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Mapping the diversity & transformative potential of approaches to sustainable just cities

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Abstract

How can cities be more sustainable and just? This question has guided a process of synthesizing insights from previously funded research and innovation projects that deal with approaches tackling urban sustainability and justice. As part of this process, a database in the form of a knowledge commons was developed to gather 40+ approaches: sets of interventions, actions, strategies, solutions or policies that address urban sustainability and justice. This paper reflects on what we can learn from this database of approaches from an urban transitions perspective, both by sharing the method we used to develop the database and by analysing the content of those approaches and what research has revealed in relation to them. Not only do we introduce our methodology of co-creating the database (Section 2) we also present its outcomes in terms of the interlinkages between sustainable and just cities in the identified approaches (Section 3), their transformative potential (Section 4) and which institutional logics are involved (Section 5). We conclude that in addressing sustainability challenges in cities, tensions and contradictions emerge between ecological sustainability on the one hand and inclusivity, recognition and equity on the other (Section 6). Based on the identified approaches, we find that issues linked to justice are frequently glossed over, implicitly addressed, and instrumentalized in favour of ecological improvements or profitability which causes serious implications for future urban research and innovation. In order to address this gap, we present four recommendations for city-makers and city-thinkers across the globe to integrate sustainability and justice at the urban level.

Keywords: Sustainable and just cities, Urban transitions, Transformative potential, Knowledge commons

Science highlights

- An explicit focus on justice and transformative change is crucial in making sense of urban sustainability.
- In addressing sustainability challenges in cities, issues linked to justice are often neglected in favour of ecological improvements or profitability.



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- Co-creating a knowledge commons is both an ethical and methodological means to promote sustainability and justice within research.
- Integrating knowledge across disciplines, actors and localities is crucial for rethinking and reimagining just and sustainable cities.
- The transformative potential of urban approaches is related to the extent to which they address asymmetric macro and micro power relations.
- Urban approaches that are effectively integrating both sustainability and justice issues are fore-fronting the importance of a democratisation of urban challenges.

Policy and practice recommendations

- Integrate justice as an orienting principle for sustainability interventions, including their focus on the democratization of (local) policies, resources and decision-making processes.
- Link multiple approaches to strengthen the ability of community groups and civil society to foster transformative change.
- Ensure cross-fertilization between movements and approaches, as well as scales and spaces.
- Build an intersectional movement-of-movements to institutionalise and mainstream transformative approaches on a more structural level.

Introduction

How can cities be more sustainable and just? At a time when cities and other communities are faced with the interrelated crises of climate change and rising social inequalities, such a question becomes paramount for city-makers and city-thinkers across the globe (i.e., policy-makers, activists, entrepreneurs, intellectuals, citizens and other engaged individuals) in designing and transforming cities. The urban scale tends to concentrate and make tangible societal challenges, rendering it a useful prism for critically assessing justice and sustainability. Guiding principles for building sustainable and just cities emphasize the need to protect quality of life for all, including future generations of humans and non-humans, with respect to ecological systems and their balance (Agyeman 2013; Castán Broto and Westman 2017, pp. 637–638). Together, these principles can and should guide processes of societal transformation (Patterson et al. 2018) and sustainability transitions (Köhler et al. 2019).

Transitions towards sustainable and just cities require a sustained interdisciplinary and transdisciplinary effort, as each of these notions - sustainability, justice, transitions, urban - come with elaborate fields of research and practice across disciplines and sectors. Some have already explored the interlinkages and tensions between two or more of these concepts, such as those working in the fields of urban sustainability transitions (e.g. Gorissen et al. 2018; Frantzeskaki and Rok 2018; Hölscher and Frantzeskaki 2021; Torrens and von Wirth 2021), urban political ecology (e.g. Swyngedouw and Heynen 2003; Anguelovski et al. 2019) and just sustainabilities (e.g. Dobson 1998; McLaren 2003; Agyeman 2013; Castán Broto and Westman 2017). However, these subfields have largely

developed independently of each other; bridging them is therefore crucial for making sense of sustainable and just cities. While doing so, it is equally important to acknowledge the many contradictions in how urban sustainability and justice are researched, conceptualised and acted upon (Campbell 1996; Velicu and Barca 2020; Sekulova et al. 2021; Bouzarovski 2022).

The amount of funding mobilised towards research and innovation on the topics of urban sustainability and justice has been increasing in the last 2 decades, as indicated by the research priorities of key funders such as the European Union (EU). In the EU specifically, a search for projects on social justice and/or ecological sustainability funded between 2000 and 2019 revealed over 400 research and innovation projects. Based on these projects, governance interventions and policy recommendations have been developed and proposed to make cities more sustainable and just. However, this knowledge is fragmented and scattered because of, for example, scientific disciplinary boundaries and language barriers (Boekholt et al. 2017). These insights, often published as scientific articles, also prove hard to access due to reasons ranging from paywalls to outdated project websites and inaccessible language. Hence there is a need to consolidate and more effectively share this knowledge.

With this in mind, we synthesized knowledge and experience generated in previously funded research and innovation projects that deal with urban sustainability and justice (Sustainable Just Cities 2022; UrbanA 2022a). This included issues of environmental degradation and climate risks and their interconnectedness with urban inequalities and social exclusion. These insights were translated, distilled and shared into actionable and accessible knowledge for city-makers and city-thinkers as part of the EU-funded project UrbanA (“Urban Arenas for Sustainable and Just Cities”). All authors of this paper worked in or were associated with the project.

As part of that process, we facilitated a transdisciplinary collaborative process that brought together city-makers and city-thinkers from across Europe to support the identification and generation of approaches with the potential to promote, strengthen and integrate urban sustainability and justice. We built on transdisciplinary research methods as developed in the transition management literature (Loorbach 2010). A crucial dimension of this inter- and transdisciplinary process was the development of an open access database for co-creatively mapping projects and approaches (i.e., sets of interventions, actions, strategies, solutions or policies) that address urban sustainability and/or justice leading to the creation of a ‘knowledge commons’ (UrbanA 2022b).

‘Mapping approaches’ may sound as if we are dealing with static content that can be known in its entirety. However, just as the future of a just and sustainable planet is not singular, uncontested and predetermined – and similarly to how cities are processual, co-creative and ungraspable in their totality – this ‘mapping’ of approaches necessarily entailed an experimental and improvisatory relationship to knowledge creation. This fruitful convergence of the ways in which just transitions, cities, and knowledge are, in their ideal form, open-ended, co-creative and diverse is what binds together our research method, conceptual framing and, ultimately, the grounds for our argument: that the diversity of approaches to just and sustainable urban futures produces a ‘creative uncertainty’ that should be embraced and activated.

This paper reflects on what we can learn from this knowledge commons - the UrbanA database of approaches - from an urban transitions perspective, both by sharing the method we used to develop the database and by analysing the content of those approaches and what research has revealed in relation to them. [Methodology for mapping the diversity of approaches to sustainable just cities](#) introduces the database of approaches and the methodology used in developing it, as well as the questions posed to analyse the transformative potential of approaches to sustainable just cities. [Sustainability and justice and their interlinkages](#) introduces the linkages between sustainable and just cities and discusses how and to what extent the approaches in the database address those interlinkages. In [Transition dynamics](#), we introduce the concepts of sustainability transitions and transition dynamics, and discuss what role different approaches play in different phases and dimensions of ongoing transitions towards just and sustainable cities. In [Sustainable & just cities by & for whom?](#), we introduce the multi-actor perspective and discuss what are the dominant institutional logics of the selected approaches and which logics they are challenging or trying to change. Finally, [Conclusions and reflections for ongoing & future research and practice](#) provide a conclusion and reflection for ongoing and future research.

Methodology for mapping the diversity of approaches to sustainable just cities

In order to guarantee an open and transdisciplinary approach to mapping projects and approaches that address urban sustainability and/or justice, we combined desk study along with interviews and co-creative workshops and events both in person and online. Namely, between 2019–2021 four co-creative spaces, known as ‘Arena events,’ were convened in different European cities in person and/or online with 40–80 participants from sectors that included policy, activism, academia and direct practice. The first Arena focused on an initial mapping of existing approaches to urban sustainability and justice, the second explored (in)justice challenges in urban sustainability more amply, the third focussed on governance arrangements for sustainable and just cities, and the fourth and final centred on policy actions.

Complimentary to the Arena events was the establishment and nurturing of a Community of Practice (CoP), an open network of individuals committed to taking constructive action against social inequality and ecological unsustainability within the ambition to create more sustainable and just cities. The focus of the CoP included an explicit commitment to advance the field of practice and share findings, resources and knowledge more widely, especially with those doing related work, e.g. through zines, newsletters, a policy/practice-oriented website,¹ blogs,² social media,³ podcasts,⁴ several briefs and handbooks.⁵ We also began a series of 12 participatory and open access online Community Conversations, as well as local side events that engaged the CoP with situated struggles and initiatives around sustainability and justice in specific local communities.

