DOUGHNUT
ECONOMICS
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LAB

Doughnut Unrolled

Data Portrait of Place

Version 2.0 (April 2022)

Contents

About this handbook

This handbook provides guidance and resources for identifying targets and indicators that can be used to create a data-led portrait of your place through the lens of Doughnut Economics. It is an indicator-based tool that forms part of the 'Doughnut Unrolled' set of tools for localising the Doughnut through quantitative analysis, participatory workshops, and more. Collectively, these tools aim to combine metrics with lived experience, inspiring initiatives, critical challenges, new possibilities, and crucially, potential actions in your place. Before you go further in this handbook, please familiarise yourself with the core Doughnut Unrolled concepts and toolkit, introduced here: Doughnut Unrolled - Introducing the four lenses.

Doughnut Economics Action Lab (DEAL) has created this handbook because we aim to make the methodology available to all who are interested in using it to create transformative action in their place, and we want to make this as simple and straightforward as possible to do. The handbook is meant to accompany changemakers who are creating an indicator-based Data Portrait in their towns, cities or regions by providing methodological guidance for selecting targets and metrics, and by flagging useful resources, things to keep in mind, and inspiring approaches already being put into practice. All we ask in return is that your initiative follows the Doughnut Unrolled Dos and Don'ts shown in Figure 1.

👍 Dos

Safeguarding integrity

1. Do use and adapt these Doughnut Unrolled tools for your context, following DEAL's Guidelines and licensing rules.
2. Do use these Doughnut Unrolled tools at the most relevant scale for your context, from neighbourhood to nation.
3. Do share back your learning on the DEAL Community Platform to inspire others.
4. Do share any feedback and suggested improvements on these tools that we can incorporate into the next iteration.

👎 Don'ts

Weakening integrity

1. Don't leave out any of the four lenses - each lens reveals a distinct and crucial angle.
2. Don't remove any dimensions from the lenses, even if they are not your immediate focus.
3. Don't use or adapt these tools to analyse a business (see DEAL's business policy).
4. Don't use these tools as a consultant unless you've met DEAL's criteria (see DEAL's policy for consultancies and professional advisors).

Figure 1 The Doughnut Unrolled Dos and Don'ts.

This handbook builds on a previous methodological guide published in July 2020 that presented the steps taken to create the first versions of the Data Portrait methodology in three pilot cities – Amsterdam, Philadelphia, and Portland – as part of the Thriving Cities Initiative, a collaboration between C40 Cities, Circle Economy, and Doughnut Economics Action Lab (DEAL), funded by the KR Foundation.

Since then, there has been an inspiring process of peer-to-peer inspiration as towns, cities and regions worldwide have, following the lead of the pilot cities, picked up this methodology and created their own Data Portraits adapted to

local contexts and priorities. This handbook aims to showcase new methods, learnings and experiences from these diverse initiatives that are engaging with the Data Portrait of Place methodology worldwide.

Collaborative publishing

This handbook represents the latest version of DEAL's evolving set of data-led resources and methodological guidance. We are publishing it online as a Google Doc under a Creative Commons BY SA 4.0 licence to enable collaborative, iterative, and rapid development of this tool, as new initiatives and learnings appear. In doing so, we are aiming to find a balance between openness and integrity in order to unleash peer-to-peer inspiration and help bring about transformative action at the speed and scale that these times demand. Please share thoughts, comments, and lessons learned from applying the Data Portrait methodology by joining the conversation on the DEAL Platform or adding them to this online collaborative feedback document so that, together, we can keep making it more relevant to more places, at many scales.

How this handbook works

Each of the four 'lenses' of the Data Portrait methodology can be investigated in many ways, depending on multiple factors such as context, resources, time, and data availability. Throughout the handbook, we describe the methods that were chosen to create Data Portraits in Amsterdam, Philadelphia, and Portland, and we also showcase the methods chosen by other places that have since picked up and adapted the methodology worldwide.

In addition, we incorporate learnings from an in-depth co-creative process that DEAL hosted with a team of 20+ contributors during the first half of 2021, which explored the implications of adapting this methodology to better reflect the needs, interests, and priorities of places in the so-called 'global South'

(including regions such as Africa, Asia, Latin America & the Caribbean, and Oceania).

Although we are confident that the framing and questions of the Data Portrait methodology can be usefully applied in all places, we believe the unequal power relations between countries deserve explicit attention, having been built upon the legacies of colonialism. Similarly, there are vast inequalities – including of ethnicity, gender, sex, ability, and more – within countries rich and poor that must be made visible, particularly with many Black, Indigenous, and People of Colour (BIPOC) experiencing and resisting injustices within their communities, both socially and ecologically. In future iterations of the handbook we aim to continue adapting and extending the Data Portrait methodology, especially in order to:

- place greater focus on the role and impact of history, culture, power relations, and legacies of colonialism in global North places

- deepen the experiences and lessons learned in global South contexts to better reflect their needs, interests, and perspectives

- adapt the approach for use in different territorial contexts, such as urban, rural, and/or peripheral, and at multiple scales, ranging from neighbourhoods to nations or bioregions

- improve the monitoring potential of the approach through methods that take into account the direction of change over time

We look forward to discussing, collaborating with, and learning from others through these future co-creative processes held in the spirit of the Doughnut Principles of Practice.

Doughnut Unrolled: from global compass to portrait for places

The [Doughnut of social and planetary boundaries](#) envisions a world in which people and planet can thrive in balance – in other words, it offers a compass for guiding 21st century prosperity, as shown in Figure 2.
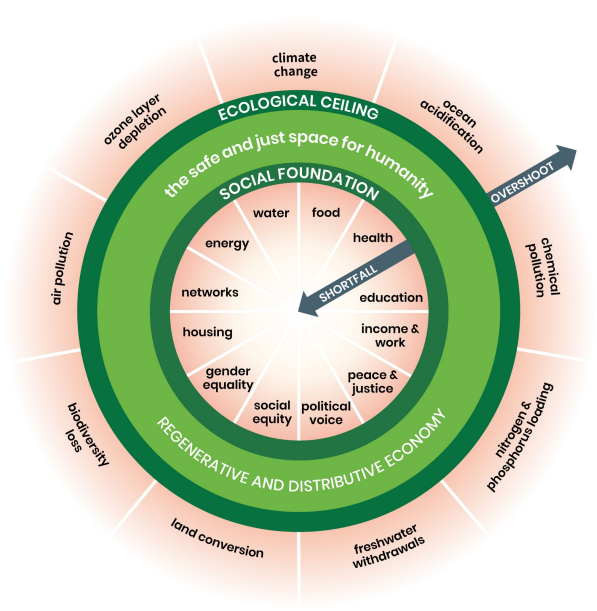

Figure 2 The Doughnut of social and planetary boundaries (Raworth, 2017). See [this tool](#) for graphics in 25+ additional languages.

The Doughnut's social foundation, which is derived from the social priorities in the [UN Sustainable Development Goals](#), sets out the minimum standard of living to which every human being has a claim. No one should be left in the hole in the middle of the Doughnut, falling short on the essentials of life, ranging from food and water to gender equality and having political voice.

The Doughnut's ecological ceiling comprises nine [planetary boundaries](#), drawn up by Earth-system scientists in order to identify Earth's critical life-supporting systems and define the global limits of pressure that these systems can safely endure. Humanity must live within these ecological boundaries if we are to preserve a stable climate, fertile soils, healthy oceans, a protective ozone layer, ample freshwater, and abundant biodiversity of all other living beings on Earth.

Between the social foundation and the ecological ceiling lies a doughnut-shaped space in which it is possible to meet the needs of all people within the means of the living planet – an ecologically safe and socially just space in which humanity can thrive. However, if humanity's goal is to get into the Doughnut, the challenge is that we are currently far from doing so, as shown in Figure 3.
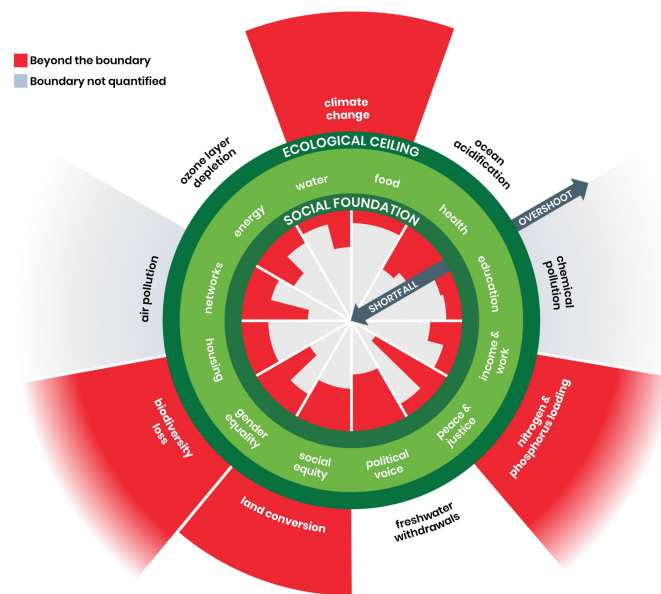

Figure 3 Transgressing both sides of the Doughnut's boundaries (Raworth, 2017). See [this tool](#) for graphics in 25+ additional languages.

Worldwide, billions of people still cannot meet their most essential needs, yet humanity is collectively overshooting at least four planetary boundaries, and is driving towards climate breakdown and ecological collapse. The red wedges below the social foundation in Figure 2 show the proportion of people worldwide currently falling short on life's essentials. The wedges radiating beyond the ecological ceiling show the current overshoot of planetary boundaries.

The challenge of our times is that we must move within the Doughnut's boundaries from both sides simultaneously, in ways that promote the wellbeing of all people and the health of the whole planet. Achieving this globally calls for action on many levels, including in cities and regions, which are proving to be leaders of driving such change. The Doughnut Unrolled tools aim to amplify that potential.
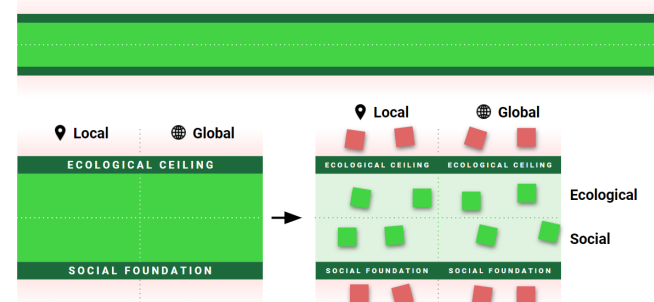
Doughnut Unrolled: four lenses on life

Since it was first published in 2012, the Doughnut has gained considerable international attention – from towns and cities to the United Nations, and across many layers of society, such as community activists, social enterprises, educators, and governments. The Doughnut has been downscaled in a range of ways since it was created, but we believe the Doughnut Portrait methodology – described in this handbook from a data-led perspective – represents the most holistic approach so far.

DEAL offers the Portrait approach as a tool that "unrolls" the Doughnut in order to open up space between the social foundation and ecological ceiling to envision possible safe and just futures *here* – wherever *here* happens to be – without losing sight of the fact that each place is inextricably linked to the rest of the world, as shown in Figure 4.

Figure 4 The Doughnut unrolled.

We believe this place-based approach represents a powerful tool to assess the social and ecological performance of a place for two main reasons:

1. Local aspirations, global responsibility: The methodology combines local aspirations – to be thriving people in a thriving place *here* – with global responsibility – both social and ecological – that requires every place to consider its many complex interconnections with the rest of the world. These interconnections deserve attention because local lifestyles can have many global impacts, and because global contexts shape many of the challenges that places face in achieving their local aspirations.

