

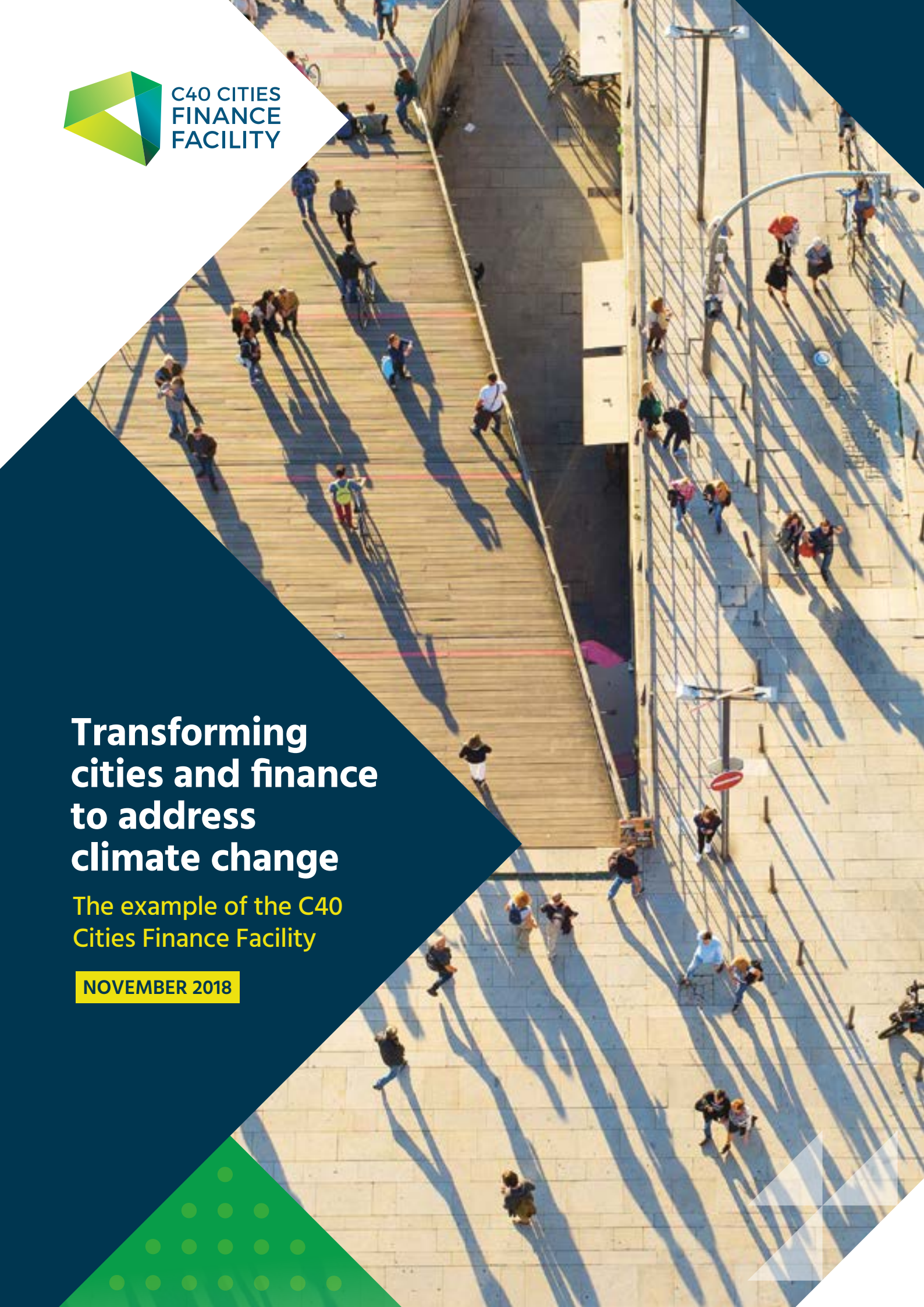


C40 CITIES
FINANCE
FACILITY

Transforming cities and finance to address climate change

The example of the C40
Cities Finance Facility

NOVEMBER 2018



About the C40 Cities Finance Facility

The C40 Cities Finance Facility (CFF) facilitates access to finance for climate change mitigation and resilience projects in urban areas by providing technical assistance to develop cities' sustainability priorities into bankable investment proposals. The CFF aims to deliver project preparation and capacity development, and to widely share knowledge and establish partnerships between cities and financiers. Funded by the German Federal Ministry for Economic Cooperation and Development, the Government of the United Kingdom and the United States Agency for International Development, the initiative is implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH together with the C40 Cities Climate Leadership Group. Bogotá, Durban and Mexico City are the first cities to receive technical assistance.

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Acknowledgements

This report was prepared by Elizabeth Gogoi, Harshita Bisht, Rishika Das Roy and Divya Sharma of Oxford Policy Management Limited on behalf of the C40 Cities Finance Facility (CFF). The authors would like to thank the CFF team and in particular, James Alexander, Martin Dirr, Manisha Gulati, Carolina Hernández, Gustavo Jimenez, Shahid Solomon and Manuel Olivera for providing their insights and experiences which were the basis for this report; Aris Moro for steering and managing the process; Aditya V. Bahadur and Uma Pal for sharing their experiences of transformation from OPM's Action on Climate Today (ACT) programme; and Anka Derichs, Elizabeth Glass, Mike Lindfield, Max Lohmann, and Marcus Mayr for their feedback.

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Executive summary

The C40 Cities Finance Facility (CFF) facilitates access to finance for climate change mitigation and resilience projects in cities. It is aiming to enable cities to play their part in limiting global warming to 1.5°C above pre-industrial levels and aims to do so by achieving a transformation in how cities address climate change. This report explores how the CFF's transformation objective is realised in practice, and what the CFF can learn from its initial three years of seeking transformation.

The term transformation has emerged in policy and practice over the last decade in recognition of the scale and urgency of the need for action on climate change. A criterion for accessing many climate funds is being able to demonstrate that the project will lead to a transformation or a paradigm shift. However, the term has been defined in different ways within academic literature and among practitioners, and there is very little guidance on how to measure, monitor and report on it.

This report unpacks the concept of transformation and what it means in the context of the CFF's work on cities, climate change, and finance. It proposes that it is both the scale and nature of the impact that the CFF achieves which is important, but also how the impact is being achieved and how it includes systemic change. These two elements together determine whether a transformation has occurred.

The CFF is only a few years old and most of the potential for transformation is still expected rather than achieved. However, examples from its three partner cities of Bogotá, Mexico City and Durban are discussed to explore some of the specific changes being seen, such as shifts in structures, inter-institutional coordination, mindset and partnerships, which are early signs that transformation is possible.

