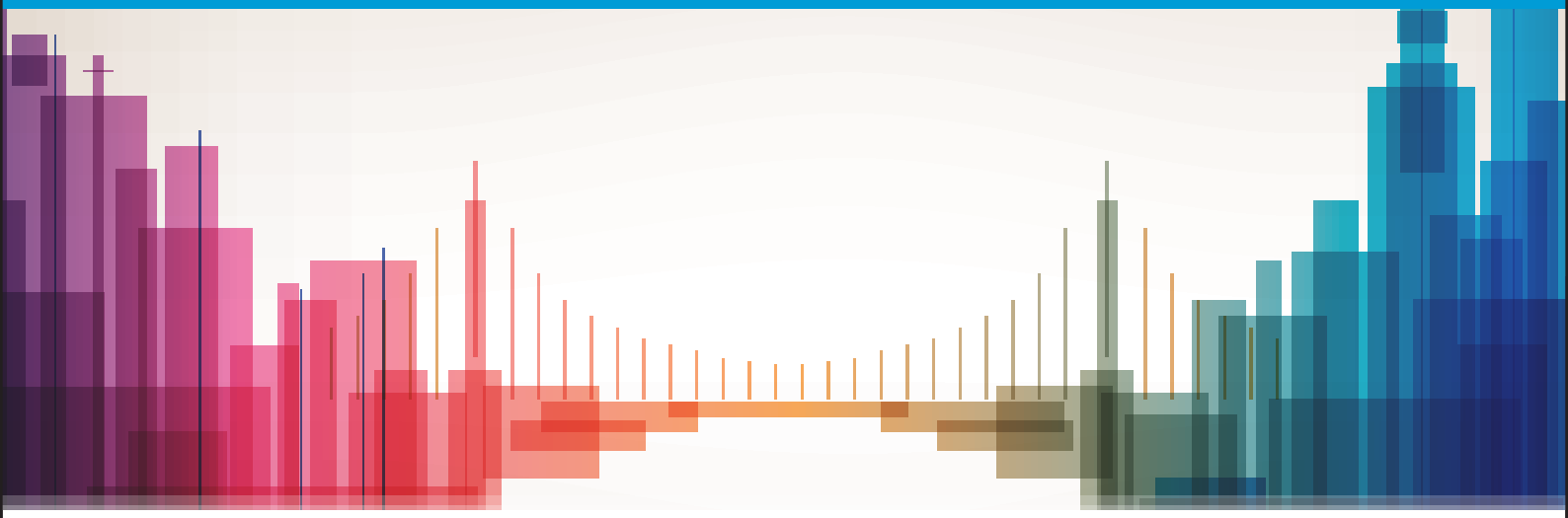
United 4 Smart Sustainable Cities

Guidelines on tools and mechanisms to finance Smart Sustainable Cities projects

A U4SSC deliverable



Convention on Biological Diversity

United Nations ECLAC

Food and Agriculture Organization of the United Nations

ITU

UNDP Empowered lives. Resilient nations.

United Nations Economic Commission for Africa

UNECE

UNESCO United Nations Educational, Scientific and Cultural Organization

UN environment programme

UNEP FINANCE INITIATIVE

United Nations Framework Convention on Climate Change

UN HABITAT FOR A BETTER URBAN FUTURE

UNIDO

UN OFFICE 4 PARTNERSHIPS

UNITED NATIONS UNIVERSITY UNU-EGOV Operating Unit on Policy-Driven Electronic Governance

UN WOMEN

WORLD METEOROLOGICAL ORGANIZATION


7,000
6,000
5,000
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1 2 3 4 5 6 7 8 9 10

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Foreword

This publication was developed within the framework of the United for Smart Sustainable Cities (U4SSC) initiative.