2. Scalable: Many of the examples in this handbook focus on the city scale, but we are confident that the methodology can be adapted to be applied at many scales, from neighbourhood to nation (and beyond) – indeed, this handbook highlights how pioneering changemakers are already moving in this direction.

DEAL's motivation is to find the most effective ways to translate the Doughnut into a tool for place-based thinking, decision-making, and action, while recognizing the very diverse realities of places worldwide. The Portrait methodology is the best response that we have come up with so far, and it can be distilled down to a single core question for any place:

Local · **Global**

ECOLOGICAL CEILING

How can our place become
a home to thriving people in a thriving place,
while respecting the wellbeing of all people,
and the health of the whole planet?

SOCIAL FOUNDATION

Figure 5 The core question of the Doughnut Portrait of Place

Any town, city or nation asking itself this very 21st century question can explore it more deeply through four crucial 'lenses' that arise from combining two domains (social and ecological) and two scales (local and global). Each of these interconnected lenses focuses on a part of the overarching question at the core of the Portrait, as shown in Figure 6.

Local · **Global**

Ecological		
ECOLOGICAL CEILING	ECOLOGICAL CEILING
How can this place be as generous as the wildland next door?	How can this place respect the health of the whole planet?

Social		
How can all the people of this place thrive?	How can this place respect the wellbeing of all people?
SOCIAL FOUNDATION	SOCIAL FOUNDATION

Local aspirations · Global responsibilities

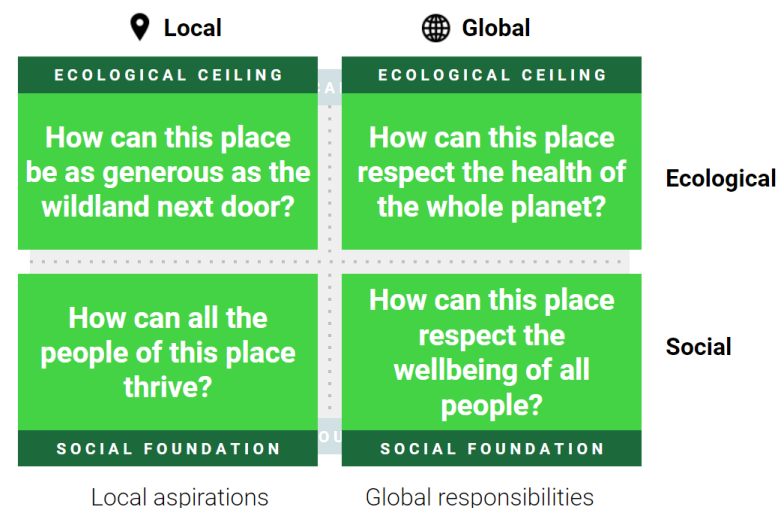Figure 6 The four lenses of the Doughnut Portrait.

Taken together, the four lenses are intended to start and inform a public discussion about what it would mean for your place to achieve local aspirations, while respecting the rights of all people, and the health of the living planet. With this overall purpose in mind, our design of the Data Portrait methodology has followed six broad principles, listed below.

Design principles for the Data Portrait

Be locally relevant, rather than comparable between places.

The Data Portrait does not seek to produce directly comparable portraits between places, either within the same nation or beyond. There are already multiple initiatives that aim to create such comparisons between places, and these can be extremely valuable in situating a given place's performance in a wider context. What is lost in such comparisons, however, is the specificity of place, the character of community, and the relevance of historical and cultural context – all of which can be crucial entry points for civic reflection. The Data Portrait forgoes strict comparability in order to best reflect these traits, meaning that each place's portrait and its related metrics will look, feel, and turn out differently.

Aim to compare desired outcomes versus current performance.

The ultimate aspiration for each of the four lenses of the Portrait is to be able to compare a place's desired performance to its current performance. The targets and data required to make this kind of comparison are, however, currently lacking for many places. But in these relatively early days of devising metrics fit for measuring the local aspirations and global responsibilities of places, such data gaps are to be expected, and one of the best ways to fill them is to create demand for them.

Offer a holistic 'snapshot' for discussing complex issues.

Each of the four lenses will depict just a fraction of the possible data that could be shown. Rather than overwhelm stakeholders with detail, the Data Portrait aims to engage them with judiciously selected data that give a snapshot of the whole and provide an overview perspective. As these four simple lenses of a place's current reality are brought together, they invite holistic reflection on the very complex dynamics that underpin their interconnections. In this way, the Data Portrait aims to help open up discussions about possible transformative pathways.

Create an opportunity for tracking progress.

The data and information within the four lenses of the Portrait could be tracked and updated over time, creating the possibility of tracking progress in each of the lenses, if time-consistent data are available or can be created. Some monitoring could be done by the city's residents themselves, enabling a wider range of people to participate in the measuring process, and help to amplify – and celebrate – progress.

Take the long view.

Humanity is in the very early days of creating metrics that are fit for 21st century goals and realities. The current approach to quantifying the Data Portrait has many caveats (set out throughout this handbook). In a decade or so we hope that we will look back at this early methodology and see it as crude. Indeed it is, but we will only make progress in assessing what it means to thrive if we start where we are and keep pushing ourselves to improve. This is teamwork and we invite suggestions.

Combine data with community perspectives.

This Data Portrait of Place focuses on gathering targets and indicators to create a holistic snapshot of a place through the perspective of data. It is intended as a starting point, and one that will be richly enhanced by simultaneously, or subsequently, creating a Community Portrait of Place, which brings together people's sense of their place, through stories, lived experience, and other diverse sources of community information.

Applying the Data Portrait methodology

Amsterdam was the first city to publish its Data Portrait of Place in April 2020 – right at the height of the first wave of the COVID-19 pandemic. The Amsterdam City Doughnut publication gained traction in the media worldwide on how the city planned to use it to set a new vision for the city as it emerged from the emergency. These ripples started a process of peer-to-peer inspiration and interest in exploring the methodology.

DEAL published the first version of this handbook in July 2020, making it available for others to pick up and adapt. Now there are cities and regions all over the world that are applying the methodology, and committing to create their own Portraits adapted to their needs and priorities.

DEAL believes that the potential of the Data Portrait as a transformative tool will be best realised when put into practice together with a wide range of participatory tools and methods, bringing government, business, and academia together with innovators from community networks, the commons, SMEs, and start-ups. See the Doughnut Unrolled: Community Portrait of Place tool, in particular, for a set of ready-made participatory workshop approaches and materials – both in-person and online – that brings together people's sense of their place through stories, lived experience, histories, photographs, and other community sources of information.

Given the methodology's commitment to being locally relevant, this handbook does not provide a one-size-fits-all guide, but rather a series of questions, suggestions, and resources that ambitious places are invited to consider in their own context. Similarly, the handbook does not provide detailed calculations on how to compare desired outcomes to current performance for a specific set of indicators. However, a general procedure to carry out such comparisons between indicators and targets, both qualitatively and quantitatively, is shown in Figure 7. In addition, an illustrative overview of the the indicators, targets, and calculations applied in the Amsterdam City Doughnut is provided as a supplementary spreadsheet.

Qualitative
If available targets and indicators are not numerically comparable, they can still be usefully assessed qualitatively.

Quantitative
If available targets and indicators are comparable numerically, their ratios can indicate shortfall or overshoot.

$$\frac{\text{Social indicator}}{\text{Social target}} = \text{Shortfall (if less than 1)}$$

$$\frac{\text{Ecological indicator}}{\text{Ecological target}} = \text{Overshoot (if more than 1)}$$
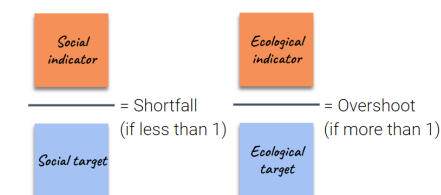
Figure 7 Comparing performance indicators with respect to targets.

Overall, the handbook guides changemakers through a general structure and process of applying the Data Portrait methodology by zooming into each of the four lenses shown in Figure 6. It also flags useful resources, issues to keep in mind, and inspiring approaches that are already being put into practice. The aim is for this living document to continue incorporating new learnings that may serve as a useful guide for others who want to create a Data Portrait for their place.

The remainder of this handbook contains four dedicated sections that zoom into each of the four lenses, which are followed by a section that points changemakers to other useful tools and resources that we have developed as part of the wider Doughnut Unrolled set of tools.

Useful Resources

Here are some useful tools from Doughnut Economics Action Lab for working with the Doughnut Unrolled methodology:

- Introducing the four lenses, an essential introduction to the four lenses and the ways in which they can be used to help places get into the Doughnut.

- Dimensions of the four lenses, an overview of each of the social and ecological dimensions within the four lenses.

- Community Portrait of Place, a range of participatory workshop approaches using the four lenses as a tool to explore perspectives and action in your place.

- Exploring a topic, a range of entry-points for exploring a specific topic through the four lenses, be it a policy, project, or possibility.

- The tools mentioned in the previous three bullets each include useful Miro templates with instructions for how to create your own online Doughnut Unrolled canvases, which could likewise be used as a data repository for sharing and collaborating with others in real-time (see Part 1 of each tool).

- Doughnut Diagrams in 25+ languages, high-resolution PDF and JPEG formats for printing and use in presentations.

Here are some useful stories and resources from places already using the indicator-based Data Portrait methodology:

- Amsterdam City Doughnut

- Downscaling the Doughnut at 4 levels in Brussels

- Renegade economists assemble in Ladywood, Birmingham

- Yerevan embraces Doughnut mindset

- **What else? Please suggest more resources in this online collaborative feedback document**.

For an illustrative example of how the research team selected targets and indicators in Amsterdam, please see the accompanying Supplementary Information spreadsheet. Please see DEAL's co-creative global South workshops repository for resources focused on adapting the methods in the Data Portrait to better reflect global South contexts and priorities.

Data Portrait of Place

Local-social lens

How can all the people of this place thrive?

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Local Social

How can all the people of this place thrive?

This lens of the Portrait asks what 'thriving' means to the people of your place from a social perspective, and compares that local aspiration with a snapshot of the place's current performance. As a place aims to answer what thriving means to its residents, a number of methodological questions arise; from defining local-social dimensions and setting targets to selecting indicators and, crucially, ensuring a diversity of voices are heard (Figure 8).

Figure 8 Methodological considerations in the local-social lens.