To strengthen its capacity to support transformation, the CFF is looking to adopt a framework for monitoring and reporting on transformation. This will provide a robust way of reflecting on the CFF's level of ambition and finding ways to further maximise its impact. The report puts forward a specific definition to guide how the CFF understands, measures and aims to achieve transformation:

The CFF seeks transformation through large-scale, sustained and catalytic GHG emissions reductions and enhanced resilience within cities, by supporting shifts in the systems of cities that remove critical barriers around access to finance and thus enable further action on climate change. The CFF achieves this by strengthening the capacity of cities to develop and finance climate change projects and by informing the thinking and practice of other cities, practitioners, and national and international policy-makers.

One of the CFF's strategies for achieving transformation is to engage with programmes and organisations with a similar mandate and objective, and to strengthen the overall community of practice in delivering this objective. To contribute to this goal, this report puts forward some learning points on how to best use and operationalise the concept of transformation within programmes focusing on cities, finance and climate change.

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List of abbreviations

5C	Quinto Centenario
CCFLA	Cities Climate Finance Leadership Alliance
CFF	C40 Cities Finance Facility
CO ₂ e	Carbon dioxide equivalent
FELICITY	Financing Energy for Low-carbon Investment – Cities Advisory Facility
FSCI	Financing Sustainable Cities Initiative
GCF	Green Climate Fund
GEF	Global Environment Facility
GHG	Greenhouse Gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
IADB	Inter-American Development Bank
ICF	International Climate Fund
ICLEI	Local Governments for Sustainability
IPCC	Intergovernmental Panel on Climate Change
MRV	Monitoring, Reporting and Verification
MW	Megawatt
NAMA	Nationally Appropriate Mitigation Action
OPM	Oxford Policy Management
PIU	Project Implementation Unit
SDM	Secretaría de Movilidad, Bogotá
TAP	Transformative Action Programme
TUMI	Transformative Urban Mobility Initiative
URBIS	Urban advisory platform within the European Investment Advisory Hub
WRI	World Resources Institute

1. Introduction

The IPCC 2018 Special Report on 1.5 Degrees lays out in stark terms the consequences of climate change, including water scarcity, extreme heat, flooding, loss of habitats and human life, and how these consequences become exponentially more severe as temperature rises (IPCC, 2018). The current level of global effort and investment in tackling climate change is not sufficient. The collective pledges under the Paris Agreement will not keep average global temperature rise to below 1.5°C above pre-industrial levels (IPCC, 2018).

Governments, businesses and civil society are required to increase their level of ambition urgently and at an unprecedented scale.

The world only has 12 years to cut greenhouse gas (GHG) emissions by 45% below 2010 levels to limit catastrophic climate change (IPCC, 2018). Governments, businesses and civil society are therefore required to increase their level of ambition urgently and at an unprecedented scale. However, while there is now widespread acceptance that a deep and fundamental transition to a zero-carbon economy is needed, there is less clarity on how to achieve and support this transition. How can ambition on climate change be increased across the board? What projects or programmes have the most significant impact? What do we need to do to set in motion exponential change? These questions are driving the emergence of new approaches and programmes in the development sector.

To address these questions, donors now often expect that supported climate change programmes result in not just 'impact' but 'transformation', 'transformative impact' or 'transformative change'. For example, projects supported by the Green Climate Fund (GCF) must lead to a 'paradigm shift'. However, there is little consistency around what transformation means and how to know whether it is likely or has been achieved (Puri, 2018).

The CFF's purpose is to support ambitious action on climate change in cities. Specifically, it addresses one critical barrier to realising the potential of cities to carry out ambitious action on climate change, namely limited access to finance for climate-related infrastructure projects in cities. The CFF aims to unlock finance for climate action in cities through rigorous project preparation and turning cities' sustainability priorities into investment proposals. In-depth capacity development by the CFF is intended to enable the cities to access suitable financing instruments and to undertake further projects. A dedicated knowledge and learning component aims to get successful experiences replicated by other cities and organisations.

This report is a step further in the CFF's efforts to understand and conceptualise what transformation means in the field of cities, climate change and finance. By building on theory and practical experiences of achieving and supporting transformation (section 2), the report supports the CFF in conceptualising how it can achieve transformation, and explore whether and how the CFF's activities and objectives will lead to transformation within its partner cities and beyond (section 3). The examples of Bogotá, Durban and Mexico City are used to explore elements of transformation (section 4). Finally, this report aims to set a replicable example of how similar organisations can conceptualise and apply the idea of transformation (section 5).

2. The theory and practice of transformation

2.1 The evolution of the concept of transformation

As the world has gradually acknowledged the scale, urgency and complexity of climate change, the idea that there is a need for transformation towards a low-carbon and climate-resilient economy has taken root. The idea of 'transformation' or 'paradigm shift' has been around since the 1960s, but in the last decade has increasingly become a focus for climate funds and programmes (Puri, 2018). There is also growing academic interest in exploring the theoretical dimensions of transformation (University of Oslo, 2013), while donors and organisations have used the term to design and evaluate their work in various ways. However, there is no single accepted definition of transformation, beyond a general consensus that it involves a shift in the status quo (Puri, 2018; Mersmann et al., 2014). Transformation means different things to policy-makers, researchers, practitioners and citizens (O'Brien and Sygna, 2013).

This report does not aim to create a universal definition of transformation: its meaning will always depend on where and how, and in what context, change is being sought. For example, transformation in the context of increasing education standards in one school inevitably differs from the transformation required to reduce the emissions of an entire country or region to net zero.

An appropriately contextualised understanding of the term 'transformation' can help ensure it is being used correctly. Without properly defining and measuring transformation, its meaning and value could get diluted. It is also important to understand how it differs from more traditional 'impact'.

There is a wide breadth of literature on transformation in different sectors; with respect to climate change, the term is used in three different contexts.

1. The first relates to 'transformational adaptation' or what transformation means for resilience, and to theoretical frameworks that unpack the term (Kates et al., 2012; Nelson et al., 2007; Park et al., 2012, Tanner and Bahadur, 2013). At the same time, the scale of anticipated future impacts of climate change demand more than just piecemeal adaptations, but much more impactful and more fundamental – transformational – adaptation. It may include changes in form or structure through new, large-scale actions (O'Brien and Sygna, 2013). Although transformational adaptations usually involve technological or behavioural shifts, there may be legal, social and institutional changes involved (Kates et al., 2012).

2. The second looks at transformation in the context of sustainability and mitigation of climate change (Calvin et al., 2009; WBGU, 2011; Westley et al., 2011). It explores how pathways and emission trajectories for decarbonisation of the economy can be achieved, with an emphasis on the deep structural changes required in key sectors. The literature tends to focus on the costs and benefits of different options that have a transformative impact on the mitigation of climate change. This research emphasizes the learning processes, innovation and experimentation required across multiple levels, and how there is no single cause or driver of transformation (O'Brien and Sygna, 2013).