Acknowledgements

In 2016, the United Nations Economic Commission for Europe (UNECE), together with the International Telecommunication Union (ITU), launched the global initiative United for Smart Sustainable Cities (U4SSC). One of the aims of U4SSC is to develop guidance and training materials for city leaders to make their cities smarter and more sustainable and to support the achievement of international agreements, such as the 2030 Agenda for Sustainable Development (2030 Agenda) and the New Urban Agenda.

In 2017, under the umbrella of U4SSC, the secretariat of the Committee started developing the "Guidelines on tools and mechanisms to finance smart sustainable cities".

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Disclaimer

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Abbreviations

CAPEX	capital expenditures
CO2	carbon dioxide
COVID-19	coronavirus disease of 2019
DUP	detailed urban plan
ESG	environmental, social and corporate governance
ESG	environmental, social and governance
GIS	geographic information system
GUP	general urban plan
HIIs	hybrid investment instruments
ICTs	information and communication technologies
IFC	International Finance Corporation
IGO	inter-governmental organization
IRR	internal rate of return
IoT	Internet of Things
ITU	International Telecommunication Union
KPIs	key performance indicators
NGO	non-governmental organization
NPV	net present value
OPEX	operating expense
PACE	property-assessed clean-energy
PPP	public-private partnership
PPPP	people-first public private partnership
RDP	regional development plan
S&P	Standard & Poor's
SDGs	Sustainable Development Goals
SPV	special purpose vehicle
SSC	smart sustainable city
U4SSC	United for Smart Sustainable Cities Initiative
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
USD	United States Dollar

Contents

Executive Summary

These Guidelines elaborated on within this report have been developed as part of the United for Smart Sustainable Cities Initiative (U4SSC). They provide practical recommendations for city governments on how to develop investment-grade projects in support of sustainable smart urban development. The Guidelines explain what a sustainable smart city project is and provide an overview of traditional and innovative financing tools that are available and can be used to finance city projects. They also outline what types of potential investors exist and how to make a sustainable city development plan attractive to them. The Guidelines promote implementation of the *2030 Agenda for Sustainable Development* and the *Addis Ababa Action Agenda of the Third International Conference on Financing for Development*.

The objectives of the Guidelines are to:

(a) define sustainable smart city (SSC) projects;

(b) share the criteria potential investors consider when making investment decisions;

(c) explain what a list of investment-grade projects for sustainable cities is and how to create one;

(d) describe the different financing instruments that exist today; and

(e) provide an outlook on potential trends induced by the COVID-19 outbreak which might impact future investment in urban development.

The introduction explains why innovative financing is more relevant than ever before. It references major United Nations events and meetings that addressed the topic of financing the *2030 Agenda* and the importance of working across sectors (public and private) and levels of governance (international, national and local). It also explains why financing urban development projects at a local level is critical to achieving the Sustainable Development Goals (SDGs) globally. The introduction suggests that the financial resources needed for urban development projects are available through private investment. However, there is a need to build up the capacity of local authorities and stakeholders for them to be able to attract those investments. It stresses the importance of enhancing sustainable financing strategies and investments at country and regional levels.

The definition of an SSC project is provided in the first chapter of the Guidelines and is elaborated with a broader outlook on the areas the projects may touch upon. This chapter also explains the importance of a baseline reference for the progress of cities in becoming sustainable and smart, in order to be able to set meaningful targets for further development. The Guidelines suggest that cities use the *U4SSC Collection Methodology for Key Performance Indicators for Smart Sustainable Cities* (2017)[1] to develop their city profiles and set the benchmarks for further development. The first section also describes the ECE approach "Sustainable Smart Cities with Innovative Financing", which the ECE applies in its work with cities, supporting them to move from an evaluation of their sustainability to a concrete action plan for development. Action plans include both legislative recommendations and a list of investable projects for the city's sustainable development.