Although there are many ways to answer these questions, the main analytic decisions that need to be made are shown in Figure 9. Making these decisions will always be an iterative process – a kind of dance between the Data Portrait team, the availability of data and resources, and the place-specific context.
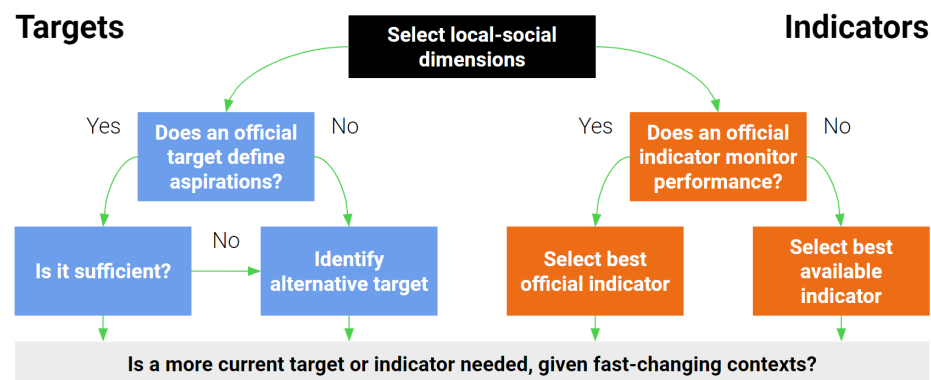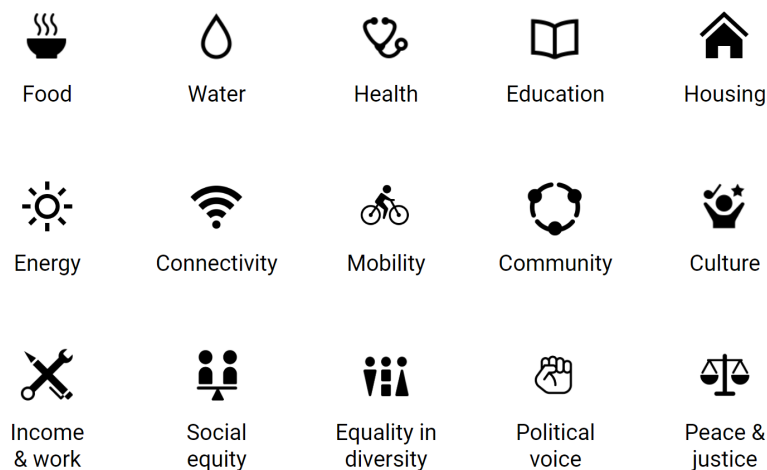

Figure 9 Local-social decision tree.

Select local-social dimensions

The local-social lens analysis begins by defining the set of dimensions that collectively form a place's social foundation – a basic standard of wellbeing that all residents have a claim to achieving. These social dimensions range from nutritious food and decent housing to political voice and community connection. For the Data Portraits in Amsterdam, Portland and Philadelphia, they began with the twelve dimensions of the Doughnut's social foundation (which, in turn, are drawn from the social priorities of the United Nations Sustainable Development Goals (SDGs). Other dimensions – such as community, culture, and equality in diversity (adding racial equality and more to gender equality) – go beyond the SDGs, and were added because they are widely recognised by cities and regions as essential elements of a thriving life for all residents (Figure 10).

Food	Water	Health	Education	Housing
Energy	Connectivity	Mobility	Community	Culture
Income & work	Social equity	Equality in diversity	Political voice	Peace & justice

SOCIAL FOUNDATION

Figure 10 Dimensions of the local-social lens. See Dimensions of the four lenses for additional information on each dimension.

Since the first version of the Portrait methodology was published in 2020, a number of other initiatives have picked it up, and followed a similar process to select dimensions for the local-social lens, including Brussels, Curaçao, and many more (see the 'Inspiring Approaches' box below for examples from cities & regions in action).

During the co-creative session that DEAL held to explore the local-social lens from the perspective of global South needs and priorities, contributors identified the importance of setting targets and gathering data that reflect the significant role of the informal economy. They also highlighted a need to be critical of data accuracy from official sources, as local institutional capacity for data collection and monitoring are often very limited (or non-existent).

Do official targets exist, and are they sufficient?

There are many possible ways of determining what 'thriving' means to the people of a city or place – such as through a citizen's assembly, through an inclusive survey of residents' opinions, or through official place-based targets drawn up by elected authorities.

Many cities and regions have extensive and recently created sets of relevant local-social targets – although this may not be the case in all places, especially in the global South. It is also important to note that official targets may not reflect the needs and interests of all residents, especially those who lack wealth, power, and access to decision-makers (such as people living in informal settlements, or migrant labourers) and so such targets need to be assessed in terms of their sufficiency in addressing the needs of all.

A number of places, such as Amsterdam, Barcelona, Cornwall, and Nanaimo have begun with a primarily desk-based approach to begin defining what it means for their residents to thrive by collating officially recognised targets, in consultation with relevant officials across diverse departments. The general desk-based approach taken by the TCI pilot cities (Amsterdam, Portland, and Philadelphia) is described in more detail on the next page.

In contrast, the Regen Melbourne network created an innovative participatory community engagement approach to begin defining what thriving means to Melburnians. The changemakers hosted four community forums attended by hundreds of residents that focused on the vision for each local-social dimension in creating a healthy, connected, enabled, and empowered Melbourne. Within these community forums, participants co-created more than 90 vision statements across 16 dimensions. Meanwhile other places, such as Brussels, Devon (UK), El Monte (Chile), and Yerevan (Armenia) have each created distinct ways of combining data-led and participatory methods to inform the selection of local-social targets and indicators.

In Amsterdam, Portland, and Philadelphia, the teams identified existing targets that had been officially agreed and published by the city, and mapped them onto the set of social dimensions through a four-step process, given time and resources available.

First, they identified the full range of stated priorities of the city, as expressed in the city's publicly available goals or targets, in consultation with city officials across diverse departments, and through desk-based research.

Second, they categorised these goals by the scope of their ambition (i.e. vision, target, objective), by their focus, and by their target date. More broadly, any such qualitative categorisation process will always be dependent on the information available as well as the choices and expertise of the Data Portrait team, who also hold a responsibility to document and justify their choices (see the 'Inspiring Approaches' box for examples from initiatives worldwide).

Third, they identified the city targets that directly addressed the dimensions of the local-social lens and, out of these, selected the most representative target or targets, for each of the social dimensions. This selection was based on a qualitative assessment of the many possible targets, in terms of their specificity and their time-bound ambition. For example, they gave priority to targets that specified a year, e.g. 2025, as their end date. The Supplementary Information document (referenced in the 'Useful Resources' box on the following page) provides an illustrative example of this local-social target selection process for Amsterdam's Data Portrait.

Finally, the team assessed the sufficiency of the selected targets by ensuring that they at least matched or exceeded the level of ambition set out in the Sustainable Development Goals and their related targets. In addition, in workshops later held to present the first iteration of each Data Portrait's four lenses to a wide range of city officials and community organisations, participants collectively reflected on the sufficiency of their city's social targets. They noted any social dimensions for which the city had no related targets, and

identified areas in which they believed the city's scope and level of ambition should be raised.

During the co-creative workshop on adapting the local-social lens to the priorities and needs of places in the global South, contributors highlighted the lack of institutional mechanisms to define locally relevant targets, despite general consensus that participatory processes should be used to define official targets inclusively because people value things differently. Contributors also noted that, in the absence of locally defined targets, national government priorities and the SDGs offer meaningful starting points for analysis.

Select performance indicators

In many cases, the place-based target identified for each social dimension can be matched with a number of statistics that provide illustrative snapshots of different aspects of current performance (as shown in the layout of Amsterdam's local-social lens in Table 1). No single indicator – or set of indicators – can capture the full diversity and complexity of city life against each dimension, nor can it reflect the richness (or paucity) of data available.

For example, should the indicator for housing focus on homelessness or rental affordability? There is no single right answer, of course – the approach for the three global North pilot cities was to select indicators that highlight pertinent aspects of each city's current reality, and that could act as conversation starters for deeper reflections on the many interconnections between the Portrait's four lenses. Importantly, the choice of indicators shown can introduce biases and blind-spots, so they encouraged participants to reflect on this risk during workshops later held with city stakeholders.

A process of selecting and deliberating upon indicators would ideally involve residents and officials who, collectively, are familiar with the most critical issues facing the city or region. Such participatory processes are being carried out in a growing number of places, such as Devon and Brussels.

Even in the absence of local statistics, there is value in flagging a lack of official data for a given dimension. Contributors to DEAL's global South co-creative workshops highlighted the importance of identifying marginalised and vulnerable groups, which may not be recognised by formal institutions, such as informal communities and workers, indigenous/tribal communities, refugees, and people with disabilities. They also identified a number of qualitative methods for a place to assess local-social performance inclusively, including participatory action research and focus groups, along with photography and story-telling. These qualitative aspects of lived experience can also be made visible through the Community Portrait of Place tool. In addition, they recognised that relevant data is not always owned or collected by the government – lots of data is collected and held by private corporations, academic institutions, and civil society organisations.

Contextual sense-check

Having selected the best-suited indicators and the most recently available data, it is crucial to sense-check and ask whether these indicators and data reflect the city's current realities, particularly in the context of the COVID-19 crisis, and other rapidly changing situations. When data is very likely to have been superseded by events, additional estimates or indications need to be added, based on the best available information in the city – even if it is as simple as highlighting the likely direction and scale of change (e.g. city employment levels are likely to have fallen significantly in many cities and places worldwide, in the wake of COVID-19).

Useful Resources

Locally relevant social targets and indicators are often available via the websites of city authorities and national and international statistical services. Some other sources and methods could include:

- The World Council on City Data, which has developed an International Organisation for Standardisation (ISO) standard for city metrics, with certified data for more than 60 global cities worldwide.

- The Global Observatory on Local Democracy and Decentralisation delivers annual reports to the UN High Level Political Forum on the localisation of the SDGs.

- The World Database of Happiness, which provides indicators of subjective wellbeing, primarily at the national level, and with some city-scale indicators.

- The Sustainable Development Goals (SDG) Tracker, hosted by Our World In Data, which monitors national progress towards the SDGs.

- The Know Your City campaign, hosted by Slum Dwellers International, compiles city-wide data and information on informal settlements collected by slum dwellers.

- **What else? Please suggest more in this online collaborative feedback document.**

For an example of how the research team selected the targets for this lens in Amsterdam, please see the accompanying Supplementary Information spreadsheet. Please see DEAL's co-creative global South workshops repository for resources focused on adapting the methods in this lens to better reflect global South contexts and priorities.

Keep in mind…

"Informality (of e.g. housing, settlements, income) is crucial to include, even though it may not be reflected in official statistics. Find innovative ways to make it visible." – Global South workshops contributor

Whose voice is heard – and whose may be left out? Ensuring a diversity of voices are heard is a crucial aspect of defining what thriving means to the residents of a place. Some questions to keep in mind could include:

- How could we connect with existing research and knowledge around marginalised communities in this place?

- How could we best work with community-based networks and organisations that bring the voice and perspective of marginalised people?

- Many cities and towns are facing rapid urbanisation, especially in the global South – does it make sense to include the voice and perspectives of future residents? If so, how?

- What methods could help to ensure a diversity of voices are included – such as participatory action research?

- **What else? Please suggest more in this online collaborative feedback document.**

Inspiring Approaches

Some pioneering places using innovative methods to explore the question 'How can all the people here thrive?':

- Amsterdam has updated their City Portrait for incorporation into the 2020-2021 State of the City report, which is published with updated statistics every two years.

- The Regenerate Barbados initiative held a community scoping workshop focused on the question "How could Barbados thrive with more social justice, fairness, and safety for all?"

- The Brussels Donut project collected a database with more than 190 local-social indicators, and held participatory workshops with residents, using an online Portrait among other tools.

- Cornwall Council has adopted the Cornwall Plan 2020-2050, which commits to review progress on 12 local-social dimensions identified in their 'State of the Doughnut' report

- The Curacao Doughnut Economy Taskforce, in collaboration with the Ministry of Economic Development, identified 12 local-social dimensions, and held participatory workshops with residents.

- The Regen Melbourne network held four community engagement workshops, interviews with leading thinkers and doers, and roundtable discussions to co-create a shared vision of thriving.

- More inspiring initiatives are ongoing in Devon, Nanaimo, the Philippines, Yerevan, and more. Once published, more examples will be added to this Handbook at its next iteration.

- **What else? Please suggest more in this online collaborative feedback document.**

Table 1 What would it mean for the people of Amsterdam to thrive?