3. Lastly, several publications from think-tanks and donors relate to how transformation can be facilitated and supported through climate finance (Mersmann et al., 2014; Puri, 2018; Westphal and Thwaites, 2016). These tend to examine how different agencies and funders have defined transformation, with case studies of how climate finance has facilitated transformation, and guidelines for how climate funds can best maximise the potential for transformation. Some explore the factors that help climate finance to kickstart a transformation (Westphal and Thwaites, 2016).

Box 1: What is the difference between transformation and other terms:

The term 'transformation' is often used interchangeably with a range of other terms, sometimes incorrectly.

Transformation vs transformative impact, transformative action, transformative change etc. These terms explain different stages of 'transforming' from one state to another. For example, a 'transformative action' will bring about a 'transformative change', which is the change which will result in a 'transformative impact' or ultimately a 'transformation'.

Transformation vs paradigm shift. The terms are used interchangeably, although users of both terms may have different meanings in mind.

Transformation vs sustainability or resilience. Sustainability or resilience is the goal or describes the desired status that transformation should achieve.

Transformation is increasingly being used as the yardstick for donors and programmes on climate change to measure success. Table 1 summarizes some of the best documented definitions of transformation.

Table 1: Definitions of transformation from other organisations.

Organisation	Definition of transformation	How transformation is being used
Green Climate Fund (GCF) (GCF, 2016; GCF, 2018)	The GCF requires any investment to result in a 'paradigm shift'. Any project proposal has to identify a vision for paradigm shift: "The vision for paradigm shift in GCF project proposals should outline how the proposed project can catalyse impact beyond a one-off investment. This vision for longer-term change should be accompanied by a robust and convincing theory of change for replication and/or scaling up of the project results, including the long-term sustainability of the results, or by a description of the most binding constraint(s) to change and how it/they will be addressed through the project."	The GCF's goal is to promote a paradigm shift to low-emission and climate-resilient development, taking into account the needs of nations that are particularly vulnerable to climate change impacts. It states that it is "driven by innovation and targets its investments for transformational impact".
UK International Climate Fund (ICF) (ICF, 2018)	The ICF's definition and indicator for transformational change is: "Transformational change is complicated and multifaceted. At its core is change which catalyses further changes, enabling either a shift from one state to another (e.g. from conventional to lower carbon or more climate-resilient patterns of development) or faster change (e.g. speeding progress on cutting the rate of deforestation). However, it entails a range of simultaneous transformations to political power, social relations, markets and technology."	The ICF has well-defined criteria for transformation, as well as a theory of change for achieving it, and a methodology for reporting on it. It states that many of the transformations the ICF is seeking to bring about will only be evident with a lag. Their indicator therefore tracks early signs of transformation, or the extent to which key ICF activities either are being, or have a good likelihood of being, transformational.
GIZ (Mersmann et al., 2014)	GIZ developed a guidebook on transformation to guide their work and others. It defines transformational change as: "A structural change that alters the interplay of institutional, cultural, technological, economic and ecological dimensions of a given system. It will unlock new development paths, including social practices and worldviews".	A GIZ guidebook provides some examples of how the transformational impact of capacity development activities can be enhanced and gives guidance on identifying which activities should be funded.
NAMA Facility (NAMA Facility, 2017)	The NAMA Facility uses transformational change as a criterion for assessing projects for funding, defined as: "It's contribution to broader programmes or policy frameworks, a change of prevailing structures of a sector contributing to high emissions, impact beyond the project scope, institutional capacity building, private sector engagement, innovation, replicability, and learning processes fostered by the NAMA."	Transformation is embedded within the NAMA Facility's Theory of Change. The overall aim is to support the concrete implementation of highly ambitious projects that fit into the context of a broader NAMA and have the potential to catalyse transformational change towards low-carbon development.
ICLEI's Transformative Action Programme (TAP) (TAP, 2018)	The TAP application form for projects includes a definition of transformative action as: "An action that contributes to tackling climate change (low emission development, mitigation, adaptation and/or resilience, access to secure affordable and sustainable energy). It supports systematic and sustainable changes at the community level with potential for large-scale impact and scalability."	Any project proposal submitted has to fulfil the criteria of being "transformative", and in particular, demonstrate it is ambitious (e.g. contributing to 1.5°C goal, address SDGs), cross cutting (e.g. size of population that will benefit, scalability, added benefits to other sectors) and inclusive (e.g. participation of the community, benefits to disadvantaged groups).

2.2 The general elements of transformation

a. The CFF application phase

The various definitions of transformation from both literature and practice illustrate that there is significant overlap in how the term is being understood and applied. All describe the size and scale of the future change that occurs through transformation: it is fundamentally bigger, and happens more quickly, than would have otherwise occurred.

There are also important conceptual differences.

- Different definitions put varying levels of emphasis on whether transformation necessarily involves a systemic shift in the economy, society or political system. In the literature, these changes are often described as 'drivers' of transformation, whereas in practice, funders and practitioners often see these as part of the definition of transformation. For example, GIZ, ICLEI and the NAMA Facility use a definition that focuses on the "structural changes" that happen (Table 1).

- Some definitions include a specific reference to when and how a transformation occurs. For example, how problems or crises (e.g. a natural disaster) can be turned into an opportunity for large-scale change.
- Other definitions emphasize the role that innovations in technology, policy or in other areas have in delivering transformation.

Both the literature and practice suggest that transformation should be defined in two parts. These two elements together determine whether a transformation has occurred.

1. The scale and nature of the impact, relating to the change that has occurred and whether it is fundamental and significant enough to be classified as a transformative impact. The following criteria apply:

- + **Large-scale and radical impact.** The impact is large and significant (for example, deep decarbonisation of the economy), and represents a radical shift from one situation to the next. The impact is non-linear, a sudden and significant advance.
- + **Positive impact.** The direction of the impact should be a positive contribution towards the objective. For climate change this means a reduction in GHG emissions and climate risks, but may also include the delivery of development and poverty reduction co-benefits.
- + **Long-term and sustained impact.** The impact is not a one-off improvement, but a sustained change and without any backsliding.
- + **Catalytic impact.** The impact may have initially occurred in one location or sector but is replicated and has a knock-on effect in other locations or sectors.

WHAT

Large-scale, radical impact

Positive impact

Long-term and sustained impact

Catalytic impact

2. How the impact is achieved, including through structural and systemic change. The assumption is that only certain transformative actions or changes can result in a transformative impact. The following criteria can be used:

+ A shift in systems. For the impact to be radical and sustained, a shift in fundamental structures and ‘rules’ governing the social and economic system is required. The shift could occur in a number of different economic, political and social spheres, including those related to:

– In terms of changes in the technical response to managing climate change, this relates to the practical ways in which individuals and organisations manage and address climate change. For example, the introduction of new technologies, changes in management practices and processes, or new strategies by the government to address climate change.

– In terms of shifts in the structure of power and influence in society, this relates to the economic, political, legal, social and cultural systems that inform what technical responses to climate change are feasible. For example, enhanced political will, new policies and laws, regulatory reform, shifts in market behaviour and new economic incentives.