The second chapter of the Guidelines outlines who the potential investors for SSC projects are and what they are looking for. There are many potential investors, all with different characteristics, objectives and approaches. All want to gain from their investment, both financially – through return on investment, and reputationally – through environmental, social and governance (ESG) impacts. The chapter also outlines the ECE's people-first public private partnership (later referred to as PPPP) model. To attract investors, urban development projects need to be well-defined from the beginning. Understanding the actual condition of the assets of the project[2] allows a proper financing structure to be designed. Without it, no project can be developed. Once the financing structure is in place, markets facilitate the realization of ESG impacts alongside financial returns. Returns can be provided from charges collected from toll roads, a share of the savings generated by the project, revenue from a subscription payment, etc. Planning these returns is called "revenue modelling". In these cases, ESG impacts can act as a catalyst for a healthier, longer-term cash flow by developing the real assets as part of a thriving, stronger environment and society.

The third chapter offers ten practical recommendations on how to develop a list of investable projects for sustainable urban development.

A list or a "pipeline" of urban development projects should reflect a coherent strategy for achieving an objective for a given city or region. The recommendations invite stakeholders from all sectors (public, private, academia and civil society) to adopt a common development language based on the SDGs. City governments can then identify what changes are needed in the city to ensure it develops sustainably, how much money is required to implement these changes, and what proportion of the money required has yet to be generated. The process is complemented by a vision of the future of a sustainable city and a list of the projects needed in order to achieve this.

Once the vision is developed, it is suggested to group projects under four sectors: mobility, utilities, social infrastructure and real estate, and to estimate the cash flow those projects will generate. Cash flow can be positive or negative. The Guidelines suggest balancing cash-positive and -negative projects, to ensure positive inflow of external investment.

It is recommended to take the traditional city "master plan" to the next level. While, generally, cities have spatial master plans, the social, economic and environmental dimensions are often overlooked. It is suggested to develop a multi-layered master plan which will help generate positive economic, social, and environmental impacts for the city. How to create this plan is explained in detail.

Cities should examine existing operational frameworks to remove barriers for investors and lenders to enter the market. This can be done through ensuring that legislation is revised, where necessary, to enable new partners to collaborate on urban development projects. It also means that existing laws should be clear and their enforcement mechanisms reliable. Urban development dialogues that feed into this revision should be organized in a round-table manner and involve decision-makers from multiple levels, multiple sectors, and transdisciplinary teams. It is also recommended to translate urban development policies into investment programmes and city projects (top-down flow

of information) and to incorporate the feedback from projects to enhance development policies (bottom-up flow of information).

The Guidelines suggest that, by following this set of recommendations, a city will be able to create a virtuous urban development cycle, where commitment to achievement of the SDGs leads to a pipeline of investment-grade projects that generate public and private investment, contribute to job creation and protect the planet by generating sustainable economic growth. To implement this process, it is proposed to use a project-management tool based on a gate system, where a project is submitted to a "go/no-go" decision process at each stage. This is designed to ensure that the viability of a given project is reconfirmed at each stage. It is also proposed to create a project book that provides a perspective on how different projects contribute to the city's vision of its long-term sustainable urban development.

The fourth chapter of the Guidelines outlines how potential investors might assess the financial attractiveness of urban development projects. Investors have different levels of risk tolerance, which is the deciding factor for them when deciding to "enter" or "get out" of a project. Chapter 4 summarizes what attracts investors from the operational, financial and reputational perspectives.

The final section of the Guidelines provides an outlook on how the recent COVID-19 pandemic might change the behaviour of investors around financing urban development projects. The three priorities for every city and government will now be to respond, recover and rebuild. The section also elaborates on some trends that might emerge as a result and how these may influence investment in projects related to large infrastructure, industry and logistics, commercial real estate, hospitality and restauration, geriatric and nursing homes, offices, residential real estate, and public urban facilities.

Additional tools and insights for attracting capital to city projects are provided in the annexes of the publication.