Dimensions	Targets	Indicators
Food	A target is currently under development.	In 2018, over 1,200 households made use of the city's food banks.
Water	Public water is accessible, attractive, clean and safe for all users.	Tap water quality in 2017 was rated well above the legal standard.
Health	All citizens have an equal chance of living a healthy life, regardless of socioeconomic status, or background.	Around 40% of citizens are overweight and almost half (49%) have a moderate-to-high risk of depression or anxiety.
Housing	There is sufficient availability of affordable and decent homes.	In 2018, 60,000 homeseekers applied online for social housing, but only 12% were successful. Almost 20% of tenants are unable to cover basic needs after paying rent.
Education	Every child receives a good education in a high-quality school environment.	In 2019 there were 175 unfilled teaching posts in city schools.
Energy	Make the city natural gas-free before 2040.	The City is currently working on making 28 neighbourhoods become natural-gas free.
Connectivity	The digital city is designed in collaboration with citizens, and other city actors. The municipality's interaction with citizens is accessible, understandable and inclusive.	98% of Dutch households had access to the internet in 2017. 13% of Amsterdammers over 19 years old experience severe loneliness.
Mobility	The city is accessible to everyone via public transport, in a safe and sustainable way.	In 2017, residents made an average of 665,000 journeys by bike every day, and in 2018 they gave the city's public transport a rating of 7.7 out of 10.
Community	Amsterdam is an inclusive and connected city.	81% of city residents stated that they felt connected to the city in 2017. Residents' ratings of their neighbourhoods ranged from 6.8/10 in Nieuw-West, to 8.1/10 in Zuid.
Culture	All citizens and visitors are provided with a high-quality, innovative and diverse cultural offering; and all Amsterdam children become acquainted with art and culture.	In 2017, the City's Kunstenplan introduced a programme of after-school activities in arts and culture, predominantly for children from low-income households.
Income	Financial (income) security is assured for citizens who cannot (completely) provide for their own livelihoods.	Almost 1 in 5 of all households (18%) qualified to apply for the social benefits scheme due to their low income and savings in 2016.
Work	Citizens are provided with attractive commercial facilities throughout Amsterdam, plus entrepreneurs benefit from a good business climate.	Local entrepreneurs gave the city business climate a rating of 6.75 out of 10, in 2017.
Social equity	Citizens enjoy greater independence and seldom experience inequality of opportunity.	16% of residents in lower-income neighbourhoods feel they lack control over their lives — higher than the national average of 11%.
Equality in diversity	Amsterdam is an inclusive and connected city.	In total, 15% of residents reported experiencing discrimination in 2017: 39% of incidents concerned ethnicity or skin colour; and 29% concerned nationality.
Political voice	Citizens have an increased say, involvement and role in deciding what happens and how it gets implemented.	Voter turnout for the 2018 city elections was 52%, compared to 79% for the 2017 national election
Peace & justice	Amsterdam is a safe and liveable city for residents and visitors.	In 2017, 25% of citizens were the victim of a crime, and 3% of citizens said they had experienced domestic violence over the past five years.

Data Portrait of Place

Local-ecological lens

How can this place be as generous as the wildland next door?

Local Ecological
How can this place be as generous as the wildland next door?

Every village, town or city is situated in a unique ecological location, be it in a coastal wetland, or surrounded by tropical forest, or in a temperate valley. If you could visit the 'wildland next door' – the healthiest natural habitat of the locality – then you would get a sense of how nature has learned to survive, thrive and be generous there. Nature cleanses the air, and regulates the temperature, stores carbon, cycles water, builds nutrient-rich soil, harvests the sun's energy, welcomes wildlife, and makes people feel at home. What if every town or city aimed to match or exceed the ecological generosity of its wildland next door? This would transform the design of urban and rural places alike, bringing greater health and resilience to the places where people live.

The local-ecological lens invites every place to aspire to be as ecologically generous as its healthy surrounding natural habitat. What if its buildings and infrastructure, its greenways and waterways worked together to purify as much air, filter as much water, store as much carbon, and house as much biodiversity as nearby healthy ecosystems?

This aspiration invites a paradigm shift in the way that cities and places are designed, and it arises out of the practice of biomimicry, which encourages every place to recognise itself as part of the larger living world in which it is embedded. Biomimicry provides an abundance of design strategies – informed by nature – that aim to create conditions conducive to life, thereby helping to create resilient and regenerative rural and urban communities.

Through exploring the local-ecological lens, places have the opportunity to review and raise the ambition of their existing environmental targets by identifying and adopting a set of Ecological Performance Standards that are scientifically derived from the local ecological context. A general decision-making process for creating the local-ecological lens is shown in Figure 12.
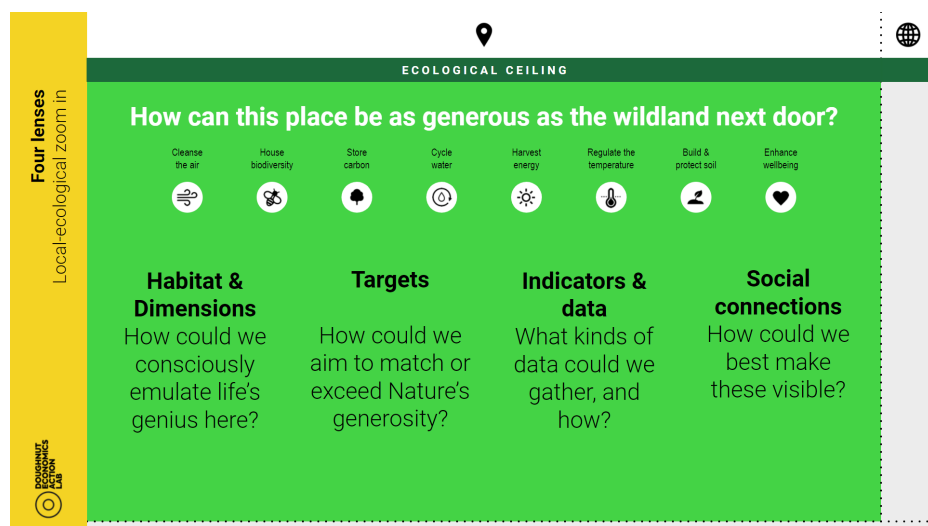

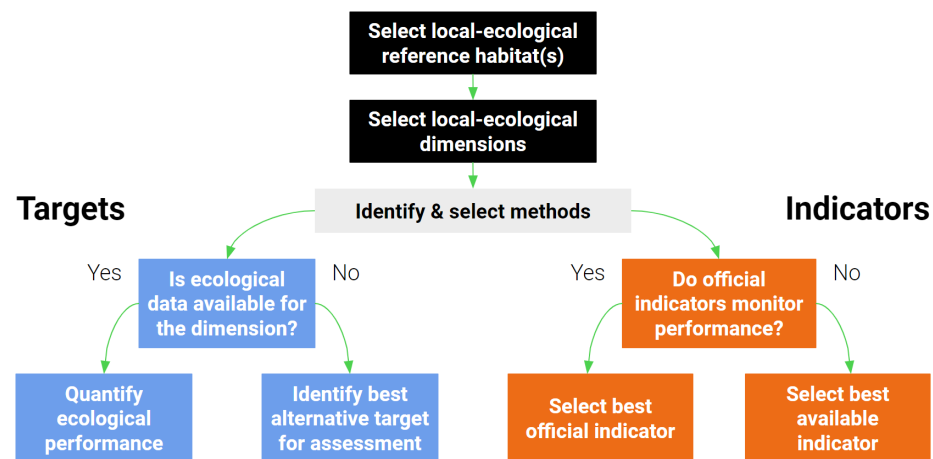Figure 11 Methodological considerations in the local-ecological lens.

Figure 12 Local-ecological decision tree.

Select local-ecological reference habitat(s)

The first step is to identify and select healthy local habitats to act as a reference point for establishing and prioritising ecological performance goals specifically relevant to that place's location. This step includes understanding key ecological dynamics that create local ecosystem health and resilience, as well as the needs of residents, which combine to shape the priorities for local ecological performance. In some places, the story is about alternating wet and dry seasons, with water storage as a key function; in other places it's a story of extreme seasonal heat, with temperature regulation as a priority.

In Amsterdam, Philadelphia, and Portland, they began by identifying each pilot city's ecological location, following the Genius of Place process developed by Biomimicry 3.8. Philadelphia, for example, is situated in the wetlands of the Atlantic coastal plains, nestled against the Piedmont forests. Portland is located within a matrix of forest, upland prairie, oak savanna, and wetlands, while Amsterdam is based in the temperate broadleaf and mixed forest biome, which includes forests, but also wetlands, coastal dune formations, and

heathlands. Each of these very different habitats provides a host of opportunities for its respective city to explore how it can best learn from nature how to be healthy and resilient for the long term in its specific location.

A challenge for many places will be that their surrounding habitat is degraded, rather than healthy, having long been managed or farmed. In such cases, it may be helpful to look further afield to reference habitats within the same biome. In the global South workshops, participants from Barbados noted that the entire island ecosystem is degraded, having been converted to a plantation colony centuries ago. Being in urgent need of regeneration, it does not currently constitute a measure of nature's generosity.

Select local-ecological dimensions

Human settlements are part of their local ecosystems, and so have an important role in supporting their health. To be part of a thriving and resilient ecosystem, a town or city would do more than reduce its damaging impact on its surroundings: it would aim to deliver ecological benefits in ways that match or even exceed the ecological performance of the wildland next door.

This ambition first requires identifying the key ecological benefits that the city or region should seek to deliver and support. For the three pilot cities, the research team identified seven key ecological benefits that are highly valuable to the cities and their surroundings: cleansing the air, regulating the temperature, harvesting energy, housing biodiversity, building and protecting soil, storing carbon, and cycling water. In subsequent studies, an eighth benefit has been added: enhancing human wellbeing (see Figure 13).

Figure 13 Dimensions of the local-ecological lens. See Dimensions of the four lenses for additional information on each dimension.

This is not an exhaustive list of all the benefits that are provided by surrounding ecosystems, but these eight provide critical guidance for cities and places on how to live generously and resiliently within their biome. For more information on each of these eight benefits, and how cities and places can seek to emulate them, see Dimensions of the four lenses.

Identify & select methods and ecological data sources

The local-ecological lens looks to each place's surrounding healthy ecosystems to provide guidance, models, metrics, and – ideally – place-specific science-based targets. On this basis, each place would, for example, take on the ambition of matching the performance of its respective healthy local habitat, by aiming to store as many tons of CO_2 each year as its nearby forest, cooling the air as much as the forest does from the treetops to the forest floor, and absorbing as many gallons of water during a storm. Setting such aspirational yet tangible targets can restore a community's connection to the surrounding living world, support community health and wellbeing, significantly

enhance the place's climate-change resilience, and dramatically enliven the design of buildings, hardscapes, and landscapes.

Where time and resources permit, places can create such locally specific ecological performance standards by quantifying the performance of the selected ecological benefits, through on-site data collection in the reference habitats of their healthy local ecosystems. Although some relevant secondary data can often be found in publicly available sources, site-specific data collection requires ecosystem-performance measurement tools; this can be technically demanding and may require the support of biomimicry specialists to research, identify, quantify, and suggest design recommendations.

Where time and resources to create these new metrics are not available, the place's existing ecological targets can be taken as a first (albeit limited) proxy for setting ecological performance ambition. The research teams took this approach in Philadelphia, Portland, and Amsterdam, mapping each city's existing local ecological targets against the set of key ecological benefits identified. In doing so, they noted where there were gaps in the coverage of ecosystem performance that were not addressed by those targets; this process provided a valuable opportunity for city staff and community to reflect and recognise where new and additional local ecological targets may be required.