– In terms of adjustments to values, ideology and mindset, this relates to how individuals and communities understand climate change and what technical responses to climate change are considered feasible. For example, increased quantity and quality of informed political and public discourse, debate and dialogue on climate change (O’Brien and Sygna, 2013).

+ An approach that is new and innovative for the city. For a transformation to involve a fundamental shift from the status quo, it must involve some action or approach that has not been tried before. It must involve innovation (for example, introducing a new technology) or adapting a solution from elsewhere to the local context. What is innovative in one context, however, may not be in another: transformation does not necessarily have to involve using cutting-edge ideas or solutions. This innovation implies that there is risk involved in seeking a transformation, and therefore a high chance of failure.

Box 2: Is transformation the only thing that matters?

The literature on transformation includes several views that are critical of its inherent vagueness and its recent ascendancy as an objective. An identified challenge is that ‘transformation’ is “entering policy lexicon with little substance to guide implementation” (Tanner and Bahadur, 2013). Others say that the idea of ‘transformation’ or a ‘paradigm shift’ has become in the last decade the ‘holy grail’ of development assistance (Puri, 2018). The amount of emphasis that is given to transformation by donors and others can make it seem that this is the only type of impact that is of value. There is a risk that only things labelled as transformative will be supported, whereas investment and support is also required across the board: focusing on transformation only may delay or even halt measures that have a more traditional impact.

3. How transformation applies to the CFF

The CFF is already striving to achieve transformation in its choice of projects, the projects itself, and with its dissemination of good practices and lessons learned. What it needs is, however, a workable definition of transformation, and a system to track whether and how it is being achieved. This section sets out an overarching framework for reporting on transformation that meets the CFF donors’ requirements but is tailored to the CFF’s specific work and context. This section develops this framework by first unpacking what transformation means in the context of cities, climate change and finance, outlining a definition of transformation for the CFF, and then breaking it down according to the main elements of transformation.

3.1 What transformation means for cities, climate change and finance

As previously mentioned, achieving the objectives of the Paris Agreement requires nothing less but a transformation in how the global economy is structured. In this context, organisations seeking to support action on climate change need to have a high level of ambition and focus their efforts on facilitating transformation in terms of the climate change outcomes from their interventions, both with respect to mitigation and adaptation.

The CFF is one of those organisations supporting a transformation in how to address climate change. It focuses on action at the urban level, since cities consume over two-thirds of the world’s energy and can deliver over 40% of the emissions reductions needed to keep global warming to 1.5°C (IPCC, 2014; C40 Cities and ARUP, 2016). 70% of cities are also already dealing with the damaging effects of climate change (C40 Cities, GCoM and UCCRN, 2018). As urbanisation increases across the world at a rapid pace, there is a clear need for cities to develop in a different way, compatible with the Paris Agreement.

However, this transition will not be easy or cheap to realise. Cities are complex entities, covering multiple sectors, systems, and stakeholders. Even financing current trends in infrastructure requires an investment of US\$3.4-6 trillion per year (Floater et al., 2017). The financing challenge is considerable: only 1 in 5 C40 cities are able to borrow from the state; only 1 in 4 C40 cities are able to issue municipal bonds (C40 Cities and ARUP, 2016). Barriers such as limited public capital, inflexible governance, insufficient capacity, high risk, low forecasted returns, and imperfect information are further preventing cities from addressing climate change (Floater et al., 2017).

Only by addressing these barriers can cities deliver their potential in the transition to a net zero world and achieve transformation. By conceptualising what transformation means in detail in this report and in its practices, the CFF aims to play its part.

HOW

A SHIFT IN SYSTEMS

Introduction of new technologies

Strengthened institutional capacity, management practices and relationships

Enhanced political will

Improved policy, regulatory and legal frameworks

Market Behaviour and economic incentives

Values, ideology and mindsets

AN APPROACH THAT IS NEW AND INNOVATIVE

3.2 A definition and framework for transformation for the CFF

The CFF's own working definition and framework for transformation needs to incorporate the specific ways in which the CFF aims to deliver it. In particular:

- The way the CFF supports transformation differs from city to city, depending on the context and needs of the city. For example, while the CFF is aiming to influence systemic change in each city, the specific changes it is targeting will differ for each city. Therefore, the CFF's framework for transformation should be flexible enough to not require contributing to all of the potential different ways that transformation can be achieved.
- While the CFF's focus is to support cities to deliver ambitious climate change projects (which will have an immediate impact on GHG emissions and resilience), how it delivers this support and the wider changes it facilitates are equally, if not more, important. The framework for transformation should therefore put significant weight to these wider, sometimes indirect, benefits that the CFF facilitates.
- The CFF supports transformation not just through its direct support to cities, but also by influencing other cities, practitioners, and policymakers.

The definition of transformation for the CFF which combines these elements is:

The CFF seeks transformation through large-scale, sustained and catalytic GHG emissions reductions and enhanced resilience within cities, by supporting shifts in the systems of cities that remove critical barriers around access to finance and thus enable further action on climate change. The CFF achieves this by strengthening the capacity of cities to develop and finance climate change projects, working directly with specific projects in its partner cities, and by informing the thinking and practice of other cities, practitioners, and national and international policy-makers.

Figure 1 unpacks this definition and outlines a CFF framework for transformation, including the scale and nature of the impact expected ('what'), how the impact will be achieved and how it includes systemic change ('how'), and where it will be sought ('where').

WHAT

The CFF's seeks transformation through large-scale, sustained and catalytic GHG emissions reductions and enhanced resilience within cities.

Large-scale, radical impact

Positive impact

Long-term and sustained impact

Catalytic impact

HOW

It achieves transformation by supporting shifts in the systems of cities that remove critical barriers around access to finance and thus enable further action on climate change.

A SHIFT IN SYSTEMS

Introduction of new technologies

Strengthened institutional capacity, management practices and relationships

Enhanced political will

Improved policy, regulatory and legal frameworks

Market Behaviour and economic incentives

Values, ideology and mindsets

AN APPROACH THAT IS NEW AND INNOVATIVE

WHERE

The CFF achieves this by strengthening the capacity of cities to develop and finance their climate change projects and by informing the thinking and practice of other cities, practitioners, and national and international policy-makers.

Partner cities

Other cities

Practitioners, national and international policy-makers

Figure 1: CFF Framework for Transformation

3.3 Assessing transformation in the CFF

This section builds on existing literature and the CFF's definition of transformation to operationalise the concept in the context of the CFF. There are two different sides to transformation (Section 2.2): First, the scale and nature of the impact that is achieved; and second, how the impact is achieved, including through systemic change. These two elements together determine whether a transformation has occurred. This section defines each element and then presents examples of whether and how the CFF is achieving this.