¹ Sustainable Just Cities Website: <https://sustainablejustcities.eu/>

² <https://medium.com/urban-arenas-for-sustainable-and-just-cities>

³ <https://www.linkedin.com/groups/13794274/>

⁴ <https://podcasts.ceu.edu/series/urban-arena>

⁵ Resources Sustainable Just Cities: <https://sustainablejustcities.eu/search?f%5B0%5D=content%3Aresource>

A knowledge commoning approach

The knowledge co-creation process, resulting from all the above processes and in combination with a detailed desk study of research projects situated within the domain urban sustainability and justice (see [Methodology underlying the mapping of approaches](#)), resulted in a knowledge commons. Commons are resources of some kind that are shared and governed in common via a set of social and relational processes known as commoning (Euler 2018; Federici 2018), whilst knowledge commons are shared information resources governed by a community of users according to an agreed set of rules, conventions and procedures (Hess and Ostrom 2007). In our case, the resource is translocal knowledge on sustainable and just cities that was compiled and synthesized. The user community initially consisted of members of the UrbanA consortium who developed the first release of the database based on the mapping process, later opening up to the wider CoP. Rules-in-use were developed emergently over the course of the mapping and included editing guidelines for the Wiki on Sustainable Just Cities⁶ as well as facilitation methods and conversational principles during meetings and events.

The decision to create a knowledge commons was both ethical and methodological. Commons are increasingly recognised, in both theory and practice, as having greater potential to promote and embody sustainability and justice when compared to state led and market-oriented mechanisms, both in general and specifically in cities (Bollier and Helfrich 2019). Creating a knowledge commons was in part a response to contradictions between our commitment to sustainability and justice and the constraints we observed and experienced as a consequence of pressures associated with the professionalization - and hence commodification - of knowledge production (c.f. Bollier 2007). By creating a resource that was not necessarily limited by the time boundaries of a project, it is hoped not only to map knowledge from previous research but, at the same time, to create a legacy for our work that could persist into the future.

Commoning and peer-to-peer exchange among and within different circles of the CoP allowed these circles to create and distribute shared value, at the same time opening the possibility for new cycles of commons-based knowledge production through new and wider dissemination, uptake, application and further development of findings (e.g., by CoP members). By adopting a commoning approach to knowledge co-creation, to the degree possible within the remit of the project, the wiki can easily be duplicated, transferred or shared to enable longer-term co-creation and database-making for the CoP and other communities focused on the intersection between sustainability and justice in cities. To enable this, the consortium agreed to license wiki content for free re-use and remixing under [Creative Commons](#), one of a number of mechanisms for legal recognition of intellectual property as a common resource (Bollier 2015). At this time of writing, the [UrbanA Wiki on Sustainable Just Cities](#) has seven co-created databases of: approaches, drivers of injustice, governance arrangements, projects and initiatives, people, resources and keys (see Fig. 1).

As mentioned above, this knowledge commons emerged from a process of mapping existing projects and the practical, theoretical or conceptual approaches these projects

⁶ Wiki on Sustainable Just Cities: https://wiki.sustainablejustcities.eu/Main_Page

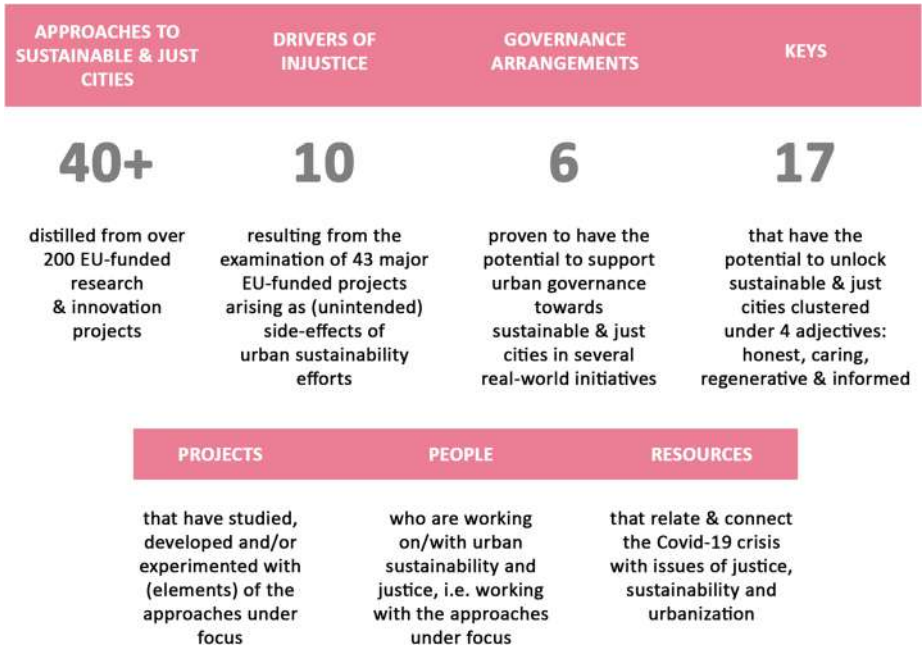


Fig. 1 Overview of databases developed on the Wiki on Sustainable Just Cities

explored in relation to urban sustainability and justice.⁷ We will now detail the process of how we mapped the projects and the approaches, leading to the creation of the wiki and specifically its database on “APPROACHES”, as that was the basic ground upon which subsequent analysis on drivers of injustice, governance arrangements and keys for policy, was built.

Methodology underlying the mapping of approaches

When mapping approaches to sustainable and just cities, we are referring to sets of interventions, actions, strategies, solutions or policies that address urban sustainability and/or justice. The scope of approaches varies from very broad and general concepts (e.g. *Nature Based Solutions*) to more specific and concrete implementations (e.g. *Community Gardens and Food*).

We clearly distinguish approaches from specific instances/case-studies of their application (e.g., community gardens in Rotterdam) and their documentation or experimental deployment in research/innovation projects (e.g., community gardens in Rotterdam as studied in the EdiCitNet Project). Thus, by reframing these specific instances or case studies to the more abstract level of approaches, we aim to broaden the accessibility and applicability of the knowledge in the database.

The development of the database of approaches resulted from an iterative mapping process that followed four phases (Figs. 2 and 3): moving from a breath of projects and a more standardized approach of scanning projects in phase 1 to interpreting

⁷ The database-making has been outlined and presented in-depth in the UrbanA Mapping Guidelines (Avelino et al. 2019) and in deliverables reporting the results of the UrbanA Wiki Database on Approaches to Sustainable & Just Cities (Schipper et al. 2019, 2020).

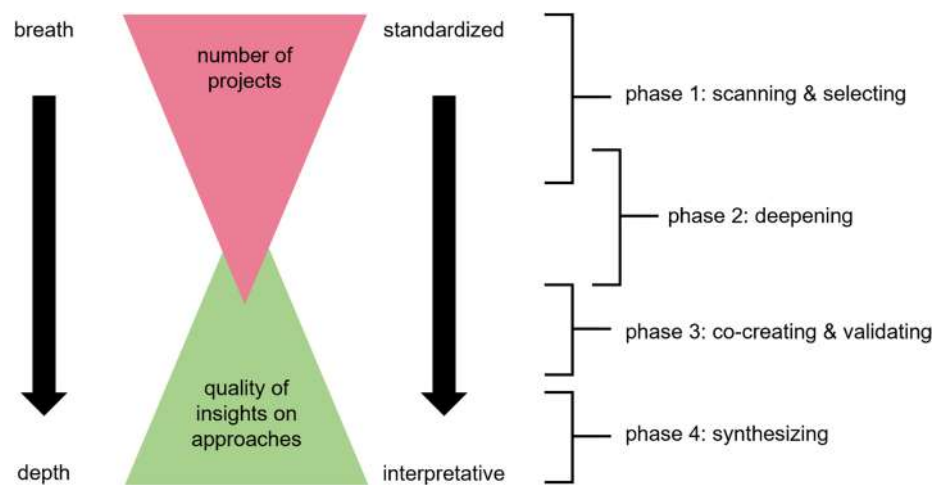


Fig. 2 Overview of the mapping process and focus of each phase (source: Avelino et al. 2019)