Several places, such as Melbourne and Curaçao, have created participatory workshop approaches – as well as an innovative 'neighbourhood walkshop' in Birmingham – that invite residents to reflect on the generosity of Nature in their places, and to consider their relations with the local habitat. Although such participatory approaches often do not lead to quantitative indicators and metrics, they provide valuable opportunities for sense-making and community-building. Several ways to make visible these qualitative aspects are provided in the Community Portrait of Place tool.

Select place-based performance indicators

Ideally, each place would monitor its current ecological performance using indicators that match and reflect the key ecological benefits provided by the nearby healthy ecosystem. Such a comparison would make it possible to assess, prioritise, and focus on strategies and solutions that start to close ecological performance gaps between the place and its high-performing reference habitat(s), while generating benefits to support the health, wellbeing, and resilience of the community.

In practice, however, if time and resources do not permit such an in-depth approach, then places can instead identify the most relevant and reliable indicators and data available for assessing each existing ecological target, creating an illustrative statistical snapshot of that city's or region's current ecological performance. This was the approach taken in Amsterdam, Portland and Philadelphia, as shown in the presentation of Amsterdam's local-ecological lens in Table 2. This approach does not match up to biomimetic standards and practice, but still provides a valuable conversation starter for officials and changemakers to identify and consider the possible design strategies that could take their city or region far closer to matching the performance of the wider ecosystem in which it is embedded.

Some valuable insights regarding data collection and use arose in the global South workshops. Contributors in India and Bangladesh emphasised that data on air pollution and water quality can vary widely and may therefore be highly contested, especially between local, national and satellite-based sources.

Urban farming was widely agreed to be an effective way to harvest solar energy and enhance people's wellbeing in cities - both benefits recognised in the local-ecological lens. But there was wider debate over whether urban farming can be scaled to significantly improve food security (reflected in the local-social lens) and simultaneously reduce the impact of food imports (in the global-ecological lens).

Useful Resources

There are multiple resources to help identify local reference habitats and the potential benefits that they produce, such as:

- The Biomimicry Toolbox, a digital resource site from Biomimicry Institute that provides an essential quick-start guide to biomimicry, introducing the core concepts and methods needed to start incorporating Nature's genius into the design of your place.

- The Ultimate Guide to the Genius of Place: this blog post by Biomimicry 3.8 gives a concise overview of the steps involved in identifying a city's ecological location and learning to mimic nature's success there. It also provides links to several databases and reports that can support and deepen this analysis.

- EcoRegions 2017, which provides an overview of Earth's fourteen biomes and 846 ecoregions, giving a valuable first understanding of any town or city's ecological location.

- Species Threat Abatement and Recovery tool, which allows quantification of the potential contributions that species threat abatement and restoration activities offer towards reducing extinction risk across the world.

Resources that give an introductory overview of the range of ecological benefits that nature generates include:

- The 2005 Millennium Ecosystem Assessment, which sets out the concept of 'ecosystem services' and classifies them into four broad clusters of supporting, provisioning, regulating, and cultural services.

- The Urban Nature Navigator, an interactive guide to a set of tools and methods that use indicators to assess urban challenges and nature-based solutions.

- Green Facts, a website providing peer-reviewed information on environmental issues to non-specialist audiences, including on the topic of ecosystem change.

- The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), which provides global and regional assessments of human−nature interactions.

Resources providing indicators and data on the ecological performance of cities and places include:

- The World Air Quality Index, which provides historic and real-time air-quality data for more than 1,000 cities in over 100 nations.

- HackAIR is an open-tech platform for accessing, collecting and improving air quality information in Europe.

Resources on community-led approaches to gathering local-ecological data:

- The Ecosystem Services Identification and Inventory Tool (ESII Tool) is an iPad app and web interface that helps people understand the benefits that nature provides and incorporate nature's generosity into decision-making.

- Case studies of approaches used by successful citizen science initiatives - from Kampala to Bengaluru to Antwerp - provide valuable examples of the range of approaches that can be taken to community-led data collection.

- WaterMission and the World Bank set out a range of approaches to collecting data on the quality of local drinking water.

- **What else? Please suggest more in this online collaborative feedback document.**

For an example of how the research team selected the targets for this lens in Amsterdam, please see the accompanying Supplementary

Information spreadsheet. Please see DEAL's co-creative global South workshops repository for resources focused on adapting the methods in this lens to better reflect global South contexts and priorities.

Keep in mind...

"Data is power - and so will always be contested" – global South workshops participant

- The eight local-ecological dimensions identified (from cleansing the air to enhancing human wellbeing) represent a broad spectrum of nature's generosity in a place, and are relevant and adaptable across many diverse contexts, from in-land forests to coastal zones.

- The ideal reference habitat for measuring the generosity of the local healthy ecosystem may have been degraded over decades or even centuries, through industrialisation, agriculture, or colonial exploitation. Looking back at legacy data and records can help to see a fuller picture of the former health and density of the local habitat.

- It may seem beyond possibility to match nature's generosity, especially in dense urban areas. So you might introduce the concept of this lens as a literally 'wild' (or utterly natural!) aspiration, and focus on celebrating every step that is taken towards it.

- Exploring the local-ecological lens is a powerful way to reconnect people to the rest of nature, and to explain the health and resilience provided by nature-based solutions to ecological degradation. Urban food production and food composting can be a strong entry point for making this visible, tangible and every day.

- Community-level experience of, say, air and water quality may differ greatly from official data. When generating community-led data, aim to combine different types and sources (such as local measurements and photographs along with satellite data) to reinforce its validity.

- Don't focus only on what is wrong, but point to examples of what is working, however small-scale or local; they may be the seeds of possibility. The biodiversity that has been welcomed into the district of Curridabat in Costa Rica is an inspiring example of what can be possible.

- **What else? Please suggest more in this online collaborative feedback document.**

Inspiring Approaches

Examples from places exploring the local-ecological lens:

- In Birmingham, UK, the community organisation Civic Square takes neighbourhood residents on a walking workshop - a 'walkshop' - from the nature reserve to the high street, to reconnect with the role of nature in the locality and to start understanding what might be possible (link to come]

- The Brussels Donut initiative collated the best available data on local ecological conditions in the Brussels Capital Region and presented them using playful, accessible graphics in order to promote wider public interest and understanding.

- The Curaçao Doughnut Economy initiative documented the island's official targets related to local ecological health, created a snapshot of their current status using the best available indicators, and documented a wide range of local initiatives that are working

towards this goal.

- The Regenerate Barbados initiative held a community scoping workshop focused on the question "How could the Barbados economy and society thrive within natural ecosystem limits?"

- The Regen Melbourne network held a community engagement workshop focused on creating 'an ecologically healthy Melbourne', producing a compelling graphic of their shared vision. They asked how Melbourne can mimic its surrounding nature, gathered potential indicators for monitoring this, and began documenting existing initiatives that promote the city's ecological health.

- A report, entitled 'Health Risks in Our Environment: Urban Slum Youth' Perspectives Using Photovoice in Kampala, Uganda' trained 10 youth in photovoice methods to document risks to urban health due to local-ecological degradation.

- **What else? Please suggest more in this online collaborative feedback document.**

Table 2 What would it mean for Amsterdam to thrive within its natural habitat?

Dimensions	How Nature Does It	To Work Like Nature...	Current City Targets	Indicators
Cleanse the air	Leaves can capture ultrafine air pollutant particles and are also able to absorb gaseous pollutants.	Amsterdam is experimenting with strategically placed green walls to absorb pollutants in hotspots such as road corridors and intersections.		In 2015, the European Environmental Agency linked nearly 12,000 premature deaths in the Netherlands to air quality issues.
Regulate the temperature	Forests regulate rainfall and cool local air temperature through a process of evapotranspiration.	Amsterdam could reduce the 'heat island' effect by increasing urban green infrastructure.	Increase the use of green space as green infrastructure.	At present, Amsterdam's temperatures can be up to 5°C warmer than surrounding areas due to urban heat island effect.
Harvest energy	Through photosynthesis, plants turn sunlight into energy.	Amsterdam is using wind turbines and photovoltaics to generate renewable energy.	Utilise two thirds of all solar energy potential (1000 MW) by 2040 — enough to power 450,000 households.	In 2018, renewable energy sources accounted for 7.4 percent of total Dutch energy consumption, up from 6.6 percent the previous year.
House biodiversity	Forests provide protective locations for nests/dens, as well as structures to support plant growth.	Amsterdam is promoting and tracking sedum, grass and herb roofs, as well as rooftop gardens.	Make Amsterdam a city for people, plants and animals with green spots in all neighbourhoods and well-kept parks and forests.	In 2018, Amsterdam had at least 200 green roofs, with a total surface area of approximately 120,000 m2.
Build and protect soil	Marine plants and mollusks, such as oysters, slow down waves and reduce their power to erode the shore.	Amsterdam could create oyster substrates to support a reef barrier and bolster erosion protection.		In the Netherlands, 12 million m3 of sand is replenished annually, but 20 million m3 is needed to keep pace with rising sea levels.
Store carbon	Land-based and sea-based plants absorb and store CO2, as do phytoplankton in the ocean.	Amsterdam could set goals for sequestering and storing carbon in land- and sea-based plants.	Reduce the city's total CO2 emissions to 55% below 1990 levels by 2030, and to 95% below by 2050.	Dutch greenhouse gas emissions fell by 2.2% in 2018, contributing to a total reduction of 14.5% below 1990 levels.
Cycle water	Coastal dunes purify water as it infiltrates and filters through the sand.	Amsterdam is supporting the Sand Motor project which promotes dune development on the city's surrounding coastlines.		Renewable water resources make up only 12% of city supply.
Enhance wellbeing	<Not included in Amsterdam's local-ecological lens>			

Data Portrait of Place

Global-ecological lens

How can this place respect the health of the whole planet?

DOUGHNUT
ECONOMICS
ACTION
LAB

Global Ecological

How can this place respect the health of the whole planet?

The global-ecological lens asks whether the resources embodied in products and services consumed by the people in your place could be extended to everyone on the planet without degrading Earth's critical life-supporting systems, such as a stable climate and healthy oceans. Essentially, this lens compares your place's consumption of resources to your place's fair share of a globally sustainable level of resource use.

Figure 14 Methodological considerations in the global-ecological lens.

This lens is relatively technical compared to others in the Doughnut Portrait because it combines two evolving fields of knowledge, namely approaches to 'downscaling' planetary boundaries to places, and 'environmental footprint' accounting. The general process is shown in Figure 15.
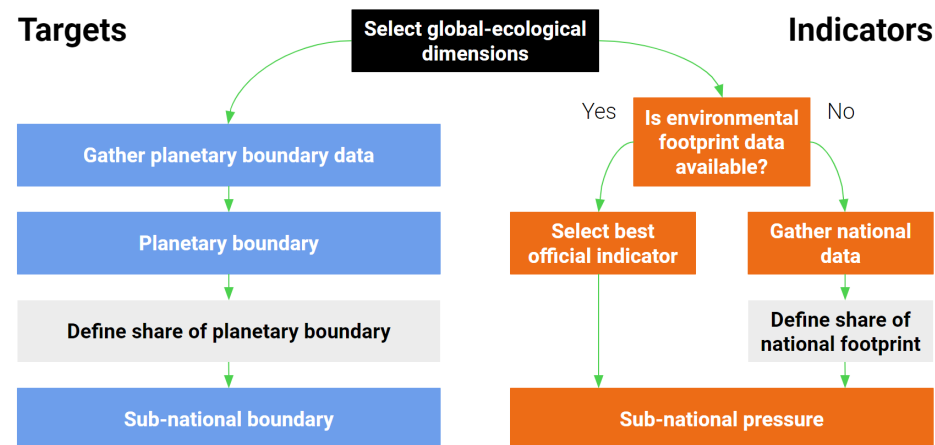
Figure 15 Global-ecological decision tree.