3.3.1 Scale and nature of the impact

The CFF's activities and objectives can be first assessed against the set of criteria related to the scale and nature of the impact, relating to the change that has occurred and whether it is fundamental and significant enough to be classified as a transformative impact. The following criteria apply:

Large-scale and radical impact.

The CFF set itself a quantitative target in its first phase related to climate change mitigation: it aimed to reduce, sequester or avoid 75,000 tCO₂ equivalent per year as a result of CFF assistance. It is difficult to judge what is a radical shift in a reduction of GHG emissions and climate risks within the cities the CFF is working in, especially as what is ambitious in one city may be easy to achieve in another.

In terms of individual projects supported by the CFF, their direct impact is rarely large-scale and radical. However, they are expected to have a catalytic impact and involve structural and systemic shifts (see below), and therefore a large-scale and radical impact indirectly.

Positive impact.

The direction of the change expected as a result of the CFF towards a low-carbon and climate resilient future is clearly positive. The CFF also seeks to maximise projects' socio-economic benefits, including access to employment, poverty reduction, improved air quality and public health, and gender equality, amplifying its positive impact in its partner cities.

Long-term and sustained impact.

The CFF expects the reduction in GHG emissions and resilience gains to be sustained, and not reversed. This could be achieved by the projects that the CFF helps develop 'locking-in' GHG emission savings and resilience benefits. However, there is a risk that these projects are not successful, get cancelled or do not get maintained or extended. For example, changes in political priorities may be beyond the control of the CFF and would diminish the impact of the particular project.

The strengthened capabilities of city officials as a result of the CFF support should mean that even if a project fails, the city will be able to learn from it and put in place corrective measures for a future project. In addition, if the CFF is successful in institutionalising new practices, processes and structures for improved performance within the city administration, including for inter-organisation coordination,

then the capacity the CFF helps develop will be sustained, which in turn should catalyse the impact on climate change. In practice, the CFF is attempting to develop capacities within cities during a short time-frame and must deal with challenges such as staff turnover.

Catalytic impact.

The CFF aims to have a replication effect, with one city demonstrating the viability of a project and other cities in the country and beyond following suit. In addition, by documenting the knowledge and learning from the CFF's experience, it is influencing and informing other funders and programmes and ultimately leveraging their resources to support their ultimate goal.

The CFF considers the potential for catalytic impact when assessing and selecting projects from cities. The CFF's in-depth assessment of potential projects to support is based on six criteria, namely scalability, environmental impact, co-benefits, financing, city context, and implementation challenges. Scalability refers to 'the ability to apply the learning from a pilot or limited scale project to expand the intervention city-wide; or, to apply the learning in one city to a similar project in another city' (CFF and ARUP, 2017). By employing this criterion, the CFF aims to ensure the selected projects can have a catalytic impact in its partner cities and beyond.

3.3.2 How the impact is achieved, including through systemic change

In terms of how the CFF expects to deliver this impact, the CFF's activities and objectives can be assessed against the second set of criteria for transformation. The assumption is that only certain transformative actions or changes can result in a transformative impact. The following criteria can be used:

A shift in systems.

The CFF aims to kick-start or nurture fundamental systemic and structural shifts in its partner cities that will facilitate long-lasting and sustained action on climate change. In each city, the context and what needs to change differs significantly:

- **Introduction of new technologies:** Several projects that the CFF supports involve piloting or scaling-up a climate change technology (e.g. zero-emission buses). The technology may be readily available in another city, but certain barriers have prevented its uptake in others. The CFF helps overcome these barriers and demonstrate the technology's viability and its scalability potential through the project.
- **Strengthened institutional capacity, management practices and relationships:** The CFF carries out a capacity assessment within each of its cities, and then provides targeted support to build the necessary institutional mechanisms, skills and knowledge. This is primarily done by locating a Senior Project Advisor (SPA) from the CFF within the city to support from within the design of project workplans, business cases, risk and financial assessments,

etc. The SPA supports, but does not do, the preparation of the project plan and associated tasks. This is a crucial element of the CFF's activities and objectives and how they support transformation: this on-the-job learning for city officials is complemented by specific training opportunities, around, for example, municipal financial management, electric bus technology, cycling programmes, etc. In addition, the CFF helps nurture positive institutional practices and mechanisms which can facilitate future investments in low-carbon and climate resilient developments.

The CFF puts significant emphasis on capacity development to ensure the city is able to access suitable financing instruments for more projects in the future and that it can manage relationships with financiers. It includes human resource development (for example, strengthening technical and management skills within the administration), organisational development (for example, supporting the city to develop optimal institutional structures), and cooperation and network development (for example, building city-to-finance networks including local finance institutions). Based on the capacity gaps identified through an online tool, focus group discussions, interviews and workshops, a capacity development strategy is prepared and delivered, and the results of which are evaluated against the baseline (CFF, 2017).

- **Enhanced political will:** The CFF supports cities where there is already a high level of political commitment to tackling climate change. By supporting a well-planned, evidence-based design and preparation process, the CFF aims to increase the buy-in of mayors and senior officials in the project. The CFF also emphasizes the development co-benefits of the project to increase political interest in it.
- **Improved policy, regulatory and legal framework:** The CFF recommends to cities opportunities to strengthen policies, plans and laws when these are a barrier to the implementation of the project, or there is an opportunity to scale-up the project. In Durban, the CFF recommended that its project feed into the planning process for the wider provincial catchment area in the future, including the broader regulatory and financial framework for riverine management. In Bogotá, it pushed for the inclusion of changes to the city's masterplan to tie future administration to the project. The CFF does not provide any technical support to develop new or refined policies. However, the CFF may work with partners, including C40's and GIZ's other programmes, to get these policy recommendations acted upon.
- **Adjusting market behaviour and economic incentives:** Some of the projects the CFF supports may increase the economic and business incentives for low-carbon and climate resilient investments, which will facilitate greater investments in the future and beyond the scope of the project itself. In Durban, the project is trying to turn the city's rivers and streams into an economic asset to encourage long-term investment in protecting the ecosystem by the city, landowners, local communities and the port. The value of this stewardship will be demonstrated by a detailed cost-benefit analysis (see Section 4.3).

- **Values, ideology and mindsets:** The CFF's support to cities aims to adjust to a certain extent the way city officials, citizens and civil society thinks about how the city can address climate change. This includes significant changes in the way city officials understand the requirements of project planning and preparation, such as the need to involve different departments, stakeholder engagement strategies or what are feasible and appropriate solutions to tackling climate change.

An approach that is new and innovative for the city.

Projects supported by the CFF may involve an unknown, cutting-edge technology or approach, but this is not always the case. For example, in Bogotá, cycling is not new: 6% of all trips in Bogotá in 2015 were by bike, and the city was the first in the world to organise ciclovías – involving the closure of some roads to cars on Sundays and holidays (CFF, 2018). However, the city needs CFF support to be able to draw upon local and global expertise to set its own standard for how mobility will look like in Bogotá's future. Although Mexico City already operates electric trolleybuses, it has not procured new ones in decades and lacks a blueprint for how to structure and design an integrated zero emission buses (CFF, upcoming). There are multiple elements of innovation involved in the CFF's support, from interdepartmental coordination to developing the capacity of cities to access new financing instruments, even if the overall project may not seem innovative at face value.