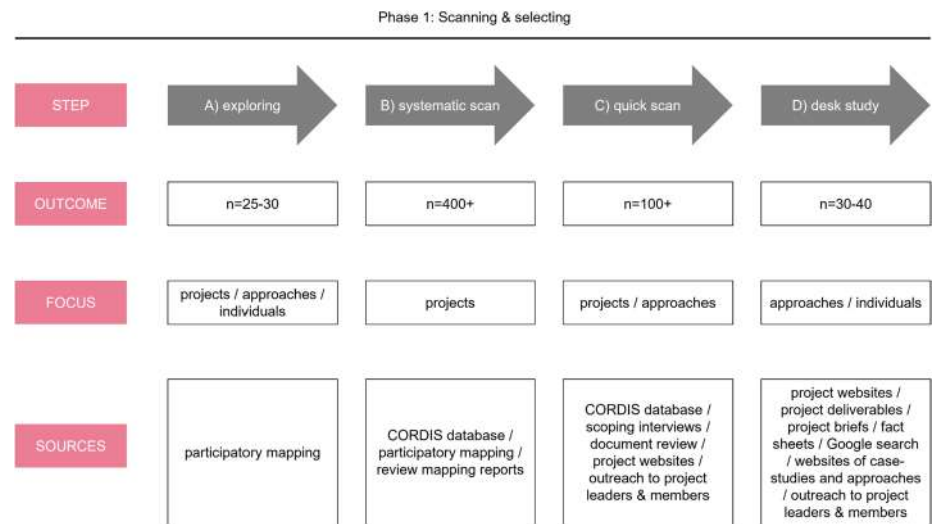


Fig. 3 Visualization of Phase 1 of the mapping process (source: Avelino et al. 2019)

project outputs and interviews in phase 2 to validate and synthesize the approaches in a co-creative manner in phase 3 and 4. The four phases of the process involved a gradual shift in terms of a wide variety of projects to a depth of approaches and in terms of a more systematic scanning of data to an interpretation of project outputs and interviews with key project researchers, Arena and CoP participants. For instance, through this process we proceeded from the creation of a long-list of 400+ projects to a shortlist of 100+ projects based on the degree in which they addressed the intersection between sustainability, justice and the urban scale, e.g. if a project would only address sustainability in general terms it was less relevant than a project that focused on sustainability in cities. From the shortlist of projects we identified nearly 200 approaches, which we eventually clustered and selected into a hotlist of 30+ approaches.

The database is limited in its geographical focus to European projects and cities. However, while the database acknowledges the specificity of each city and neighbourhood, it also recognises shared phenomena that transcend these localities. Although many of the examples in the database are located in European cities, the actual ‘approaches’ in the database are not necessarily confined to European cities and may originate and/or be implemented in other geographical contexts (e.g. many of the approaches are part of global networks and movements).⁸ Detailed descriptions, limitations and justifications of the mapping methodology can be found elsewhere (Avelino et al. 2019; Schipper et al. 2020).

After this first phase of scanning and selecting projects and approaches, we moved on to the next phases of deepening, co-creating, validating and synthesizing. This included in-depth desk study, interviews with 30–40 individuals who were directing or working in these projects, as well as creating a first public version of the approaches database to share with the wider CoP inviting their comments, edits and additions (of projects and approaches), including during the first Arena event in Rotterdam, in November 2019, at which 60 city-makers and city-thinkers from across Europe gathered and gave feedback and insights to synthesize and refine the database further.

A central feature of this process has been our efforts to deliver a way of mapping that was more than just a matter of academic experts gathering data. Rather, it has also been a process of engaging a broad set of people and allowing them to feel acknowledged for their prior and ongoing efforts on urban sustainability and justice as part of a transdisciplinary knowledge co-creation community. This was important not only ethically, but also methodologically. Folding the city-makers and city-thinkers back into the co-creation process allowed for grounded, lived experiences and an ever-evolving form of knowledge co-creation that did not pretend to know its conclusion from the outset.

The ways in which non-academics were engaged were very diverse and differed for each arena event, while following some overall design principles on transdisciplinary engagement, which are described in the methodological guidelines of the arena design (Rach et al. 2019)⁹ and in a *Just Arena Guide* that shares the main experiences and insights of the arena events in hindsight (Schipper et al. 2022).¹⁰ For instance, for the 2nd Arena on the drivers of injustice in urban sustainability, part of our effort to engage non academics was to collaborate with a graphic designer and prepare vignettes that communicate some of the more complex concepts with simple impactful examples, and videos that summarize insights in a direct way. This served to bring some of the most recent research and academic thought to practitioners and policy makers and allow their direct contribution and complementation of such research from their own perspectives. Finally, this work enriched by Arena insights and further research was also published as a short fully open access book for the wider public (Kotsila et al. 2023).

⁸ Also, the way in which the database has been developed as an open-ended knowledge commons to be continued, expanded and further developed in the future, also means that the geographical scope of the project may be surpassed and that there is no reason why the database could not be elaborated into a more geographically diverse database with contributions from localities like the Global South.

⁹ https://urban-arena.eu/wp-content/uploads/2019/07/D2.1_UrbanA_Arena-Design_website.pdf

¹⁰ <https://sustainablejustcities.eu/resources/just-arenas-guide>

Table 1 Overview of approaches in the Wiki on Just Sustainable Cities (for more information, see Appendix 1)

Approaches	
<ul style="list-style-type: none">• Beyond GDP indicators• Citizen Science• Civil Disobedience• Co-living, co-housing & intentional communities• Ecovillages• Co-working spaces• Community gardens and food• Crowdsourcing• Culture for empowerment• Data Collection• Degrowth movement• Democratic innovation through recognition• Digital fabrication• Energy and Mobility solutions• Experimentation labs• Financial practices and instruments• Governance and participation processes• Governance for urban climate mitigation and adaptation• (Impact) evaluation and assessment framework• Integral MetaMapping• Co-learning and knowledge brokerage• Multi-stakeholder partnership - policy	<ul style="list-style-type: none">• Nature-based solutions (NBS)<ul style="list-style-type: none">◦ NBS for climate adaptation◦ NBS for health and equality• Participatory budgeting• Pathways and scenarios• Pathways and scenarios for post-carbon societies• Policies and practices for inclusion of disadvantaged groups• Reconceptualising urban justice and sustainability• Regeneration of disused urban land• Right to housing• Right to the city• Sharing and cooperatives for urban commons• Smart Cities• Social food movements• Sustainable food supply chains• Sustainable Households• Participatory pollination• Transition towns• Municipalities in Transition• Urban development through cultural solutions

The Approaches Database in the Wiki on Sustainable Just Cities, at the time of writing, documents 42 approaches aimed at moving towards urban sustainability in a just manner (see overview in Table 2 in Appendix 1 below and short descriptions in Appendix 1). Approaches range from broader frameworks such as *democratic governance* and *people-oriented financial mechanisms*, to more specific proposals like *community gardens* and *Transition Towns*. Although this documentation might be taken to imply that these approaches are isolated or static, in practice the approaches are typically interconnected, and overlapping assemblages of ideas, objects, activities and actors, with substantial internal diversity, and continually evolving.

We present them here not as a final list, but rather to show what the output of such a multi-actor knowledge co-creation process centered on just and sustainable cities might look like. Each of these approaches was succinctly elaborated according to a template as provided in Appendix 2.

The identified approaches all represent significant bodies of work, both in academia and other fields of practice. It is not our aim to embed the identified approaches in literature, but to illustrate the breath of the approaches and to present our findings on the approaches via different conceptual lenses (as we do in [Sustainability and justice and their interlinkages](#), [Transition dynamics](#), and [Sustainable & just cities by & for whom?](#) sections). For more interest in the bodies of work behind the approaches (including references) we refer to the Wiki in general and the particular Wiki-pages of the 40+ approaches (Table 1).

The methodological and normative orientation that guided the selection and elaboration of approaches drew on a transition perspective on sustainable and just cities, which we now clarify before turning to the insights from the content of the wiki database on approaches.

Exploring the transformative potential of approaches to sustainable just cities

In order to explore the transformative potential of transformative potential of the approaches on our database, we explore three specific dimensions: (1) the interlinkages between sustainability and justice, (2) the role that different approaches play in different phases and dimensions of ongoing transitions towards just and sustainable cities, and (3) a multi-actor perspective on the selected approaches in terms of who are the actors and institutional logics involved. The convergence of these three elements - justice, transition and multiple actors - provides a framework to analyse, interpret and compare the approaches in the following three sections. More specifically we will introduce and answer the following questions about the approaches:

1. To what extent is justice considered an integral part of sustainability, and how? ([Sustainability and justice and their interlinkages](#) section)
2. What role do different approaches play in different phases and dimensions of ongoing transitions towards just and sustainable cities? ([Transition dynamics](#) section)
3. What are the dominant institutional logics of the selected approaches and which logics are they challenging or trying to change? ([Sustainable & just cities by & for whom?](#) section)

The logic and argument around each of these concepts and questions are explained in the following sections.

Sustainability and justice and their interlinkages

Linking sustainability and justice is not a self-evident practice on the urban level. For example, the predominant focus in many urban sustainability discourses tends to lay on establishing smart, green or economically competitive cities thus reproducing a certain kind of economic, social and ecological future that often leaves justice behind (Connolly 2019). In this paragraph we delve deeper into the interlinkages between sustainability and justice and assess how far both are addressed in the mapped approaches.