Select global-ecological dimensions and gather data

The starting point for defining the set of dimensions in the global-ecological lens of the Data Portrait is the nine planetary boundaries shown in Figure 16, which collectively form the ecological ceiling of the global Doughnut (see Figure 2). An immediate issue, however, is that these planetary boundaries aim to describe Earth-system processes that operate from major river basins to continental and global scales, and hence were not designed to be 'downscaled'. At the same time, most regulatory decision-making takes place within smaller political jurisdictions – especially at national, sub-national, and city levels – and people understandably want to know how these different places are doing, with respect to staying within global boundaries. Analysts have been refining

downscaling methods ever since the planetary boundaries framework was first proposed in 2009; these methods are continually evolving, but some current best practices are emerging.
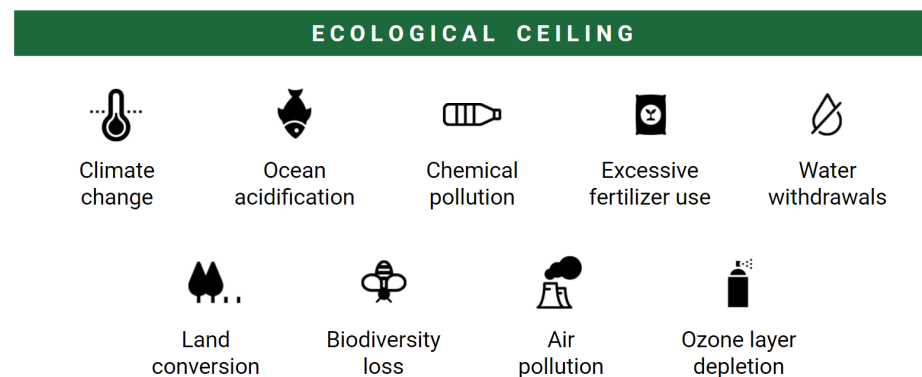

Figure 16 Dimensions of the global-ecological lens. See Dimensions of the four lenses for additional information on each dimension.

For the three pilot cities, they selected nine global-ecological dimensions, which were clustered into three broad categories: air, water, and land (but with hindsight, DEAL feels this clustering may not be a necessary step). Seven of these dimensions are directly derived from the planetary boundaries framework (climate change, ocean acidification, excessive fertiliser use, ozone layer depletion, air pollution, excessive land use, and freshwater use). Five of these seven dimensions had sufficient downscalable data for quantification, and this data was collected from the EXIOBASE database and the Global Footprint Network. The other two dimensions are overfishing – for which adequate data was not available in all pilot cities – and waste generation, for which city-level data was used.

Define place-based shares of planetary boundaries

Once the global-ecological dimensions have been selected, the next question is how to define a place's 'fair share' of resource use relating to each dimension – but of course there is no right answer to this question. Planetary boundaries can be shared according to many principles, such as equality, capability, or sovereignty, among others (see Table 3 for a summary of sharing principles commonly found in the planetary boundaries literature). Given the historical responsibility of high-income nations for excessive resource use, cities in these nations should commit to moving back within planetary boundaries far faster than cities and regions in less wealthy nations.

For the global-ecological lens in Amsterdam, Portland, and Philadelphia, the teams used an equal per capita approach to determine city-scale shares of global-ecological boundaries, which is the most common sharing principle found across studies. At the same time, they also collected the city's official targets for comparison with the downscaled planetary boundary results.

Several places, such as Brussels and Yerevan, have since followed a similar approach to the pilot cities, by allocating fair shares of planetary boundaries based on equal per capita shares. An interactive website hosted by the University of Leeds provides estimates of per capita equivalents for several planetary boundaries since the early 1990s.

Meanwhile, changemakers in Devon have created an innovative 'twin-track' approach that incorporates community-based aspirations alongside official targets. Contributors to the global South workshops also raised the importance and scope for setting global-ecological targets in a participatory manner. See the Community Portrait of Place tool for a set of participatory workshop approaches designed to explore residents' lived experience alongside the data-led approaches described here.

Table 3 Overview of possible sharing principles for global-ecological boundaries.

Sharing Principle	Description
Equality	People have equal rights to use resources, resulting in an equal share per capita. Equality can be envisaged between people living in a particular year or between people over time, including future generations.
Needs	People have different resource needs. This could be due to their age, the size of the household they live in, or their location. As a result, their right to resources could be differentiated.
Right to Development	People have the right to have a decent life (e.g. rights for covering basic needs). Places with lower development levels could thus be allocated more resources to meet development objectives.
Responsibility	Some places have a long history of high resource use, notably in the global North, thus contributing disproportionately to climate & ecological breakdown. These historical responsibilities can be taken into account when allocating remaining current rights.
Capability	Places have widely differing levels of economic wealth. Places with higher financial capabilities could contribute proportionally more to the mitigation efforts, or use less than their allocated share of resources, since their ability to pay is higher.
Sovereignty	Countries have a legal right to use their own territory as they decide. This implies that their current levels of environmental pressure are taken as starting points for sharing the global-ecological boundaries on national and sub-national scales.

Source Adapted from European Environment Agency (2020).

Define place-based shares of national environmental footprints

Environmental footprint accounting is useful because it can attribute resources used (and wastes emitted) to the place in which a given product is consumed, regardless of where that product was produced, often using a modelling technique called input-output analysis (see the 'Useful Resources' box below for more detail). The use of environmental footprints takes into account the upstream environmental burdens that arise from producing and transporting the goods that are consumed in a place, no matter where in the world those burdens occur.

Although there are growing requirements and standards for corporate reporting on the social and ecological risks along their supply chains, the most common scale of environmental footprint data is at the national level, which means it must be downscaled to the city or regional level. Similar to the question of how to share planetary boundaries, there is no right answer for how to divide national environmental footprints into sub-national shares. For the Portland, Philadelphia, and Amsterdam Portraits, they collected national footprint data for the United States and the Netherlands, and calculated their respective city shares using an income-adjusted approach.

Their income-adjusted approach is based on the observation that people with higher incomes tend to have more resource-intensive lifestyles than people with lower incomes. For each footprint indicator, they calculated the per capita value for the relevant nation, and adjusted it by the average household income in the pilot cities (relative to national average household income). Finally, they calculated the level of city overshoot by dividing each income-adjusted city footprint indicator by its respective per capita boundary (i.e. overshoot if greater than 1). The resulting lens from Amsterdam's City Portrait is shown in Table 4 below.

Several places have since followed a similar approach, adapted to their own contexts, resources, and data availability (see the 'Inspiring Approaches' box below). In addition, many indicator sources mentioned during the global South workshops, such as satellite data, the potential for technologies to trace and disclose supply chain impacts more transparently, and insights from Indigenous/local knowledge systems.

Useful Resources

Some useful resources for identifying and combining environmental footprint accounting with the planetary boundaries framework include:

- A report published by the European Environment Agency, entitled 'Is Europe Living within the Limits of the Planet?' (2020), which provides an accessible analysis of environmental footprints to downscaled planetary boundaries in practice.

- The Stockholm Resilience Centre maintains a webpage dedicated to planetary boundaries research, which includes publications, figures, and data sources.

- The Integrated Biodiversity Assessment Tool, which hosts and maintains resources and leading global databases, including the IUCN Red List of Threatened Species.

- Metabolism of Cities and the Global Initiative for Resource Efficient Cities both provide concepts, reports, and datasets aimed at reducing the flow of resources and waste through cities.

- A study, entitled, 'Review of life-cycle based methods for absolute environmental sustainability assessment and their applications', provides an overview of life cycle-based methods.

Data analysis tools and sources are continually evolving, and have become increasingly accessible over the past decade, such as:

- An interactive website hosted by the University of Leeds provides environmental footprint data with respect to several downscaled planetary boundaries for more than 150 nations.

- The Environmental Footprint Explorers website, hosted by the Norwegian University of Science and Technology. Environmental footprint data from multiple international databases is available for nearly 50 countries, along with state-of-the-art resources on input-output analysis.

- The EXIOBASE database, which contains detailed input-output tables for more than 40 countries and estimates of resource extractions and waste emissions by industry.

- The Eora supply chain database, which provides environmental footprint indicators and associated data for 190 nations (though it requires a degree of technical proficiency).

- The Global Material Flows database, provides data and analysis on material flows at the national level. Note that these mass-based indicators are not included in the planetary boundaries framework.

- An Embodied Carbon in Construction (EC3) tool that estimates the amount of embodied carbon in construction sector materials.

- **What else? Please suggest more in this online collaborative feedback document.**

For an example of how the research team selected the targets for this lens in Amsterdam, please see the accompanying Supplementary Information spreadsheet. Please see DEAL's co-creative global South workshops repository for resources focused on adapting the methods in this lens to better reflect global South contexts and priorities.

Keep in mind...

"What are national and global responsibilities when it comes to how global South cities and nations develop after colonial rule?" – global South workshops contributor

The core question of the global-ecological lens asks 'how can this place respect the health of the whole planet?' It was originally designed with a focus on high-consuming global North cities and places, which have historically contributed far more to climate and ecological breakdown than most places in the global South.

Even so, most high-consuming cities and regions are lacking targets for reducing their global ecological impacts, beyond cutting their carbon, so the exercise of exploring the global-ecological lens can be an important opportunity to step up ambition and accountability, including both consumption-based emissions but also material footprints and action on raising circularity.

In every place, and especially in cities and regions in the global South, it may be just as relevant to recognise two-way relations by also asking 'how can the degradation of planetary health by people and places worldwide impact on the wellbeing of people here?'

How could this question be answered? What could be the major impacts here from Earth-system changes that are exacerbating droughts and flooding, ocean dead zones, sea-level rise, heat waves, and disease spread? What others?

Furthermore, many ecosystems have been managed in balance by Indigenous peoples and local communities for centuries, yet these same groups are frequently excluded from or do not feel adequately represented in scientific endeavours. How can their vital expertise be included with respect and integrity? These insights from a study led by researchers at the Stockholm Resilience Centre provide useful additional guidance.

What else? Please suggest more in this online collaborative feedback document.

Inspiring Approaches

A growing number of ambitious places are assessing their global-ecological impacts and responsibilities worldwide, including:

- Amsterdam is currently developing a city-based method, building on the Amsterdam City Doughnut, that tracks global-ecological impacts as part of their Circular Economy Monitor (results expected in 2022).

- The Brussels Donut project prepared a useful methodological note that describes the methods they used to downscale planetary boundaries to Brussels Capital Region.

- A University of Exeter report, entitled 'Towards a Sustainable Cornwall: State of the Doughnut', provides a detailed account of their downscaling methods at a regional scale.

- There are many other examples of places engaging with this lens, more examples will be added to this Handbook at its next iteration.

- **What else? Please suggest more in this online collaborative feedback document.**

Table 4 What is Amsterdam's impact on the health of the whole planet?