3.4 Measuring and reporting on transformation by the CFF

The CFF – and by extension any organisation hoping to support transformation – needs to consider the complexities of how to measure, monitor and report on whether and to what extent transformation has been achieved.

First, there are some conceptual challenges related to how to measure and evaluate transformation. This process involves a subjective judgement on how large and significant an impact is, for example, on how many tonnes of GHG emissions have to be reduced or saved in order for it to qualify as a transformation. For resilience, the ultimate measure is the number of citizens within a city whose adaptive capacity and resilience to climate change impacts has been increased, often in the absence of reliable baselines. Monitoring and evaluation of transformation builds upon qualitative criteria and include a judgement on some of the most difficult to measure aspects of transformation, for example, what constitutes a large-scale impact, or a system change, for a specific city.

Secondly, the process of transformation involves a number of contributing factors. Therefore, the CFF has to unpack its specific contribution to any impact related to the projects, cities and external actors it engages with. This has to be unpacked relative to other contributing factors across the multiple sectors and systems involved, and all relevant actors. To accurately measure its support's additionality, the CFF needs to establish a comprehensive baseline of

the context and stakeholders, as well as monitoring and measuring changes and the contribution of the CFF relative to that of others.

Thirdly, it is necessary to identify in which systems, dimensions, contexts, and geographies the transformation is expected. The CFF aims to have an impact at multiple levels, directly within target cities, indirectly by facilitating replication by other cities (and by national governments) and in a wider sense by influencing the investments and policies of other funders, programmes and organisations. Therefore, the CFF must somehow measure transformation within each individual city it is working with and the transformative impact, if any, that is happening indirectly by influencing other cities, governments, funders and organisations. This should then be aggregated as a description of the total transformative impact of the CFF.

Fourthly, the issue of timing is one of the most challenging aspect to reporting on transformation. In reality, a transformation can only really be assessed after the fact or even decades later given that the impact needs to be sustained to be classified as a transformation. In reality, funders want reporting on transformation while the support being provided to cities is still underway. Therefore, the CFF should focus on describing both the scale of the expected impact on GHG emission savings and resilience and the fundamental changes that have taken place that give a strong indication that transformative impact is likely.

There is a need for indicators to measure, monitor and report on transformation, and the CFF should adopt a set of indicators that track early signs of transformation. These can sit above the CFF's impact and outcome monitoring framework and should be aligned with any of their funders' own indicators for transformation (in particular, the ICF Key Performance Indicator 15). For each city, there will be some positive signs of transformation but also some questions about whether it will actually happen.

4. CFF case studies of transformation

4.1 Bogotá – Quinto Centenario Project

The CFF is supporting the planning and development of the 'Quinto Centenario' (5C) cycle avenue in Bogotá, a 25-km corridor crossing the city from north to south, since January 2017.

The 'what' of transformation: When implemented, the 5C is expected to result in an estimated cumulative reduction of 47,540tCO₂e by 2030 and of 134,430tCO₂e by 2050, by shifting journeys from private cars and motorcycles to bikes. The project has been selected as a pilot in Colombia's Nationally Appropriate Mitigation Action for Active Transport and Demand Management (NAMA TANDEM). The 5C is also expected to deliver resilience benefits, by incorporating high quality drainage features to prevent flooding.

There is interest from other cities in Colombia to learn from and replicate Bogotá's cycling initiatives. Bogotá is one of 19 cities with pilot projects in Colombia's NAMA TANDEM. The CFF's plan to expand support to more cities in Colombia can help achieve transformation both by increasing impact across more cities and by promoting a shift in systems and structures across the country.

The 'how' of transformation: The CFF's engagement in Bogotá is supporting a number of systemic shifts, which are likely to lead to transformation. The CFF's support has changed the way Bogotá understands, plans for, and implements urban mobility in a low-carbon and climate resilient way, which should lead to wider emission reductions beyond the 5C project. In particular:

- Through its support, the CFF has developed greater institutional capacity for factoring climate change considerations in cycling infrastructure and mobility projects more generally. The 5C project is the first time a mobility project in Bogotá has used GHG emission savings and resilience as a key criterion for design and planning. The CFF's support has led to a new GHG measuring tool being applied by the city to track the climate impact of any new cycling project. It has developed the capacity of city officials on monitoring, verifying and reporting on GHG emissions at the project level, and



mainstreamed climate change into the mandate of the Secretaría de Movilidad (SDM; Department of Mobility).

- The CFF has pioneered new institutional mechanisms in Bogotá that can be scaled-up and institutionalised. In particular, the inter-departmental collaboration through the Project Implementation Unit (PIU) is unprecedented: set up by the city with support from the CFF, the PIU has strengthened cross-departmental coordination and provides an overall management structure for project planning (CFF, 2018). It includes representatives from SDM and the municipal departments for environment, planning, urban development, citizen participation overseeing the implementation of the 5C. This governance structure has set a replicable template of how city officials can work cross-sectorally and holistically.

Cycling is well-established in Bogotá and in Colombian culture, but the 5C includes a degree of innovation: it aims to be a model for safe, resilient and high-quality cycle lanes, showing how Bogotá's mobility will look like by the time of Bogotá's fifth-hundredth anniversary (hence the name Quinto Centenario).

Outside the scope of the CFF's engagement with the 5C project, there are other systemic shifts happening which should increase the likelihood of transformation. Requirements for cycling infrastructure are included in Bogotá's Plan de Ordenamiento Territorial (the city's land use masterplan) which will affect the city's planning process for the next 12 years. There is a growing 'bicycle economy' (e.g. bicycle taxis, bike tourism, bike repair centres). Within SDM, the administration is establishing a (legally) permanent Gerencia de la Bicicleta (cycling office), which will continue to work on cycling management and infrastructure in future administrations.

The project has benefited from a strong rationale and actors with a key stake in influencing the change. Although Bogotá has grown exponentially in the last decades, there has been limited investment in public transport and the city often suffers from severe congestion on roads and overcrowding on buses. Cycling as a mode of transport offers an option for those not reached by public transport or those attracted to its convenience. The re-election of Enrique Peñalosa as Mayor in 2015 strengthened political commitment to improve public transport and promote cycling (CFF, 2018). SDM and the private sector have also played a key role in institutionalising and embedding cycling into the city's identity.



4.2 Mexico City – Eje 8 Sur project

In Mexico City, the CFF is supporting a 22km long zero emission bus corridor project on Eje 8 Sur, in the south of the city, since January 2017.