Why it is crucial to link sustainability and justice in cities

Cities and neighbourhoods should neither be viewed as empty canvases nor as homogeneous places; they are inseparable from the people who inhabit them. Health-promoting, diverse and vibrant neighbourhoods create the conditions for people's wellbeing, while contaminated, run down and under-invested ones become stigmatized along with the people who inhabit them (Keene and Padilla 2014; Butler-Warke 2021). This intersects with the structural inequalities produced by relations of power underwritten by ethnicity and class. Research has shown, for example, that the exposure risks associated with polluting industries are higher in areas inhabited by non-whites and/or the poor (see e.g. Bullard 1990; Pulido 2000) while access to environmental benefits (e.g., urban forests and green infrastructure) is often limited to the more privileged (O'Brien et al. 2017) with implications for health and well-being

(Sze 2004; WHO 2012). As such, approaches to just urban sustainability demand a strong sensitivity to both social and ecological conditions (cf. Mohai et al. 2009; Agyeman 2013; Anguelovski 2015; Cook and Steger 2021).

However, while urban sustainability comprises multiple aspects of city life including the economic, social, ecological, technological and cultural, the predominant focus in many discourses tends to be on establishing smart, green or economically competitive cities thus reproducing a certain kind of economic, social and ecological future that often leaves justice behind (Connolly 2019). Even when social dimensions of sustainability are addressed, justice issues tend to remain underdeveloped, in the sense that even when liveability, well-being and quality of life are examined as indicators of sustainability, such benefits are assumed as evenly trickling down to society, ignoring the inequalities in access, decision-making or representation of different knowledges that social groups are facing in this regard (Agyeman 2013; May and Perry 2017; Trudeau 2018).

It is not enough, however, to call for an equal distribution of benefits in a top-down manner, even if approaches pay attention to structures of social injustice. Approaches for urban sustainability and justice also need to include and create processes and communication channels to make urban sustainability an expression of and means to democracy, inclusion and equity. Towards these goals, Anguelovski et al. (2020), argue for a more expanded view of ways to analyse and address environmental justice in the urban context, including procedural and recognitional aspects, but also paying attention to relational and intersectional aspects of power structures and, thus, their transformation. This calls for reckoning with the persistent subordinating dynamics and structural drivers of injustice as they intersect with different forms of knowledge and ways of knowing in urban sustainability movements (May and Perry 2017). This is a complex processual entanglement that goes beyond 'good-bad' or 'victim-perpetrator' binaries, demanding that approaches not only take into account the messy historical and social processes that produce inequalities (including those relating to racism, classism and more), but also develop an understanding of the multiple actors operating at various spatial scales who often have contradictory and cross-cutting motivations and alliances (Pellow and Brulle 2005).

To what extent is justice considered an integral part of sustainability, and how?

With these interlinkages in mind, we take a closer look at the approaches in the Wiki on Sustainable Just Cities and how they address justice as an integral part of sustainability.

Addressing sustainability on the urban level

A number of approaches in the Wiki have an explicit focus on ecological benefits and impacts. For example, 'Nature-Based Solutions' (NBS) have the potential to contribute to climate and water resilience by responding to flooding, heat stress, drought, poor air quality, biodiversity, the carbon cycle, soil consumption and use of natural resources in urban environments. Urban farming combines closed-loop systems for sustainable water, nutrients, and waste management in order to create more resilient cities. *Short food supply chains*, contribute to sustainability through the reduction of distance travelled for food and water use and multifunctional land use. This approach highlights the added value of connecting consumers more with their food and increasing the transparency of food production. Other

approaches, like *Energy and mobility solutions*, consider sustainability issues from the perspective of smart and sustainable green growth and improved efficiency.

Lifestyle and behavioural changes are another angle to work on sustainability. For example, *Social food movements* focus on eating habits as a way to reduce one's ecological footprint. Sometimes this is done from a moral and/or political perspective. Similarly, *Short food supply chains* focus on the vulnerability of current food systems by making the carbon footprint of conventional food chains and counter trends in food commodification and detachment and the related inequalities visible. These include the existence of so-called 'food deserts' and draw attention to the socio-economic determinants of unhealthy diets. For both social food movements and (some) *NBS*, health is an important dimension, although *NBS* tend to focus mainly on the (mental) health impacts of urban environments.

Some approaches that explicitly aim to have positive environmental impacts, however, might intensify other unintended aspects. For example, the redevelopment of brown-field sites can lead to the intensification of recreational use at a micro-level, which again might have negative ecological consequences. Also, approaches with a one-sided focus on centralized, large-scale, technocratic solutions can unintentionally reproduce environmentally extractive systems for economic growth, which can lead to negative environmental consequences on a macro level.

Positive ecological impacts might be achieved without it being the main focus of an approach due simply to the values of the people involved or the principles that underlie the alternative ways of organizing, such as proximity, reuse and recycling. The same goes for *Right to Housing initiatives* that do not necessarily seek to achieve ecological sustainability as the end goal, but for other reasons advocate for the reuse (and when needed the renovation) of existing vacant spaces. For other approaches, the environmental sustainability impacts or benefits are less apparent or indirect (e.g. *Culture for empowerment*). This applies to *Co-learning and knowledge brokerage* in which sustainability might be one of the (many) goals or orientations, as well as to the process or *Crowdsourcing* that might contribute to the sustainability of a project.

None of the approaches in the database so far seem to pay explicit attention to the intergenerational dimension of sustainability. Lastly, none of the approaches seem to explicitly consider the different cultural or religious notions of sustainability, although some approaches do pay attention to cultural differences in the context of co-creation and governance. The question of 'injustice for whom?' does not only relate to displaced people in a specific urban neighbourhood, but also includes farmers in the hinterland, future generations and the non-human world. This seems to be a gap in the approaches.

Addressing justice at the urban level

Only a few of the projects and approaches in the database pay explicit attention to justice as a dimension of sustainability. Power relations, however, are evoked in some cases by challenging a toxic discourse and stigmatization without explicitly framing their efforts in terms of justice. For example, the stigma around youth groups as being 'troublesome' is addressed (see *Culture for empowerment*¹¹). Other approaches have a more

¹¹ Culture of empowerment is about empowering young or disadvantaged people through culture-based solutions.

implicit and indirect focus on procedural justice via participatory processes, deliberation, pluralism and inclusion which can be linked to procedural justice. An example of such an approach is *Experimentation labs* where notions of justice arise along the co-creation theme, for example, where local citizens and community groups have access to fair, open and transparent city making processes. A similar rationale applies to the approach called *Co-learning and knowledge brokerage* that emphasizes joint work and the synchronisation of knowledge involving multiple institutions and actors at multiple scales. Knowledge brokerage that excludes grassroots voices and demands might lead to a somewhat better understanding of urban challenges but reproduces injustice. Participatory approaches in general, often bear the risk of becoming tokenistic—claimed as being applied but not being meaningful. In this way, these approaches potentially ignore the ethics and political consequences of mobilising citizens in the context of austerity-driven governments.

The approaches that do address (social) justice more explicitly tend to link their efforts to wider social challenges. For example, the *Right to Housing* movement advocates that access to housing is the first step in solving social exclusion. The *Right to Housing* movement also challenges the macro-level power relations associated with the model of neoliberal economy which seeks to reduce government spending for public purposes (e.g. social and public housing) in favour of private sector interventions. The concept of ‘housing for all’ is in inherent conflict with the ebbs and flows of a speculative neoliberal market (*Right to Housing*).

Challenging these macro-issues and related power relations showcase the wider framework of such an approach. It is important to note that such approaches are always context-dependent and can change over time or might change rather rapidly due to shocks and crises. Approaching challenges in this way, however, can pose its own challenges by potentially creating a disconnect from other niches, the regime and/or opportunities for mainstreaming. This raises the question of how to navigate innovative, if non-mainstream, changes in a given context.

Interlinkages between sustainability and justice

While the majority of approaches do not explicitly relate ecological sustainability and justice, there are some approaches that have the potential for connecting the two like *Community gardens and food* and urban farming.¹² Urban community gardens and local food production are both seen as a bottom-up approach to improve food provision and greening in cities, as well as to promote inclusive communities. Urban agriculture and ‘doing’ gardening are not only tools to provide food but also have social benefits in terms

¹² Wiki-page on community gardens and food: Urban gardens have come to symbolize a proximate and locally driven way of improving life in cities, not only in terms of food provision and greening but also as inclusive community hubs that promote sustainability. In all their diversity, urban gardens are not only responses from below to the socio-economic crisis and its associated precariousness, but have also increasingly become part of urban planning and policy. Food justice activists defend urban agriculture as an important tool for urban food security and sovereignty (Anguelovski 2014)^[12], especially so in the context of food deserts and unhealthy foodscapes. Gardening work holds individual healing and other health benefits for socially vulnerable residents and can help them recover from trauma. Regarding sustainability issues, EdiCitNet’s ECS conceptual framework explores how urban farming combined with closed loop systems for sustainable water, nutrient, and waste management can create more resilient cities. Both ProGReg and EdiCitNet explore many aspects of sustainability to a very deep degree, seeking to identify and improve areas in cities through NBS including: biodiversity, the carbon cycle, soil consumption and use of natural resources in urban environments, citizen involvement, education and empowerment. Citizen science and active citizen participation also include sustainable education and nature appreciation (Source: *Community gardens and food*).

of community building and personal and community recovery from trauma, especially for vulnerable residents. In the Wiki, this approach is placed in the context of a shift from ‘sustainable’ to ‘regenerative cities.’