Dimensions	Footprint	Boundary	Unit	Ratio	Targets	Notes
Climate change	8,578,155	4,495,268	tonnes CO_2	1.9	Reduce the city's in-boundary CO_2 emissions to 55% below 1990 levels by 2030, and to 95% below by 2050.	In 2017, Amsterdam's in-boundary CO_2 emissions were 31% above 1990 levels. Furthermore, 63% of the city's total CO_2 emissions are produced beyond city boundaries, embedded in the building materials, food and consumer products that the city imports.
Air pollution	1,184		PM 2.5 emissions	N/A		50-60% of air pollution in China is associated with products and services that are exported to other countries including the Netherlands.
Ozone layer depletion				N/A		Since 1986, global use of ozone-depleting substances has declined by over 90%.
Waste generation	16%		Total household waste separated	N/A	Amsterdam aims to have a 50% reduction in the use of primary raw materials by 2030, and be a fully circular economy by 2050.	In 2018, the Amsterdam Metropolitan Area processed 8.5 mt of industrial and commercial waste and 1.1 mt of household waste - equivalent to one and a half Egyptian Pyramids.
Excessive land use	505,116	191,922	gha	2.6		The amount of land required worldwide for Dutch consumption in 2013 was around two and a half times the area of the Netherlands.
Freshwater withdrawals	508	510	$Mm^3 H_2O$	1.0		The Netherlands has the highest water footprint in Europe, with almost 90% of total water consumption embedded in imports such as meat, cotton and food.
Overfishing				N/A		Fish consumption has more than doubled in the Netherlands since 1990, putting the country in the top 25% of fish-consuming nations in the world.
Excessive fertiliser use	14,688	7,908	tonnes N	1.8		The Dutch agricultural sector is responsible for 61% of the total amount of nitrogen emissions, mainly caused by fertilisers.
Ocean acidification	<Same as climate change>				Reduce the city's in-boundary CO_2 emissions to 55% below 1990 levels by 2030, and to 95% below by 2050.	CO_2 dissolved in seawater has increased the level of ocean acidity by 30% since the beginning of the Industrial Revolution.

Data Portrait of Place

Global-social lens

How can this place respect the wellbeing of all people?

DOUGHNUT
ECONOMICS
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Global Social

How can this place respect the wellbeing of all people?

Every place has a unique pattern of connections with other parts of the world, which is shaped by its location, history, commerce, and culture. The global-social lens of the Portrait explores how these interconnections have multiple impacts – both positive and negative – on the ability of people and communities worldwide to live above the Doughnut's social foundation. Many of these impacts, and the global issues from which they arise, have typically been beyond the ambition of most towns, cities and regions to influence. This global-social lens seeks to make these interconnections visible and ultimately actionable, in recognition of the global responsibilities and implications of interconnected life in the 21st century.

A general process for creating the lens is shown in Figure 18.
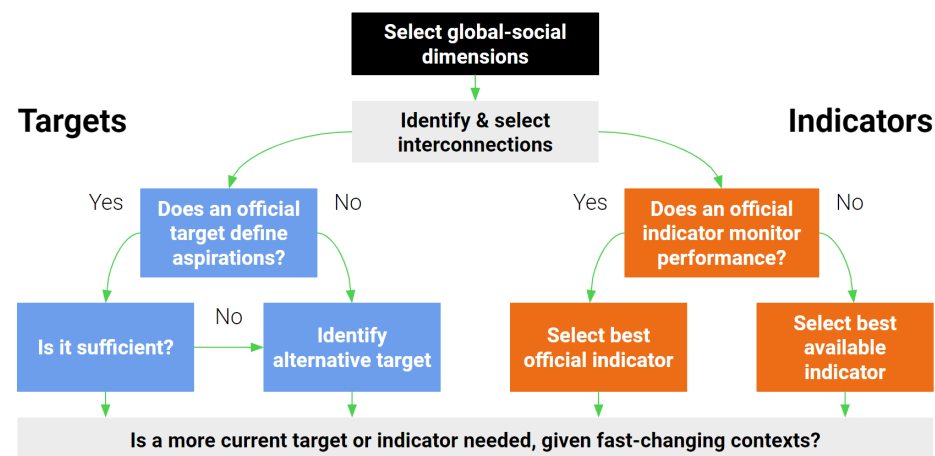
Figure 18 Global-social decision tree

In the first iteration of this methodology, which was designed around three pilot cities in the global North, this lens focused on identifying the worldwide social impacts of those cities' consumption-intensive lifestyles, especially through the working conditions found in the global supply chains that provide them with consumer goods. In this second iteration, which takes into account the interests of a far wider range of places, the methodological guidance for this lens adopts a much wider and more exploratory approach. One key adaptation invites cities to reflect not only on how they have impacts on other people worldwide through global interconnections and institutions, but also how communities in their own city are impacted by the actions and decisions of people, places and powers elsewhere.

Figure 17 Methodological considerations in the global-social lens.

Selecting global-social dimensions and targets

The dimensions comprising the global-social lens are drawn from the social foundation of the global Doughnut, which are in turn derived from the UN Sustainable Development Goals (SDGs). These constitute an internationally recognised minimum standard of human wellbeing that all UN member nations have recognised for all people worldwide, as shown in Figure 19.

Figure 19 Dimensions of the global-social lens. See Dimensions of the four lenses for additional information on each dimension.

Given the international commitment to achieving the SDGs, the aim of this lens is to ensure that actions and decisions taken by any city or region aiming to meet its own local aspirations do not undermine the ability of people elsewhere to meet their essential needs and rights. As a result, the default targets for this lens are the social goals of the SDGs, applied not to local residents but to people worldwide who are impacted by this city or place. For example, SDG 8 commits to promote 'decent work for all', and SDG 5 commits to 'achieve gender equality and empower all women and girls'. Whether the SDG goals provide sufficient targets for this lens, or if better targets can be created or are available, is a question that can be debated in each context.

Identifying interconnections and place-based performance indicators

There are many routes through which the actions, decisions and lifestyles of one place can impact upon the wellbeing of people worldwide, given the diversity of actors and institutions involved, the many systems of policy and power that shape global interconnections, and the diverse ways that people worldwide can be affected. These systems range from global supply chains to policies towards migrants to international trade rules and regimes. Some of these interconnections are illustrated in Figure 20 below, recognising that there are many more possibilities beyond those shown.

In Amsterdam, Portland and Philadelphia, the analysis focused on interconnections through global supply chains, primarily through connecting household purchases of food, clothing and electronics with impacts on workers and communities worldwide, due to the power of the brands and retailers that shape global supply chain dynamics.

There are many ways to investigate the links between consumers, workers and farmers, ranging from quantitative analyses using global supply chain databases across nations and multinational enterprises, to qualitative mapping of the 'systems of provision', that link actors within a specific chain of production, where context is shaped by culture, history, and power relations.

In the three pilot cities, researchers conducted desk-based analysis of studies by think-tanks, academics and NGOs, and identified more than 30 studies with documented evidence linking brand-name food, clothing, and electronics products on sale in those cities with positive and negative impacts on livelihoods, labour rights, and communities worldwide.
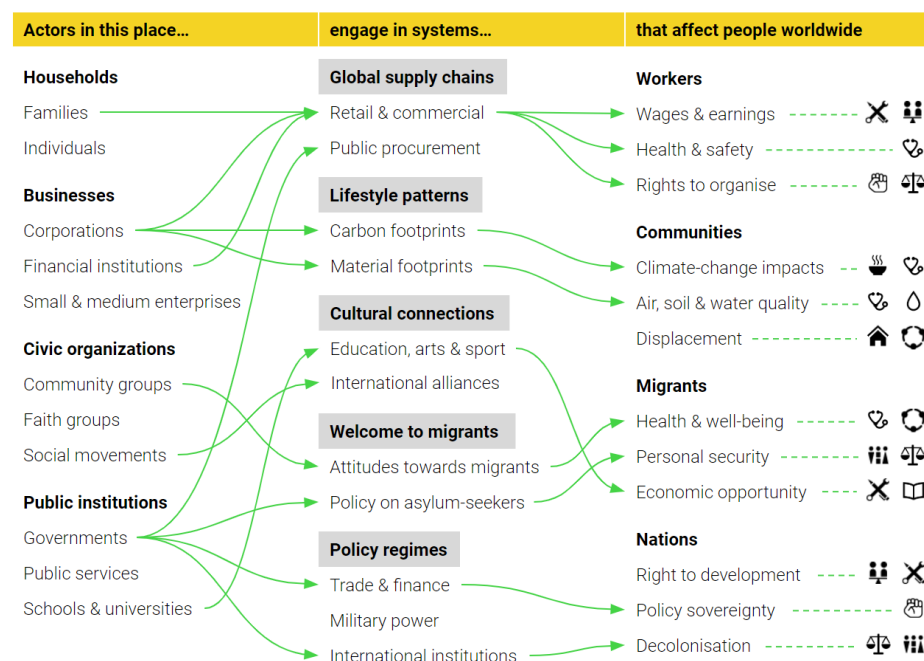
Actors in this place…	engage in systems…	that affect people worldwide
Households	**Global supply chains**	**Workers**
Families	Retail & commercial	Wages & earnings
Individuals	Public procurement	Health & safety
Businesses	**Lifestyle patterns**	Rights to organise
Corporations	Carbon footprints	**Communities**
Financial institutions	Material footprints	Climate-change impacts
Small & medium enterprises	**Cultural connections**	Air, soil & water quality
Civic organizations	Education, arts & sport	Displacement
Community groups	International alliances	**Migrants**
Faith groups	**Welcome to migrants**	Health & well-being
Social movements	Attitudes towards migrants	Personal security
Public institutions	Policy on asylum-seekers	Economic opportunity
Governments	**Policy regimes**	**Nations**
Public services	Trade & finance	Right to development
Schools & universities	Military power	Policy sovereignty
	International institutions	Decolonisation

Figure 20 An illustration of possible global-social Interconnections. For more information on these interconnections see Dimensions of the four lenses.

Analysing this set of studies, they identified recurring social impacts, mapping them to the related Sustainable Development Goals. They then selected statistics and qualitative evidence from the lived experience of workers and communities, creating an illustrative snapshot of the city's performance. The results for Amsterdam's City Portrait are shown in Table 5.

Global supply chain dynamics have been researched and documented for decades, making this one of the best entry-points into making visible the interconnections between people worldwide, and particularly how their relationships are mediated by both consumer choice and corporate power. But global supply chains are just one of the many ways in which the decisions and actions taken in one place can affect the lives of people worldwide, as Figure 20

makes clear. Place-based analyses of this global-social lens are starting to explore ways of making many other interconnections visible too, bringing new questions and data to bear on other systemic interconnections, including:

Lifestyle patterns: how do carbon- and material-intensive corporate models and consumer lifestyles impact communities worldwide? Researchers in Leeds are exploring how data on consumption and trade can be combined to reveal the city's 'imported' social impacts worldwide, from child labour to premature deaths from air pollution. In London, researchers are highlighting links between mining corporations headquartered in that city and the social impacts of their global carbon and material footprints.

Cultural connections: what official or community-led connections does this place have with municipalities worldwide, such as through twin towns or sister cities? What evidence is there of action to make this solidarity real especially in challenging times? How do local schools, universities, clubs and cultural organisations create opportunities and build empathy and solidarity with others? Researchers in London are highlighting the mutual benefits of welcoming many international students to the city.

Welcome to migrants: what is the city or region's official policy towards migrants, refugees and asylum seekers? Is it part of a network of Sanctuary cities, such as those in the US or UK? What role do incomes earned by migrants living here play in providing remittances to support families and communities worldwide? What evidence exists or can be gathered on the lived experience of migrants of all kinds arriving and living in this place?

