, S1, S2) (Ernstson, Sverker, and Thomas 2008). This reiterates earlier findings about the importance of mosaic governance approaches and scale-crossing social networks for promoting the impact of CSAs' activities (Buijs *et al.* 2019; Naber *et al.* 2017; Scoones *et al.* 2020). Interestingly, a mosaic governance approach of both CSAs shows characteristics of multi-level collaborations with "core" and "peripherical" actors aiming for different types of networks (Ernstson, Sverker, and Thomas 2008). Core NGOs from both TFs and BCUs, such as IVN and SDN, are more focused on higher level institutions, strategically promoting various forms of scaling and further developing the networks to enable impact on municipalities (TFs and BCUs), national governments (BCUs) and businesses (BCUs) (Table 2, S2–4). In contrast, smaller local BCU initiatives, local TF initiatives and volunteers at the "periphery" are more focused on daily activities and the direct, tangible results of these activities in the local context; especially in the TF case (Table 2, S5, S6).

The relationship with the institutional network is, however, different between the cases (Table 2, D5). Since TFs require planting areas, their success in scaling out depends on the cooperation of local authorities, resulting in the need to find common ground with municipalities. The BCUs as an activity are not so much dependent on existing administrations for conducting their activities, but to achieve the desired change in policies (scaling up), the organisations and initiatives need to influence both local and national authorities and politicians.

In the "core" networks of both cases, the involvement of professionals is crucial. They enable and sometimes also coordinate the efforts of many volunteers and participants which contribute towards the success of the initiatives. Professionals at the "core" of both initiatives also play a key role in mobilising non-human resources and knowledge building (Table 2, S4). For IVN (TFs), knowledge building is directly aimed at schools and other participants and closely linked to culture building, fostering knowledge and awareness amongst those reached through the TFs. For the BCU CSAs, knowledge building is aimed at collecting data about marine litter (either by the

professionals themselves or by trained volunteers) to use in advocacy work for regime shifts at policy levels. The role of the BCUs in building and disseminating knowledge has contributed to the recent introduction of a refund system for small plastic bottles, which was based on monitoring data on litter in the environment, including those from BCUs (Rijksoverheid 2020).

5.3. CSAs as part of a broader transition movement

TFs and BCUs provide two examples where citizens, together with NGOs, strive for transitions that transcend the local level. Although the exact impacts are hard to define, the BCU CSAs are explicitly linked to changes in national policies related to plastic waste and municipal policies related to balloon releases: these are clear examples of scaling-up towards the regime. Advocacy enabled by the BCUs may also have contributed to the European ban on single-use plastics (EC 2019). The case of the Dutch BCUs confirms the findings of an international review that shows how through networking, strategically collaborating and scaling out, voluntary beach clean-ups contribute to building an (international) marine litter movement (Jorgensen, Krasny, and Baztan 2021). Meanwhile, more substantial change demands engaging with the root causes and wider systemic challenges, including economic and social drivers of plastic use, dominant practices in fisheries, global consumption practices and incentives towards a more circular economy, including plastic recycling (Löhr *et al.* 2017).

Although TFs had impact on the local level, one cannot speak of a regime shift. It is true that over 250 TFs have already been created in public spaces (January 2023) and, as a result, the number of citizens actively involved in, or experiencing, urban biodiversity in their own neighbourhood has grown. But these developments in themselves are not yet a regime shift: they can be better described as a scaling out of existing local niches, where urban biodiversity is locally promoted by citizens and other stakeholders (Dorst *et al.* 2021). Such forms of movement building can theoretically lead to transitions when TFs would become "common practice" in all cities and neighbourhoods (and thus, part of the regime), contributing to reversing the "extinction of experience" (Soga and Gaston 2016), through increasing the "opportunity" to engage with nature through providing nearby Tiny Forests as well as the "orientation" of young children at schools and kindergartens through practical engagement in the planting and maintenance of the trees. Although small, reconnecting young people to the biosphere can contribute to more environmental behaviour as well as to public support for sustainable transitions (Ives *et al.* 2018; Buijs and Jacobs 2021).

Our study confirms findings from other literature that highlights how a transition does not originate from a single actor but rather from a coordinated effort by stakeholders across scales and social networks (Frantzeskaki *et al.* 2016). It is therefore perhaps best to not consider TFs as a movement on their own, but to see them as part of a broader civil-society driven movement towards urban greening that is also linked to, for example, a rise in urban gardening in Europe (van der Jagt *et al.* 2017) and a growing recognition of the importance of urban green infrastructure (Pauleit *et al.* 2019). With the urban greening movement gaining prominence, we suggest that TFs might already be part of a broader ongoing transition towards more urban biodiversity.

If we look at impact from a power perspective, we especially see the importance of discursive power, such as an appealing change narrative (Wittmayer *et al.* 2019). BCUs in particular have "made cleaning up marine litter sexy" (IVN representative),

which contributes to mobilisation of support, resulting in a snowball effect in multiple BCU initiatives and their participants. Being inspiring practices and narratives, the discursive power of both TFs and BCUs are closely related to other forms of power, such as relational and dispositional power. Especially in the first years, media were highly interested in the activities and narratives generated from both CSAs, resulting in increased (social) media attention, through the initiatives' media channels, social media of participants as well as institutionalised media such as newspapers and television. This is then also used in advocacy activities, such as those aimed at banning municipal balloon releases (Table 2, S10–12).

Our analysis focused on how CSAs aim to contribute to sustainability transitions. It is also important to understand which factors are critical in (not) achieving CSAs ambitions. For our case studies, we gained some preliminary understanding of factors that, according to participants in a stakeholder workshop, are key to the success of the two initiatives (Table 2, S7–12, D6–8). Understanding these factors and how critical they are in achieving regime shifts (scaling up) or changing societal norms and values (scaling deep) was beyond the scope of our study.

6. Conclusions

Civil Society Actors (CSAs) can play an important role in sustainability transitions. The use of a Theory of Change framework allowed us to identify the mixture of strategies CSAs use to contribute to such transitions. Albeit not always explicit, CSAs employ well-developed strategies, focusing not only on direct place-based outputs, but also on larger and long-term regime change. Important strategies include developing strategic and high-quality environmental knowledge on environmental conditions, developing and implementing innovative and inspiring sustainable practices, and building new and capitalising on existing networks to link professionals from NGOs with citizens to collaboratively work towards transitions. Our analysis highlights how CSAs in both cases adopt mosaic governance approaches to strategically position themselves in multi-level social and institutional networks in order to promote regime shifts. However, the step from local impact of CSAs towards a broader societal transition remains a large one. Scaling of local initiatives is a complex, unpredictable and difficult-to-measure process that often requires a connection with forces in the regime itself – especially for scaling up through knowledge- and movement-building and scaling deep through knowledge- and culture-building. While CSAs can contribute to such transitions, we suggest that their impact should be valued as part of a broader transition movement. More understanding is needed of the critical factors that play a role in the success (or lack thereof) of civil society initiatives in sustainability transitions and in the relationship between individual CSAs and wider social movements.

Disclosure statement

The authors have no conflict of interest to declare.

Supplemental data

Supplemental data for this article can be accessed here.

Data availability statement

Anonymised interview summaries and survey results (all in Dutch) are available from the corresponding author upon reasonable request.

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