However, in most of the approaches, the connection between justice and sustainability is unclear. This observation aligns with “transition tensions” as outlined by Ciplet and Harrison (2019) who show the tensions between sustainability performance, on the one hand, and inclusivity and equitable distribution of benefits and burdens, on the other. In other cases, greening interventions might exacerbate existing social-economic inequalities by contributing to processes of gentrification. This also points to the paradoxes and tensions that are present within each approach regarding the extent to which it is both transforming and reproducing existing structures.

Transition dynamics

In the previous section we assessed that justice and sustainability are often non-communicating vessels at the urban level, at least in the mapped approaches. A follow-up question is how the approaches we mapped are aimed at fundamental systemic shifts and a transformation of the status quo. To assess this we draw on transition studies to provide us with a framework for mapping the approaches in regard to their transformative ambitions and potential.

A transition dynamics perspective on urban sustainability

Transition studies are an interdisciplinary field that focuses on long-term, structural transformation of societal systems. Initially it focused on socio-technical systems (e.g. transport, energy, agriculture, etc.) and was mainly informed by innovation studies, science and technology, complexity and governance theories (Grin et al. 2010; Köhler et al. 2019). Increasingly, however, it has taken a ‘socio-spatial’ and ‘socio-political’ turn, with insights from sociology, political science, anthropology and social geography, raising questions about ‘just’ transitions (Swilling and Annecke 2012; Van Steenberg and Schipper 2017) and with increasing attention for urban transitions (e.g. Frantzeskaki et al. 2018), issues of power, politics and agency (Avelino et al. 2016), grassroots innovation (Seyfang and Haxeltine 2012), and transformative social innovation (Pel et al. 2020).

The transition theoretical perspective is about exploring how, when, where, under which conditions and the extent to which a given approach is transformative, i.e. conducive to challenging, altering and/or replacing problematic structures and institutions. It implies studying how social and technological innovations (i.e. new/alternative ways of doing, thinking and organizing) evolve over time in relationship to different initiatives and approaches along the way characterized by a process of ‘build-up and breakdown’ in different transition dynamics (Loorbach 2014; Hebinck et al. 2022) (Fig. 4).

Innovations can both challenge and reproduce institutional patterns and dynamics (Pel et al. 2020); successful innovation is mutually integrated into the mainstream while still maintaining an innovative core (Smith 2007). This paradox lies at the heart of the very concept of transformative change, and at the core of transition theory. In order for an innovation to have transformative impact, some form of diffusion, mainstreaming or institutionalisation must occur, and in that process, the innovation – by definition – loses some of its original innovativeness. While ‘co-optation’ or ‘capture’ are

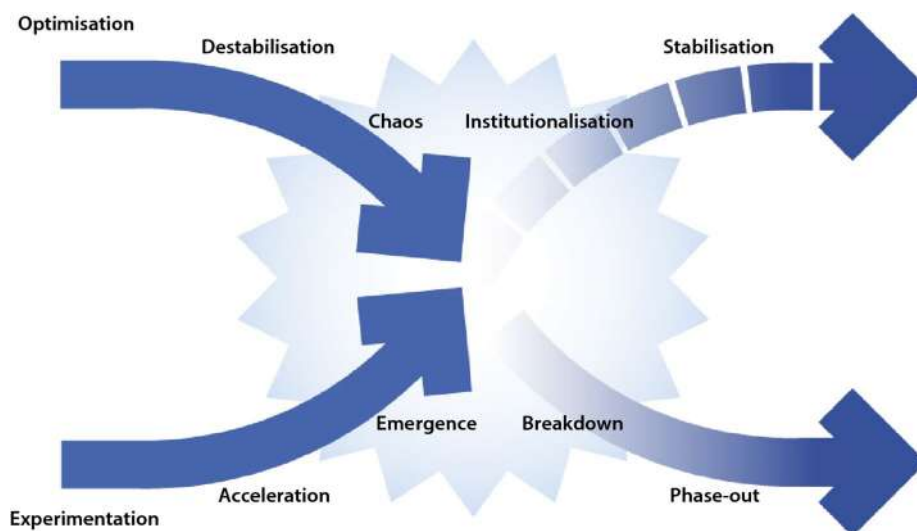


Fig. 4 Dynamics of societal transitions as iterative processes of build-up and breakdown over a period of decades. Also known as “the X-Curve” (Loorbach et al. 2017; Hebinck et al. 2022)

generally framed as undesirable in the context of innovation and change, it is important to remember that if innovation is to have a lasting transformative impact on its environment, it is actually meant to be captured at least to a certain degree, in some aspects, and by some parts of the surrounding system (Pel 2016).

In applying this transition perspective to urban sustainability focused on justice, the approaches in our database are discussed in terms of their transformative potential and development phases, while integrating an analysis regarding their role and focus, and knock-on effects. In doing so, we also recognise that urban sustainability transitions are full of paradoxes and tensions due to their complexity and multi-pillar perspective. Developing and implementing urban sustainability from a justice standpoint, can generate certain ‘transition tensions’ (Ciplet and Harrison 2019). For example, conducting inclusive participation processes when quick policy action is needed can be challenging. Similarly, recognizing diverse values and interests and assuring equitable distribution of harms and benefits can often counteract expected performance.

What role do different approaches play in different phases and dimensions of ongoing transitions towards just and sustainable cities?

With this transition perspective in mind, we take a look at the approaches in the Wiki on Sustainable Just Cities and how they (are able to) contribute to systemic change towards just and sustainable cities.

The transformative potential of novel approaches

For many approaches in the Wiki on Sustainable Just Cities their transformative potential is partly based on the way it is *being purposed*. The Wiki pages on [Digital fabrication](#), and [FabLabs](#) respectively point out the differences if people use 3D printers to print guns instead of house models, and if people use *Fablabs* for their own entrepreneurial purposes instead of decentralised and democratised modes of production.

The approaches differ in the ways they challenge, alter and/or replace asymmetric power relations. The purpose of these approaches is not only about opposing certain practices, power relations and institutions, but also demonstrating and enacting alternative lifestyles. Some approaches focus more on prefiguring alternative practices, while others focus more on setting up infrastructures and/or frameworks. There are approaches that mostly consist of ideas and narratives and those that are about enabling other approaches that provide the conditions for alternative ideas and initiatives to emerge, develop and diffuse. *Ecovillages* are an example of an approach that is ‘pre-figuring’ a future vision demonstrating that alternative forms of living are not only possible, but already happening. This is also the case for certain *Community gardens or local food initiatives*. The *Right to housing* movement presents an alternative narrative that takes housing away from the market and transforms it into a human rights issue. The approach entitled *Beyond GDP indicators* challenges the ingrained belief that GDP growth signifies a healthy economy and society, and provides alternative indicators based on different values and principles.

Some approaches contribute to transformation by *enabling* and/or *providing* the conditions for other approaches to emerge, develop and diffuse. Examples are democratic innovation, experimentation labs, *Governance and participation processes*, *Co-learning and knowledge brokerage*, and *Multi-stakeholder partnership - policy*. Approaches that enable ‘institutional work’ can empower other community-led initiatives in the future. For example, *Ecovillages* set precedents for future communities by fostering changes in regulations. Likewise, the democratization of initiatives and including previously unheard voices also build in transformative capacities and opportunities. *Impact evaluation and assessment frameworks*, with *Beyond GDP indicators* provide new frameworks or infrastructure to monitor and assess transitions to just and sustainable cities. New technologies in the domain of *Energy and mobility* facilitate alternative infrastructures, like IT platforms that support modular mobility systems and smart energy grids.

The risk of approaches being hijacked by a pervasive neoliberal mentality, i.e. politics focused on a free-market economy, seems to be especially applicable for the tech and data-driven approaches, many of which link to the *Smart-City narrative*. In some instances, the approaches are constrained by this mentality thereby precluding opportunities to contribute to more widespread well-being and equality. The Wiki on *Data collection* asserts that ‘the digital promise’ is based on paradigms that place economic development at the fore. The extent to which an approach, such as data-collection, has the potential to contribute to sustainable and just cities seems to depend largely upon how the interests of state, market and community actors are operationalized in practice. The case of *Experimentation Labs* shows us that paying improper attention to justice in terms of content, process and methodology might turn out to hamper the transformative potential of these approaches.