Summary of recommendations

1. In order to develop a long-term investment strategy aimed at sustainable and smart city development, it is vital to establish reliable, evidence-based city policy benchmarks. The Guidelines suggest using the *U4SSC Collection Methodology for Key Performance Indicators for Smart Sustainable Cities* (U4SSC KPI Collection Methodology) for this purpose. This methodology is an internationally recognized tool developed by 16 United Nations agencies and provides a comprehensive set of indicators that are easy to use.
2. To be able to achieve sustainable and smart city development, a comprehensible "city action plan" should be developed, which relies on a baseline assessment of a city's sustainability using the *U4SSC KPI Collection Methodology*. A city action plan should be comprehensive, and cover proposed actions for the development of the legal and institutional framework to promote sustainable and smart urban development as well as urban development projects supporting the implementation of the framework.
3. It is vital to involve all key stakeholders in the process of developing a city strategy. It is equally important that a common framework for strategy development is used and accepted by all the stakeholders involved. This framework should be based on the "five Ps" of the *2030 Agenda*: people, planet, prosperity, peace and strong institutions, and partnerships.
4. Often, laws and regulations prevent investors from investing in urban development projects. This could be due to direct legislative barriers – when existing legislation does not allow private capital to participate in public-sector projects – or indirect – when laws are difficult to enforce and therefore investors do not want to risk their capital. The Guidelines suggest reviewing and, if necessary, revising existing institutional and legal frameworks to enable private-sector investments to engage in urban development projects. Effective and transparent legal and institutional frameworks are critical for attracting reliable investment partners.
5. Project documentation created by the sponsoring institutions prior to mobilizing resources should be "investor-minded". This is important for investors, developers, constructors, and any potential stakeholders, as they use these documents to evaluate their potential involvement in a project in the construction and/or utilization phases. This facilitates knowledge-sharing regarding the current conditions of the city and its projects. It also allows for risk management responsibilities to be split fairly amongst the parties involved.
6. In the development of investment projects, all the stages should be treated with equal importance, and it is recommended to complete all of them, as suggested below:

   (a) Understanding the project. It is recommended to collect all necessary information about the project: its objective, the implementation time-frame, the responsibilities of the people and organizations involved, and the tools and instruments to be used to implement the project;

   (b) Evaluating the project. It is suggested to establish a system for the evaluation of the project, including its effectiveness, efficiency and impact;

(c) Defining the project. It is proposed to use clear definitions and terminology which are understood in the same way by all parties involved;

(d) Implementing the project. This stage refers to the process of building the planned urban infrastructure and putting it into operation;

(e) Measuring the impact of the project results;

(f) Establishing communication. The Guidelines suggest preparing reports, as required, and organizing effective communication, using appropriate communication tools. It is proposed to share best practices to support their replication in other projects, as appropriate.

To develop a successful investment project, it is important to gain a clear understanding of the expectations of the users and to reflect those expectations in the project design.

Lastly, realistic expectations about the time-frame, quantity and quality of the project and its expected outcomes will prevent conflict and reduce the use of resources.

Introduction

Why is the topic relevant?

On 24 September 2018, during the High-Level Meeting on Financing the *2030 Agenda for Sustainable Development*, the United Nations Secretary General released a financing strategy which emphasizes the critical role of the United Nations in supporting and accelerating the mobilization of finance. It focused on three objectives to accelerate progress, from global to local levels:

(a) align global financial and economic policies with the *2030 Agenda*;

(b) enhance sustainable financing strategies and investments, at country and regional levels; and

(c) seize the potential of financial innovations, new technologies and digitalization, to provide equitable access to finance.

In his remarks to the participants in the High-Level Meeting, Secretary General Guterres stressed the "need to step up our efforts in developing innovative financing and in mobilizing private investment. Without the private sector and the business community, the goals are simply not achievable". He also underlined that "there is much to build upon. For example, investments that take environmental, social and corporate governance factors into account, including green bonds". He also mentioned that the World Bank, "as a vanguard on innovative finance", has brought new products to the market, including sustainable development bonds.[3]

These innovations in financing and approaches to investment are bringing about new opportunities for governments and investors to form partnerships that could drive forward the *2030 Agenda* and for investors to make profits in a sustainable way. Thus, it becomes increasingly important to understand and embrace these innovative methods and tools to attract money to projects where it can make a difference.