The ‘what’ of transformation: The Eje 8 Sur project is expected to lead to an estimated 875,809t CO₂e reductions over ten years, and reduce local air pollution and associated health impacts. These reductions are not dependent on the electricity grid mix, since the city is planning to generate its own solar power on bus depot roofs. The project, as one of the first procurements of this scale in Latin America, aims to play a catalytic impact as a model for other cities in the region to shift their buses to zero emission technologies.

The project is also expected to effect a transformation on the urban form of Eje 8 sur. The new bus corridor will serve an estimated 185,000 daily trips in low- and middle-income neighbourhoods. Currently, the corridor is operated by private minibuses, with no clear stops, schedules, and insufficient capacity. The restructured corridor will guarantee service, providing a reliable alternative to private transport.

Other Mexican cities have also begun planning zero emission bus projects based on, among other reasons, the visibility of the Eje 8 Sur project. These local governments have recognised the urgency of addressing air pollution and climate change and are now asking for support, both direct and in terms of document and data sharing, from the CFF. The Mexican national government is also developing new public policies to foster the electrification of public transport across the country. This extension of assistance is expected to have a transformational impact on the national context of transport in Mexico.

The ‘how’ of transformation: Systemic shifts are already happening as a result of the CFF’s support, and more are expected to happen.

- The CFF’s engagement with Mexico City has led to the establishment of new processes for different agencies to work together in the city. For the first time, the municipal departments responsible for energy and transport are planning together around the implications of a growth in electric transport and how to supply sufficient low-carbon electricity. Officials from different departments have led the development of several project studies. The CFF has also strengthened links between the city, international NGOs, and financiers, which promise to increase Mexico City’s ability to navigate complex issues such as climate change.
- The project is also effecting a change in mindset. By providing a clean, quiet, and reliable public transport service, it aims to improve trust in the system and halt the shift of residents to private transport, at least on Eje 8 Sur. If replicated, this could have a transformative impact in Mexico City and lead to greater emission savings.

The technology is innovative for Mexico, Latin America and the world (with the exception of China). The project introduces new generation zero emission bus technology to the city at a massive scale. Scepticism and concerns about costs and risks have been addressed by using data on benefits and savings to gain city officials’ confidence.

The Eje 8 project is based around the need to formalise public transport and improve service on a currently chaotic and polluted corridor in Mexico City. There are several actors with a key stake in the project, some of whom have changed due to the municipal elections in July 2018. The project has spurred a restructuring of Mexico City’s underfunded and under resourced electric transport agency, Servicio de Transportes Eléctricos, which could lead to additional emission savings if more bus corridors are restructured. Capacity development of the agency’s technical staff has increased their support of the Eje 8 Sur’s project.



4.3 eThekweni (Durban) – Sihlanzimvelo Programme

eThekweni (Durban) aims to scale up the Sihlanzimvelo Programme, which involves the management of watercourses through community-based cooperatives, to the entire city, in an example of Community- and Ecosystem-Based Adaptation (CEBA). Support to eThekweni (Durban) began in August 2018.

The ‘what’ of transformation: eThekweni (Durban) suffers from frequent summer floods and storms. The Sihlanzimvelo Programme was established in response to these events, caused by the clogging of waterways with waste and alien vegetation and made increasingly frequent by the effects of climate change, and unsanitary conditions along the watercourses as a result. An initial pilot of the project focused on improving water quality, protecting the environment and creating employment through the establishment of community cooperatives.

However, the city realised the contribution it was also making to adaptation to climate change and is now preparing to scale it up from 300 km of waterways, to about 3,000 km – implementing it to close to half of all waterways in the city. The project expects to reduce the amount of damage to municipal infrastructure and homes, and, in extreme cases, reduce flood-related deaths; this will be quantified as part of the CFF’s support. The resilience of the local population is expected to be further enhanced, through employment opportunities, improved water quality, and enhanced social cohesion.

There is potential to increase this as other municipalities around Durban have expressed an interest in replicating the project.

The ‘how’ of transformation: The pilot project and the beginning of the CFF’s support also provides evidence of how systemic and structural shifts can facilitate transformation. The Sihlanzimvelo Programme is now led by the Coastal Stormwater and Catchment Management Department in partnership with the Roads & Stormwater Maintenance Unit and the support of other departments, and implemented by community cooperatives. Partnerships are emerging between the city, local businesses and industry to invest in the project and water management more generally. The involvement of actors from across the municipality bodes well for the project’s potential for transformation.

The project involves a shift in values, ideology and mindset: the project seeks to shift from an extractive and segregated view of water, treated as a disposable resource by municipal departments, to a circular and holistic view of water as a

resource, key to achieving economic, social, environmental and climate change benefits.

Finally, the project is using an innovative approach to building resilience: it is founded upon the understanding that eThekweni (Durban)’s waterways provide an ecosystem service, analogous to that provided by built infrastructure, and they should therefore be maintained accordingly. This creates a rationale for the project, which the CFF aims to make into a business model to incorporate in the city’s annual budget the avoided cost of ecosystem restoration, flood protection and water cleaning. The innovation is inherent in fundamentally altering how city officials look at the value of water, and how they should consider it as an economic asset to be protected and maintained as if it were traditional build infrastructure, rather than a problem or threat.

Table 2: Summary of elements of transformation in the CFF’s projects

City	Large-scale, sustained, catalytic impact expected	Evidence that systemic shifts have taken place	Introduction of an innovation for the city
Bogotá	134,430tCO ₂ e (2017-50) plus resilience benefits. Interest in replication in other cities	Mainstreaming of climate change considerations into mobility planning Improved inter-institutional coordination	Model for safe, resilient and high-quality cycle lanes
Mexico City	875,809t CO ₂ e reductions over ten years Interest in replication in other cities	New institutional processes for coordination across sectors Shift in public mindset away from private vehicles	New technology
eThekweni (Durban)	Increased resilience across 4000km of waterways Improved livelihoods	Shift in how water is viewed, as an economic asset Enhanced coordination Economic incentives for businesses to adjust practices	Innovative approach of considering water as an economic asset

4.4 The CFF’s wider influence

The CFF is informing and influencing the work of other cities, practitioners, and financiers. The objective is to leverage their resources to support additional GHG emissions and climate risk reductions above and beyond the CFF’s technical support to cities.

By documenting and sharing knowledge and guidance on preparing low-carbon and climate resilient projects, the CFF is actively engaging within C40 and other organisations to share good practices from its work in Bogotá, Mexico City and Durban to facilitate the replication of these specific projects. As mentioned previously, cities in Colombia and Mexico are already attempting to replicate or learn from CFF projects.

Building partnerships with other organisations has also proven crucial in providing the CFF with a platform to use its lessons learned to enhance the effectiveness and efficiency of programmes and organisations with a similar mandate. The CFF is an active member of the Project Preparation Working Group

of the Cities Climate Finance Leadership Alliance (CCFLA), and has organised workshops and events in collaboration with Connective Cities, the World Resources Institute, TUMI, etc. Several organisations have used the learnings from the CFF’s two application phases to structure their own application process. This very report adheres to the CFF’s principle of sharing all knowledge generated as part of its activities and in its projects and aims to set a replicable example of how organisations working in the field of cities, climate change and finance can achieve transformative impact.