Contributing to transitions within different phases

As described in the previous paragraph, the X-curve depicts the iterative processes of institutionalisation and breakdown of societal transitions over a period of decades revealing the transformative potential of initiatives vis-a-vis change. Figure 5 illustrates different ways that approaches can contribute to transitions to just and sustainable

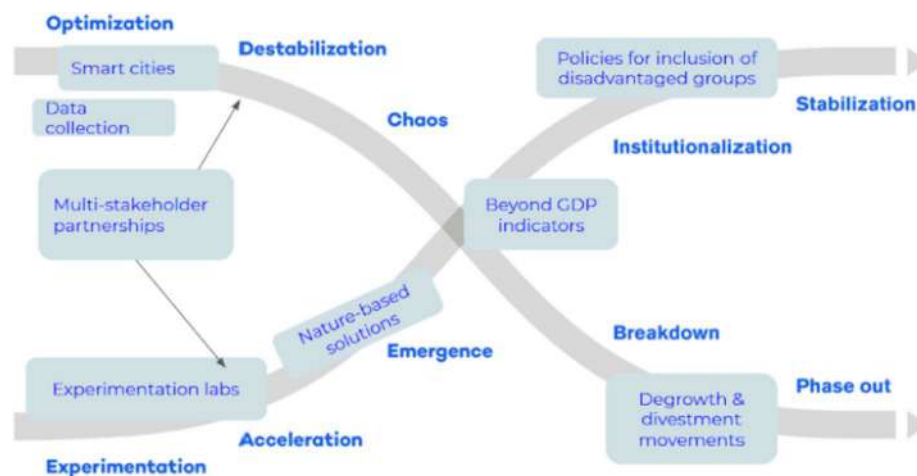


Fig. 5 Approaches mapped on the X-curve according to their potential contribution to transition

cities. Different approaches in the database can be mapped and contextualised in different transition phases, as follows:

- **Optimization:** Some approaches, like *Smart Cities* and *Data-collection*, have the potential to optimize the status-quo with an emphasis on doing new things (e.g. new technologies), rather than on doing things differently.
- **Experimentation:** Some approaches, like *Experimentation labs*, can provide space for developing radical new ideas and/or solutions.
- **Connecting regime and niche:** Approaches like *Multi-stakeholder partnerships* create networks and partnerships that can connect the regime and the niche.
- **Acceleration/emergence:** Approaches like *Nature-based solutions* gain resonance, form networks and overcome resistance with the capacity to mainstream new practices, narratives and structures.
- **Institutionalisation:** Some approaches, like *Policies for the inclusion of disadvantaged groups* or *Beyond GDP indicators*, have the potential to institutionalise new structures, practices and narratives by embedding them, for example at the formal institutional level of municipal, regional or national policies.
- **Breakdown and phase-out:** Some approaches, like *Degrowth* and the *Divest movement*, can displace old ways of doing, thinking and organizing.

However, the mapping process and the conversations during the Arena Event in Rotterdam showed that it is hard to distinguish between the purpose, the potential and the actual impact of an approach. This is especially the case because the transformative purpose and potential of an approach might - due to third-order learning - evolve and change over time as was observed, for example, in the growth of the network of the Impact Hub as an example of a *Co-working space*. Moreover, many of the Wiki pages mention the fact that approaches have had multiple unexpected and unintended negative side-effects (like gentrification of greening initiatives as expressed earlier) as well as unforeseen regenerative impacts such as the social and health benefits of gardening and a sense of belonging generated by cultural approaches.

This suggests that the transformative potential and intensity of an approach are not necessarily inherent to the approaches themselves and depend upon many factors such as the institutional context, perceived importance by policy makers, status vis-a-vis the policy agenda and problem framing. While there is a tendency to equate grassroots/community vs. formal/government institutionalisation with radical vs. moderate respectively, this construction does not always hold. Government-oriented approaches can be more radical than community-driven approaches.¹³

Sustainable & just cities by & for whom?

The approaches are part of a broader institutional context characterized by a specific mix of institutional logics and power dynamics. The effect of different approaches on urban sustainability and the different pillars is thus highly dependent on the existing power relations within a given city, requiring a cautious approach to generalizations and transferability as well as a sensitivity to diverse consequences.

A multi-actor perspective on sustainable just cities

A multi-actor perspective in urban sustainability transition analyses sheds light on the power relationships and dynamics, between different actors and between different institutional logics (Avelino and Wittmayer 2016, 2019). Different institutional logics - e.g., state, market, community and the non-profit sector - provide multiple institutional layers within which collective or individual actors operate and interact, with different roles. These institutional logics are not fixed in place or time, but rather the boundaries between them are continuously contested, blurred, shifting and permeable.

A multi-actor perspective unpacks different aggregations of power, and of actors operating within broader institutional logics. Each institutional logic also in itself a site of struggle and/or cooperation among different actors (e.g. the state as interactions of politicians, civil servants and voters; the market as interactions of consumers and producers). The role of actors can be linked to different and overlapping institutional logics, and range from 'resident' or 'neighbour' to 'citizen' or 'consumer' to a policy-maker who is also a citizen, neighbour, consumer and possibly a volunteer.

From a multi-actor perspective, institutions or structures reveal unequal power relations – and thus draw attention to the need for transformative change. Power relations at micro- and macro-levels can consolidate and/or shift across state, market, non-profit and community (i.e. macro-level), and between various actors with different roles (e.g. citizens and politicians, consumers and producers, i.e. micro-level). People are entangled in different forms of power relations and might occupy multiple positions of subordination and privilege at the same time, according to their intersectional positionalities.

Understanding the different logics and roles of multiple actors and their dynamics in various urban contexts is crucial in our focus to better understand urban sustainability through a social justice lens. A more explicit socio-political perspective invites us to

¹³ The *right to housing*, for instance, could be considered more radical in its transformative potential than many *co-housing initiatives*, in the sense that the demands of housing as a basic human right fundamentally deviates from the current housing market and would require a substantial change of formal government regulation, while many co-housing initiatives, on the other hand, can in fact co-exist within the current housing market and regulatory frameworks. Obviously, some co-housing initiatives are more radical than others, and many of them may be combined with the right to housing movements. This actor-perspective is central to the next section.

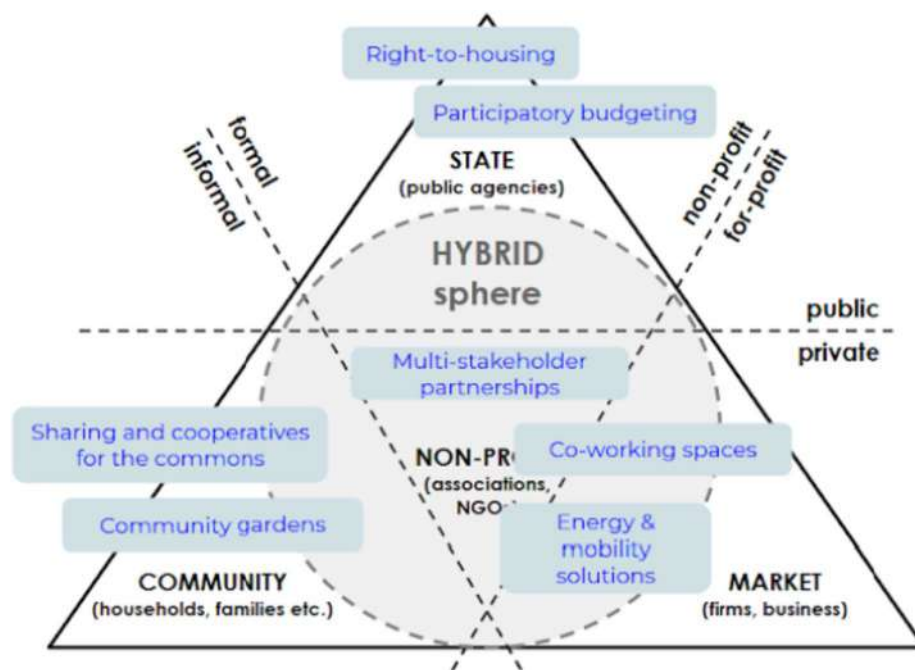


Fig. 6 Examples of approaches mapped according to their main orientation

view changing actor relations and actor roles as being at the centre of urban development. Applying a multi-actor perspective to reflect on approaches to urban sustainability based on their power dynamics they emerge from, cultivate or question, allows us to compare and critically analyse approaches by characterizing them based on their own primary institutional logics (e.g. state driven, market driven, community driven, non-profit or hybrid); the different individual/organizational roles across institutional logics; the distinguish micro- and macro-level power relations at play; the tensions across the three main pillars of urban sustainability (social, ecological, economic); the different types kinds of justice including as articulated by different groups, and their roles in different institutional contexts; and the justice implications for different levels of aggregation of the approaches (and their implementations) under questions.

What are the dominant institutional logics of the selected approaches and which logics are they challenging or trying to change?

Some approaches are more community oriented (e.g. *Community gardens*, *Sharing and cooperatives for urban commons*) or state-oriented (e.g. *Participatory budgeting*, *Right to housing*), while others have a strong market-orientation (e.g. *Co-working spaces*, *Energy & mobility solutions*) or an explicit hybrid institutional orientation (e.g. *Multi-stakeholder partnerships*). Some can be characterised as formal planning processes (e.g. *Evaluation and assessment frameworks*, *Governance for urban climate mitigation and adaptation*, some *Nature-based solutions*), while others operate more according to an informal logic (e.g. *Ecovillages*) (Fig. 6).