The *Addis Ababa Action Agenda on Financing Development,*[4] adopted by the United Nations in July 2015, provides holistic and strategic guidance for financing the implementation of the *2030 Agenda* and other relevant key United Nations agreements, such as the *Paris Agreement on Climate*, the *Sendai Framework for Disaster Risk Reduction,* and others. In the *Addis Ababa Action Agenda*, it is recognized that funds from all sources, public and private, bilateral and multilateral, domestic and international, as well as alternative sources, will need to be accessed in order to benefit cities. It stresses the importance of moving from funding (money provided directly by government for a specific purpose, or simply taxpayers' money) to financing (capital provided by financial institutions or lending agencies, private, public or otherwise, usually requiring repayment). This, however, requires an increase in the "bankability" of projects (the ability to attract investment from traditional sources at reasonable interest rates). To achieve this requires the combining of the resources of national authorities, local authorities and the private sector, to support priority actions for achieving SDGs and to ensure that "no one is left behind".

According to the *Action Agenda*, to effectively support the implementation of the *2030 Agenda*, the following measures should be taken:

(a) set up appropriate policies and regulatory frameworks to unlock private finance, trade collaborations and opportunities, and science and technological development, and to incentivize changes in production and investment patterns;

(b) mobilize public finance; and

(c) develop innovative financing instruments, such as PPPPs.

As the COVID-19 pandemic hit cities and communities worldwide, the topic of financing became even more central. On 28 May 2020, the United Nations High-Level Event on Financing for Development in the Era of COVID-19 and Beyond gathered more than 50 Heads of State and governments to discuss the impact this blow has caused to the world economy, as well as potential strategies for recovery. United Nations projections indicate that the pandemic could slash nearly USD 8.5 trillion from the global economy over the next two years. The need to create a space in which private-sector creditors can proactively engage in effective and timely solutions was, therefore, outlined among the six critical focus areas.[5]

These Guidelines suggest a set of tools and insights aimed at helping governments at local, regional and national levels to enhance urban investment strategies, by:

(a) aligning them with the *2030 Agenda*;

(b) using the suggested tools to structure urban development projects in an investment-attractive way; and

(c) taking into account how investors assess the attractiveness of potential urban projects for financing.

The 2030 Agenda at the local/municipal level

More than half of the planet's inhabitants live in cities, and this number continues to grow. Promoting sustainable urban development and building SSCs is the focus of SDG 11: "Making cities and human settlements inclusive, safe, resilient and sustainable". Achieving SDG 11 will require the joint efforts of governments and non-government stakeholders, working at national, global, regional and local levels. Representatives of all sectors – civil society, private sector, local communities, and national and local governments – must be included in the process. SSC projects have the potential to become a platform for this on-the-ground cooperation, as the implementation of SDG 11 will often take place at a local level, in cities. For representatives from all sectors to collaborate effectively, it is critical that all actors have the same understanding of the framework. This publication aims to provide this.

The *Addis Ababa Action Agenda* recognizes that investing in sustainable and resilient infrastructure, including transport, energy, water and sanitation for all, is a prerequisite for achieving many of

the SDGs. It also suggests that the global infrastructure gap in developing countries constitutes between USD 1 trillion and USD 1.5 trillion annually. In order to bridge this gap, the *Action Agenda* suggests launching new infrastructure initiatives which involve actors from all sectors: national and multilateral development banks, United Nations agencies, national institutions, development partners, lenders and private-sector investors. The *Action Agenda* also recognizes that investments in sustainable development usually take place at the subnational level, where financing and technical capacity support is often needed the most.[6]

It is critical to involve a wide variety of stakeholders to accomplish projects at the local level. The *2030 Agenda* calls for a spirit of strengthened global solidarity, focused, in particular, on the needs of the poorest and most vulnerable, and with the participation of all countries, all stakeholders and all people. As such, projects working towards the *2030 Agenda* should draw on multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the SDGs in all countries, and developing countries in particular.