Policy regimes: how do wider power structures - such as through national and international policy regimes, and the legacies of colonialism - shape the impact of global interconnections? While these systems operate at international levels, how can local-level action recognise, challenge, and counter their damaging impacts? Researchers in Leeds are exploring connections between climate change activism in the city and colonial legacies.

What other interconnections of place can be explored through this global-social lens and brought into local conversations about place-based responsibilities in the world?

Useful Resources

There are multiple possible entry points for exploring global-social interconnections. Many sources focus on documenting the impacts of global supply chains on workers' rights and livelihoods, including:

- The Clean Clothes Campaign, a global network of over 230 organisations dedicated to improving working conditions and empowering workers in the global garment and sportswear industries worldwide.

- The Living Income Community of Practice, which provides useful summaries and resources on different methods to compare decent living incomes with the incomes that people actually receive (with a focus on the global South).

- Fairfood, an NGO using blockchain and other technologies to bring transparency to global food supply chains and ensure living wages and incomes for those employed within them.

- The European Network of Corporate Observatories is a network of European civic and media organisations dedicated to investigating corporations and corporate power.

- Fairtrade International, a leading organisation in the global movement to make trade fair, which provides a certification process for producers and businesses who meet internationally agreed standards (including minimum pricing data for products).

- KnowTheChain, which documents corporate policies and practices on addressing forced labour in their global supply chains, specifically in the production of electronics, food and beverages, and apparel and footwear.

- The Global Rights Index, which documents labour rights violations by governments and businesses across countries, in particular the right to freedom of association, the right to collective bargaining, and the right to strike.

- MVO Nederland's CSR Risk Check provides an interactive tool to check risks that may occur along the international supply chains of products, such as poor working conditions, environmental concerns, or corruption.

Useful starting points for exploring data that addresses other important global-social interconnections of a place include:

- The Environmental Justice Atlas documents the impact of environmental resource extraction – such as mining, dams, and fracking – on the land, air, water, and forests that local communities depend upon for their lives and livelihoods.

- The Migration Data Portal provides access to timely data on migration flows worldwide, including data comparing national policies and approaches towards migrants.

    The Globalisation, Urbanisation and Migration site provides data on rural-to-urban migration trends for over 150 cities in more than 50 countries.

- The Global Remittances Guide provides data on global flows of payments from migrant workers to their relatives back home, noting the large and growing importance of such remittances for tackling poverty in lower-income countries.

- The List of Twin Towns and Sister Cities sets out municipalities worldwide and their standing links to local communities in other countries, usually known as 'twin towns' in Europe and 'sister cities' in the rest of the world.

- **What else? Please suggest more in this online collaborative feedback document.**

For an example of how the research team selected the targets for this lens in Amsterdam, please see the accompanying Supplementary Information spreadsheet. Please see DEAL's co-creative global South workshops repository for resources focused on adapting the methods in this lens to better reflect global South contexts and priorities.

Keep in mind…

"We must name multinational corporations and point to the global implications of their business models." – global South workshops contributor

"We need to bring global-social responsibility out for ourselves in India, because we are no longer the persecuted Southern country … there is a lot that we are doing, and the way that we are growing, which has a huge social impact on regions outside our own settlements." – global South workshops contributor

The core question of the global-social lens asks 'how can this place respect the wellbeing of all people?' Today it can still feel like that question is beyond the realm of traceability, let alone political action and accountability – and that may well be true in some places.

At the same time, it is good to keep in mind that many people felt the same way just a decade ago about the impossibility of cities and places tracing and taking responsibility for their consumption-based carbon emissions and environmental footprints - yet the concept and measurement of 'Scope 3' emissions is now fully mainstream in the arena of carbon accounting.

The world's expectations are rising on accountability for labour exploitation, along with the growing traceability of those practices and

so ambitious cities and regions would be wise to start taking this into account now. Some cities and regions have already introduced social procurement policies into governmental contracts, in order to promote ethical purchasing, decent work and diversity amongst suppliers - but the policy scope still tends to focus on local or regional suppliers. It is very likely that the expected scope of this ambition will soon extend to become global social procurement.

Although data sources are typically most detailed in documenting global supply chains, new databases and alternative approaches to gathering data are gradually making it more feasible to explore and make visible many other global interconnections. These data are likely to improve in their coverage and accuracy over the coming years, making traceability and accountability all the more possible.

When addressing this lens from the context of places in the global South, additional insight can be gained by reversing the question and asking: 'how do actions, decisions and business models practised worldwide affect the wellbeing of people here?' This opens up many questions across all kinds of systemic interconnections, such as:

How do national policies and corporate practices in global supply chains affect the terms and conditions of workers employed here?

How do international policies on migration determine opportunities for family members leaving here, and the invaluable remittances that they send back to family members here?

How do the legacies of colonialism, coupled with ongoing demands for decolonising international institutions, shape power relations between global North and global South, in ways that ultimately determine the lived experience of people here?

- **What else? Please suggest more in this online collaborative feedback document.**

Inspiring Approaches

There are still relatively few published examples of initiatives that have engaged with the core questions of the global-social lens to date:

- The Brussels Donut project drew on case studies of chocolate and smartphones to illustrate global-social connections and impacts, and created clear and compelling graphics showing documented impacts on workers' health, safety and personal security. They also included detailed documentation of the data sources and literature used to establish such global-social interconnections.

- When the draft Amsterdam City Portrait was first presented to city officials, some were taken aback by the issues reflected in the global-social lens because they highlighted the city's supply chain connections to exploitative working conditions and modern-day slavery worldwide. Instead of rejecting or contesting the findings, however, to their credit, city policymakers and officials chose to embrace the findings publicly. This established an important precedent and starting point for other cities addressing the global-social lens. In other cities and places it may be useful to share the example of Amsterdam's portrait in order to raise local ambitions about what needs to be recognised there.

- Many more exploratory studies of the global-social lens are currently underway - such as in Leeds, London, Barcelona and Bad Nauheim - and they are typically addressing a significantly wider array of global interconnections. Once published, these examples will be added to this Handbook at its next iteration.

- **What else? Please suggest more in this online collaborative feedback document.**

Table 5 What is Amsterdam's impact on the wellbeing of people worldwide?

Dimension	Global target / SDG	Global status	Sector	Impact
Food	End hunger, achieve food security and improve nutrition (SDG 2).	Malnutrition is often prevalent among vulnerable factory workers, due to low wages and excessive hours of work.	Textiles	"Our salary is so low that I can't afford the food in the factory canteen - even that is out of my reach." – Garment worker, Cambodia
Water				
Health	Ensure healthy lives and promote wellbeing for all at all ages (SDG 3).	Dangerous working conditions often lead to: accidents and injuries, long-term health problems, raised suicide rates	Electronics	"We all have problems with our lungs and pain all over our bodies" – female cobalt miner, the Dem. Rep. of Congo
Housing				
Education	Ensure inclusive and equitable quality education and promote lifelong learning opportunities (SDG 4).	The use of child labour in industrial and agricultural supply chains very often undermines children's education.	Electronics	In the Dem. Rep. of Congo, children work 12-hour days for $1-2, carrying sacks of cobalt – a mineral used to make batteries for mobile phones.
Energy				
Networks				
Culture	Strengthen efforts to protect and safeguard the world's cultural and natural heritage (SDG 11.4).	Globalisation can inspire innovation worldwide but it can also undermine local identities and cultures. In East Africa, the influx of second-hand clothing from Western countries damages local craft industries and undermines regional textile markets.		
Community	By 2020 achieve the environmentally sound management of chemicals and all wastes...and significantly reduce their release to air, water and soil in order to minimise their adverse impacts on human health and the environment (SDG 12.4).	Industrial activity often contaminates the soil, air and water resources of surrounding communities.	Food	In Paraguay, some large soybean farms have been in violent conflict with local communities over land use, sometimes resulting in arrests and even death.
			Electronics	"Mining for lithium so that people in other countries can switch to the electric car will kill our communities and our landscapes." – Indigenous leader, Argentina
Income				
Work	Promote full and productive employment and decent work for all (SDG 8).	Globalisation has created job opportunities for millions of workers. However, these jobs often entail forced overtime, insecure contracts, stressful conditions, restrictions on unions.	Food	In Ghana, more than 3,500 workers on cocoa plantations are engaged under conditions of forced labour.
Social equity				
Equality in diversity	Achieve gender equality and empower all women and girls (SDG 5).	Employers often exploit the vulnerability of marginalised communities.	Textiles	In Asia, female garment workers often face forced overtime, sexual harassment and being fired if pregnant.
Political voice				
Peace & justice	Promote peaceful and inclusive societies for sustainable development, access to justice for all, and effective, accountable and inclusive institutions at all levels (SDG 16).	Workers in poorly regulated global supply chains can face forced labour, intimidation and violence.	Electronics	In 2016, 12 of the 13 major mines in the eastern Dem. Rep. of Congo were controlled by armed groups.
			Food	In Thailand's seafood industry, migrant workers face violence, trafficking and modern-day slavery.

Data Portrait of Place

Doughnut Unrolled tools

Where to go next

DOUGHNUT ECONOMICS ACTION LAB

Where to go next

This handbook for creating a Data Portrait of Place is part of a larger set of Doughnut Unrolled tools designed to work together as an entrypoint for transforming the future of your place. The set of Doughnut Unrolled tools includes:

Introducing the four lenses - an introduction to the four lenses and the set of tools you can use to help your place bring humanity into the Doughnut.

Community Portrait of Place - a selection of participatory workshop approaches you can use to explore the four lenses for your place.

Data Portrait of Place - a handbook of approaches for collecting targets and indicators for each of the four lenses for your place.

Exploring a topic - a selection of approaches to explore a specific topic through the four lenses, whether a sector, strategy, policy, project, initiative, object or idea.

Dimensions of the four lenses - an overview of each of the dimensions of the four lenses on life.

Together, they offer diverse perspectives and methods to help you create a 'Doughnut Portrait' of your place - a holistic picture that can act as a starting point for transformative action, as shown in Figure 21.
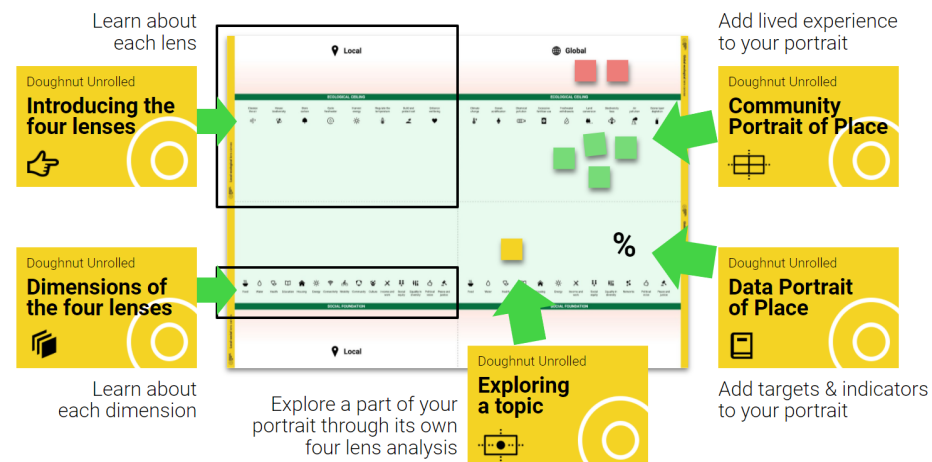
Figure 21 An illustration of how the Doughnut Unrolled tools work together.

Acknowledgements

Doughnut Unrolled: Data Portrait of Place

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