Many approaches challenge the institutional logic within which they are embedded or the boundaries between different institutional logics. For instance, some of the *Financial practices and instruments*, including solidarity economy initiatives, challenge the market

logic and the dominant paradigm of infinite economic growth. Some *Democratic innovations* (e.g. *Participatory budgeting*) empower citizens to influence decision-making and have the potential to challenge existing power relations between different social groups within a neighbourhood or between citizens and local governments. These approaches rely on the inclusion of different types of knowledge and blur the boundaries between the formal role of being a citizen and the informal role of being a community member.

In the case of *Citizen science*, for example, the roles of “expert” and “community member” or “citizen” are combined. Citizen science generally refers to the engagement of the public in scientific research activities, potentially democratising the production of knowledge. These activities and research outputs can, in turn, inform public policy, for example, related to environmental issues. In this way, citizen science blurs the boundaries between community, traditional experts and the state. As this example shows, citizen science has the potential to shift the micro-level power relations between policy makers, scientists and citizens and re-configure who is considered a legitimate source and creator of knowledge in a specific context (e.g. air quality and impacts on health).

Earlier we noted the distinction between macro-level (systems/societal) and micro-level (interpersonal/local level) power relations in understanding the transformative potential of approaches. Apart from *Citizen science*, as mentioned above, a similar change in micro-power relations is identified in *Sustainable food supply chains* and *Social food movements*, which have the potential to shift power relationships between people (producers, consumers, farmers, etc.) within a given food system, including recognizing or shifting the agency of non-human beings and changing the socio-ecological relationships within such systems. In these examples, power dynamics can be shifted through alternative relational values that deviate from the dominant market logic of, for example, consumer/provider roles and relations based on market competition. Cultures of collaboration based on trust within networks and between organizations are being nurtured in many community driven approaches (e.g. *Experimentation labs*, *Co-working spaces*, *Community gardens*).

Linking micro- and macro- processes of change and shifting power dynamics

The CoP indicated a need to engage more deeply with approaches that confront micro-level power dynamics, at neighborhood or city level, while noting a tendency in discourses around sustainability and justice to focus on approaches that confront macro-level power dynamics. This perceived false dichotomy might indicate the work that still needs to be done in systematically analyzing and showing the interdependence of macro- and micro-level processes. While, for example, the potential of structural systemic change might be more obvious in approaches such as *Beyond GDP indicators* or *Financial practices and instruments*, whose implementation would shake the very foundations of the current economic and political systems, these also would have major implications for local communities, institutions and people. Similarly so, even though approaches such as *Sustainable food supply chains*, or *Right to housing*, often start from local and embodied struggles and practices, these also often ignite action elsewhere creating pressure for change at larger scales, for example through national-level policies which in turn provide an example and set a precedent for challenging neoliberal market logics, and showing that indeed there is an alternative. Moreover, the compelling

transformative potential of approaches such as those, and others, may very well lay at the intersection and combination of approaches and how they challenge micro- and macro-relations, rather than in isolated approaches themselves (e.g. a co-housing initiative on a small scale that is involved in the right to housing movement to demand more structural government change and support).

Conclusions and reflections for ongoing & future research and practice

How then can we make sense of the diversity and transformative potential of the identified approaches to sustainable and just cities? In addressing sustainability challenges in cities, tensions and contradictions emerge between ecological sustainability on the one hand and inclusivity, recognition and equity on the other. Based on the identified approaches, we find that issues linked to justice are frequently glossed over, implicitly addressed, and instrumentalized in favour of ecological improvements or profitability. In doing so, the approaches aimed at making cities more sustainable seek to provide apparently apolitical solutions to deeply political issues.

This results in an unclear and under-explored connection between justice and sustainability, which has the potential to impede just sustainability transitions. This knowledge and practice gap has already been addressed by several authors in recent years (Pearsall and Pierce 2010; May and Perry 2017; Broto and Westman 2019; Hughes and Hoffmann 2020; Grossmann et al. 2021). In order to further explore the link between justice and sustainability at the urban level, we present a future research and practice agenda with four recommendations for city-makers and city-thinkers who are concerned with not only making cities more sustainable but also more just.

First, while the majority of approaches do not trace an explicit link between sustainability and justice, some demonstrate a stronger potential for doing so. For instance, community gardens, food collectives and grassroots urban farming initiatives are interested in (the access to) nature, food and a green living environment, but also in creating welcoming and inclusive communities and other social benefits. Also, in such approaches decision making is often based on more radical democratic practices. Herein the shift is sometimes made from 'sustainable' to 'regenerative cities'. Such examples reveal one of the main opportunities for integrating justice as an orienting principle for sustainability interventions, namely their focus on commoning, collectivization and democratization of (local) policies, resources and decision-making processes, as witnessed in efforts to involve historically marginalized or disadvantaged groups. City-makers and city-thinkers should therefore strongly commit to integrating justice into urban sustainability processes and policies through the embedding of robust and deep democratic processes.

Second, when considering the broader transformative potential of the approaches (via the X-curve), many have been found to have had both unexpected and unintended positive and negative impacts (like e.g. gentrification outcomes of greening initiatives), rendering it challenging to distinguish between their purpose, potential and actual impacts. At the same time, we are often inclined to overlook the ways the approaches and related initiatives challenge micro-power relations, and we are tempted to assess their transformative potential solely based on the extent to which they challenge, alter and/or replace macro-relations. We suggest that the transformative potential of an approach may lie at the intersection and in the combination of

approaches and how they challenge both macro-relations and micro-relations, rather than in the isolated approaches themselves. City-makers and city-thinkers should therefore ensure that the conditions for the emergence of multiple approaches are in place, for instance, by strengthening and adequately financing community groups and civil society.

Third, just sustainability transitions require a diversity of approaches by multiple actors on different scales that complement each other, as embodied in the interdisciplinary and transdisciplinary co-production of knowledge. Justice and sustainability are orienting principles rather than objective criteria, which mean different things to different people and are laden with multiple and at times conflicting values and modes of knowledge. Policymakers, researchers, activists and other city-makers and city-thinkers should realise and accept that there is not one way to be or become a just and sustainable city and that this process is neither linear nor timebound. This also requires a cross-fertilization between different movements and approaches across scales (e.g. national, regional, global) and space (e.g. urban-rural, online-offline, present-future).

Fourth, though some approaches have contributed to local successes and breakthroughs, they have by and large struggled to alter, challenge and replace current dominant institutions. After years of pioneering and experimenting, it is crucial to focus on institutionalising and mainstreaming transformative approaches at a more structural level. More emphasis needs to be put on tackling persistent institutional barriers such as legislation, funding schemes, protocols, paradigms etcetera and which anticipates the transition phase of phase-out and break-down. City-makers and city-thinkers should do the institutional work of enabling the conditions for changemakers - be it themselves or others, both within and outside their own organisations - to flourish. They need to be aware of the ways in which their organisation and organisational structures hampers approaches from flourishing and should commit to become an institutional activist and negotiate for radical transitions within their organisations. Crucial ingredients in doing so are taking care of all the labour that has already been done by pioneers and nurturing the 'radical core' of promising approaches.

In sum, future research on the conceptual and practical linkages between justice and sustainability is crucial for a better understanding of how current and future approaches are able to simultaneously address current asymmetrical power relations. In a context of growing doubts and uncertainty, collectively assessing the transformative potential of approaches can help to add a sense of contextualised directionality to current research ambitions and policy making processes and pinpoint those institutional breakthroughs that have the potential to lead to structural change. This also requires an awareness that merely adding 'the social dimension' to domain specific sustainability challenges in e.g. energy, mobility and food does not suffice for creating processes and outcomes that are actually more just. There is a risk that justice is simply evoked as an instrumental move to increase acceptability of ecologically sustainable but without justice being acted upon as an end in itself. From a political perspective on transitions, power is not only a means to an end, but equitable power relations are a goal of sustainability transitions in itself.

Research can also assist in going beyond 'sanitised' and 'glorified' stories of approaches, and beyond superficial additions of justice concepts, by forefronting possible unintended consequences of well-intended initiatives and highlighting the everyday struggle

between a diversity of institutional logics. A guiding research question is how current approaches are challenging, altering and/or replacing asymmetric micro power relations and how they are explicitly addressing unjust and unsustainable practices in cities. This should not be a judgemental and evaluative endeavour, but insights should feed into a reflexive process on how to increase the transformative potential of such approaches. The collective search for just and sustainable cities is a crucial endeavor for all involved researchers, innovators, practitioners as to not reproduce and deepen existing social inequities and power imbalances in urban sustainability research and practice. Therefore, we need to move away from empty considerations of justice (or no justice considerations at all) to an in-depth and critical consideration of justice.