Finally, the CFF aims to influence financial institutions and others to make finance more accessible to cities. The CFF has built strong relationships with a range of potential financiers within the cities it is working and globally. This is an integral element of ensuring the projects are financed, but an indirect objective is to strengthen financiers’ appetite for funding low-carbon and climate resilient urban projects. As the CFF builds its body of learning, it will also be in a strong position to advocate for reforms that will reduce the barriers to cities accessing finance.

5. Learning points from the CFF on transformation

The analysis in the previous sections about transformation in general and its relevance to the CFF's activities has yielded several insights relevant to other organisations working on cities, climate change and finance.

1. Transformation is not just about the size and scale of the impact, but also how that impact was achieved. In particular, the shifts in systems will be the critical factor in determining whether the impact is radical, sustained and catalytic in the long-term. Therefore, for a programme or organisation to have a transformative impact, it must be thinking wider than the specific outputs and outcomes expected and look at the entire system that will determine the scale and size of change. For example, the CFF carefully ensures that rather than just preparing a project plan or business case, it supports the city to do it itself and develops the capacity of staff, organisations and networks in the city itself. Even if it may be a less efficient way of accessing finance for projects, it is crucial to help ensure the CFF has a transformative impact in terms of increased capacities of the city in project preparation. These new skills, processes and practices can be applied by the city in other projects and sectors, thereby catalysing further impact.

2. Transformation is a complex concept, with multiple meanings and involving multiple systems. Organisations aiming to understand their potential for transformation must set a specific definition and a set of measures for transformation that is appropriate to their context. This applies particularly to those organisations with multiple donors with different understandings of transformation, making it onerous to define it. Section 3 of this report has proposed a bespoke framework for monitoring and measuring transformation that can work for the CFF. A similar process of exploring what transformation means and how it can be measured should be undertaken by other organisations, if they are to understand how to operationalise the concept of transformative impact within their own context.

3. Transformation involves a time lag and multiple contributing factors. As per the definition of a transformation, the impact needs to be sustained over decades, and therefore it is only possible to judge whether a transformation has occurred and the contribution of any particular programme after the intervention has occurred. There also will be a large number of actors and processes that contribute to a transformation, and these need to be identified and untangled in order to accurately identify the role of any one programme. This requires setting baselines (e.g. on a city's capacity at the beginning of an intervention) and mapping stakeholders and changes over time.

4. To facilitate catalytic impact and replication, organisations should invest in knowledge management and documenting learning. Although the learning process for the CFF has just started, it is expected to facilitate important new partnerships and opportunities to influence and inform the work of others. Examples include case studies (CFF, 2018; CFF, upcoming), reports on project financing needs and application processes (CFF, CDP and GCoM, 2018; CFF, upcoming), and one-to-one dissemination with similar initiatives and the wider community of practice. The CFF has also forged strong working relationships with initiatives such as the Cities Climate Finance Leadership Alliance (CCFLA), the World Resources Institute (WRI), Connective Cities, and others: this allows the CFF to maximise its impact and advocate for wider changes, and provides avenues for scaling-up the CFF's approach and good practices.

5. Organisations should acknowledge the risks involved in seeking transformation, encourage innovation, and document their successes and failures. By definition transformation involves an element of risk, as it is trying new and untested approaches and aiming for a radical shift in impact. Not every attempt to deliver transformation will succeed. Therefore, funders and recipient programmes should foster a close working relationship that allows honest and open discussions on both positive and negative experiences. Seeking transformation is setting a very high benchmark, and, as such, success in every instance should not be expected. However, programmes should have an inbuilt mechanism for documenting and learning from different experiences and levels of success.

6. Transformation is a useful lens for an organisation or programme, but it is not the be-all and end-all and should not replace a concern for other outcomes or types of impact. The value of using transformation as a benchmark of success for a programme is that it requires the team to think through and explore all possible ways of maximising the impact of their work. It therefore encourages a higher level of ambition, including looking beyond just the direct interventions and impact of the programme. However, monitoring and reporting on transformation should not distract from the importance of ensuring that the actual work and direct interventions of the programme are being implemented successfully and delivering results. A concern for achieving transformation should build on a need to deliver more traditional outcomes and impact, not replace this need altogether.



Systemic shifts will be the critical factor in determining whether the impact is radical, sustained and catalytic in the long-term.

6. Conclusion

This report has explored the concept and definition of transformation within the context of the CFF and shown how it is aiming for and supporting this transformation. It proposes a framework for measuring and reporting on it that is suited to the specific work of the CFF and outlines the main learning points that this investigation has yielded.

The framework for transformation for the CFF organises the concept in two levels. First, the 'what': the CFF's impact is large-scale, sustained and catalytic GHG emission reductions and enhanced resilience within cities. Secondly, the 'how': the CFF achieves this impact through shifts in the systems governing any of its partner cities. The CFF aims to achieve this transformation both directly within the cities it is working in, but also by informing the thinking and practice of other cities, funders and programmes (the 'where').

The CFF's work is still at the initial stages, and early signs of transformation are all that can be expected at this stage. Case studies from Bogotá, Mexico City, and Durban suggest that the CFF's current activities and objectives are in line with this framework for transformation.

While the CFF is well positioned to deliver transformation, it could do more. This report discusses in detail how complex and multifaceted transformation is. However, in practice, the CFF has a very specific and well-defined mandate – supporting the preparation of a project plan up to financial close – for a relatively short timeframe. For example, while the CFF can highlight the need for revised and new policies and regulations, it does not provide technical support to develop them; there is even a risk of 'mission creep' if the CFF attempts to single-handedly support all the changes required to facilitate transformation.

To further its ability to support transformation and support all of its different dimensions (e.g. political will, institutional capacity, technical innovation, etc.), the CFF should forge strong partnerships with other programmes and organisations with the mandate and resources to support additional systemic shifts in the cities. The CFF should consider expanding and deepening existing partnerships, in particular with other GIZ programmes and C40's climate action planning programme operating in the same cities, which both have the mandate and resources to further strengthen and institutionalise the capacity and system improvements generated by the CFF's intervention. These partnerships are likely to be crucial to the CFF's ability to deliver transformation in all of its facets.

More generally, the CFF is well positioned to deliver transformation. The adoption of this framework for transformation can allow the CFF to assess early signs of it, and whether and how additional support or partnerships are required to achieve more of it. Transformation is and will remain a driving force behind the CFF's objectives and activities, together with a continued focus on its main outcomes and impacts. But it is a continuous process, for which this report serves as a comprehensive benchmark for other organisations to replicate and for the CFF itself to refine in future after more experiences with different cities and different projects.

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