We have shown that ongoing research into the transformative potential of approaches is vital if we are to further acknowledge and address the need for an explicit link between urban sustainability and justice. In addressing this link it is of crucial importance to take into account an awareness of the unintended consequences of actions, the mobilization of diverse modes of knowledge, and a scaling up and broadening out of movements resulting in structural transformation. But we have also shown how this research needs to be as open, dynamic, processual and multi-actor as cities themselves. -Therein we join Hughes and Hoffmann (2020) in pleading for a more design-oriented and forward-looking urban transition research and practice in which the concept of justice offers a fruitful starting point to engage with the politics of city making and helps identify the approaches that contribute to sustainable just cities. Embracing and activating the creative uncertainty of approaches, cities and the commoning of research is a difficult task; we hope that this paper and the project from which it has emerged goes a small way towards contributing to this endeavour.

Appendix 1
List of approaches in the Wiki on just sustainable cities

Table 2 Overview and brief description of approaches in the Wiki on Just Sustainable Cities

Approaches	Description
Beyond GDP indicators	Alternative economic indicators which do not assume economic growth as the most important variable to assess a country's development.
Citizen Science	Scientific research that involves the general public entirely or in parts.
Civil Disobedience	Public, non-violent and conscientious breach of law undertaken with the aim of bringing about a change in laws or government policies.
Co-living, co-housing & intentional communities	Initiatives and movements that aim to provide affordable, ecological or community housing in both urban and rural contexts.
Ecovillages	Communities where people aim to live in harmony with each other and with nature.
Co-working spaces	Physical spaces where entrepreneurs, companies and businesses share, among other resources, working areas, networks, and knowledge.

Approaches	Description
Community gardens and food	Urban agriculture seeks to reduce cities' ecological footprints by decreasing energy use in food transport while building community resilience (Regenerative Cities).
Crowdsourcing	Online activity in which participants voluntarily undertake a task in response to a call or request from any societal actor.
Culture for empowerment	Empowering young or disadvantaged people through culture-based solutions.
Data Collection	Analysis of digital data (urban realm) in order to increase efficiency, improve decision making and provide real time information for both citizens and the state.
Degrowth movement	Political, economic, and social movement to transition towards a just, participatory, and ecologically sustainable society by downscaling production and consumption.
Democratic innovation through recognition	Inclusivity in decision-making and policymaking processes. Diverse participants are convened in diverse ways to include multiple perspectives in urban sustainability efforts.
Digital fabrication	Manufacturing process in which a machine is operated digitally to make a certain product.
Energy and Mobility solutions	Technological interventions that can support the transition to a low-carbon society by decreasing fossil fuel use.
Experimentation labs	Social experiments that test ideas, methods and technologies to better address specific (and complex) urban challenges in a contextualized manner.
Financial practices and instruments	Initiatives that tackle unsustainability and injustice in cities by taking the distribution of resources and the way our economic system is organized as the starting point.
Governance and participation processes	Processes that address environmental problems and envision the future of cities based on the co-production of knowledge through innovative partnerships.
Governance for urban climate mitigation and adaptation	Governance tools and processes to engage the civil society in policy making processes for urban climate mitigation and adaptation strategies.
(Impact) evaluation and assessment framework	Assessment methods for diverse topics (e.g. distribution of green amenities) within sustainability and justice in urban areas to mainly help policymakers.
Integral MetaMapping	Integrated map of evolutionary values that encompasses sub/objective and intersubjective/objective values for researching, planning, and managing change.
Co-learning and knowledge brokerage	Approach that facilitates the circulation of ideas, understandings and cutting-edge research between a diverse variety of actors in society.
Nature-based solutions (NBS)	Cost-effective solutions that are inspired and supported by nature and provide environmental, social and economic benefits as well as help build resilience.
Nature-based solutions (NBS) for climate adaptation	Nature-based solutions (NBS) that are designed to provide answers to major urban challenges (e.g. flooding and heat stress) while helping biodiversity to flourish
Nature-based solutions (NBS) for health and equality	Nature-based solutions (NBS) that bring green elements into everyday urban living in the most equitable of ways, so that citizens of all communities have access to them.
Multi-stakeholder partnership - policy	Approaches to (urban) governance that enable sustainability transformations by connecting multi-sectoral networks with individuals/organizations on-the-ground.
Participatory budgeting	Democratic process in which community members decide how to spend part of a public budget.

Approaches	Description
Pathways and scenarios	Tool to envision transitions, i.e., how our cities will look like in the future. It develops an action plan on how to get there.
Pathways and scenarios for post-carbon societies	Qualitative and quantitative methods, incl. participatory research, case studies, quantitative modeling and socio-technological analyses to reach EU climate goals.
Policies and practices for inclusion of disadvantaged groups	Approach that aims to provide all citizens with equal access into urban life and ensure their right to the city.
Reconceptualising urban justice and sustainability	Alternative conceptual framings range from the moral right of all those living in cities to contribute to shaping their future, to the practical importance of diverse outlooks, ideas and capabilities in working towards sustainability and justice.
Regeneration of disused urban land	Remediation and revitalization of disused urban spaces (e.g. landfills) to improve urban biodiversity and provide additional ecosystem services.
Right to housing	The right to housing indicates the right of all individuals to have access to adequate shelter.
Right to the city	The right to the city is far more than a right of individual access to the resources that the city embodies: it is a right to make and remake ourselves and our cities.
Sharing and cooperatives for urban commons	Resources and services that are shared, co-financed and managed through jointly- owned and horizontally/ democratically governed enterprises such as cooperatives.
Smart Cities	Integrative approach to utilize the opportunity of digitalization and new technologies to overcome urban issues.
Social food movements	Movements that aspire to make food production and consumption more sustainable, strengthen the local food sector, connect people and raise awareness.
Sustainable food supply chains	Research and policy on environmental benefits of short food supply chains (SFSCs), the role of small and medium enterprises (SMEs) and the various policy levels.
Sustainable Households	Initiatives seeking to the improve energy performance of buildings as a means of lowering carbon emissions to create carbon-neutral habitats, communities and cities.
Participatory pollination	Citizen science approach that uses Living Labs as a vehicle to involve local citizens and create, monitor and promote awareness of pollinator-friendly spaces.
Transition towns	Initiatives that provide spaces for experimentation where citizens build community resilience and pioneer alternative environmental, economic and social solutions.
Municipalities in Transition	Grassroots policy innovation that promotes synergies between local governments and community-led initiatives to create systemic change for sustainability.
Urban development through cultural solutions	Restoring and improving the quality of urban life by using arts and cultural heritage (e.g. museums, old industrial sites etc.) to develop (degraded) urban spaces.

Appendix 2

Template Wiki pages of approaches to sustainable just cities

Template table of contents for each Wiki-page on approaches (Schipper et al. 2019).

The Wiki-pages include the following information:

- **Short description.**

- **General introduction to approach**
- **Shapes, sizes and applications.** [General insight on the different shapes, sizes and applications of the approach. Might also include some insight in the development stage and level of maturity of the approaches, their successes and limitations and level of transferability.]
- **Relation to UrbanA themes:** Cities, sustainability, and justice [How the approach addresses and/or tackles unsustainability and injustice in cities, taking into consideration the following four questions.
 - Urban: to what extent does the approach focus on the urban? Which scale of the urban or which urban territories?
 - Justice: to what extent does the approach address (in)justice. What type of (in)justice is addressed, how and at which scale?
 - Sustainability: what type of (un)sustainability issues are addressed, how and at which scale?
 - Linking sustainability and justice: to what extent and how does the approach link or connect sustainability and justice?
- **Narrative of change.** [What is the narrative of change of the approach. What is the problem that the cluster/approach addresses? What is the underlying premise of how the cluster/approach tries to address this problem and achieve change?]
- **Transformative potential.** To what extent does the approach alter, change or challenge existing power relations? (To what extent are) which power relations considered as problematic (unequal, oppressive, unjust, excluding etc.) by the approach, implicitly or explicitly? (How) are these power relations being framed, problematised, challenged, altered or replaced by the cluster/approach? And/or which existing power relations are (at the risk of) being reproduced/ strengthened by the approach, and how?]
- **Illustration.** [One or two illustrative approach(es) or case study]
- **Suggested reading** [optional]

Abbreviation

NBS Nature-Based Solutions

Acknowledgements

We would like to thank the UrbanA community of practice, including the UrbanA consortium and all people who contributed to the project throughout the years, for their support in collecting and organizing information for the Wiki on Sustainable Just Cities. We would particularly like to thank all the respondents who agreed to be interviewed for this research, and all the researchers, policymakers, activists, and entrepreneurs that participated in UrbanA events and conversations.

Authors' contributions

All authors have been involved in writing and editing all parts of the paper and all authors were involved in collecting empirical data for the Wiki database of approaches.

Funding

The research leading to these results has received funding from the European Union's Horizon 2020 - Research and Innovation Framework Programme under grant agreement No 822357, UrbanA.

Availability of data and materials

Wiki on Sustainable Just Cities: <https://wiki.sustainablejustcities.eu/>

Declarations

Competing interests

Not applicable.

Received: 13 June 2022 Accepted: 18 December 2023

Published online: 07 May 2024

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