It is important that, in working towards the *2030 Agenda*, potential projects are built from the ground up. The fundamental message of the SDGs, "leave no one behind", requires a clear flow of communication from the citizens to the project developers. Citizen input is an integral part of project identification and can happen in several different ways; for example, via democratically elected officials or via investment opportunities for citizens (including tax breaks for local project developers). Strong citizen participation provides credibility and collective ownership of projects. There are already some good examples of direct citizen participation in the process of project development. For example, the Dutch government encourages citizens to participate in improving the liveability of their neighbourhoods.[6] This is part of an ongoing initiative, the ProDemos Knowledge Portal, to increase awareness and appreciation of democratic institutions through education. Through this portal, citizens have the opportunity to grasp what they themselves can do to improve their local neighbourhood.

Financing sustainable smart city projects

Financing for sustainable development exists, and is available for smart city projects. The size, scale, and level of sophistication of the global financial system currently in place allows for it. However, accessing these potential sources of financing for sustainable development is difficult, particularly for municipalities, as available finance is currently not channelled towards sustainable development at the scale and speed required to achieve the SDGs.[7] There is an evident need for new and innovative methods of financing, which channel the funding towards projects that support achieving the *2030 Agenda*. The problem is not the lack of financing but the lack of "bankable" projects. The public sector, in particular at the city level, lacks sufficient capacity to develop bankable projects up to a standard that attracts lenders and investors.

There is no single generic solution for financing SSC projects. A wide variety of instruments can be used, depending on the objectives of the project, the level of development of the country's economy, which aspects of the SSC concept it is supporting, and the time-frame. Financing for

sustainable development will be achieved through a combination of financing options, according to their availability and appropriateness to particular SSC projects, as encouraged by the *Addis Ababa Action Agenda*. Policymakers must ensure that the necessary steps are taken to create an enabling environment to attract and sustain feasible sources of financing. Reusable and sustainable platforms, which are scalable for other planned projects, should be prioritized. Listening to and understanding the experiences of innovative financing from within and outside the region, adapted to meet specific local challenges, is a good starting point.

Cities are a crucial space in the effort to achieve the SDGs. According to the World Bank:[8]

> By 2050, with the urban population more than doubling its current size, nearly 7 out of 10 people in the world will live in cities. With more than 80 per cent of global gross domestic product (GDP) generated in cities, urbanization can contribute to sustainable growth if managed well by increasing productivity, allowing innovation and new ideas to emerge. However, the speed and scale of urbanization brings its own unique challenges. These include meeting accelerated demand for affordable housing, well-connected transport systems and other infrastructure, basic services, as well as jobs, particularly for the nearly one billion urban poor who live in informal settlements. Conflicts are on the rise, resulting in 60 per cent of forcibly displaced people living in urban areas.
>
> Once a city is built, its physical form and land-use patterns can be locked in for generations, leading to unsustainable sprawl. Urban sprawl and inefficient land use contribute to biodiversity loss, with around one million animal and plant species threatened with extinction. Cities also play an important role in tackling climate change, as they consume close to two thirds of the world's energy, and account for more than 70 per cent of global greenhouse gas emissions. As cities develop, their exposure to climate and disaster risk also increases.
>
> Building cities that "work", that are inclusive, safe, resilient and sustainable, requires intensive policy coordination and investment choices. National and local governments have an important role to play in taking action now, to shape the future of their development and to create opportunities for all.[8]

However, at the same time, private corporations also see this as an opportunity. According to McKinsey & Company:

> To keep pace with the projected GDP growth over the next 15 years, developing countries will need to invest more than USD 2 trillion a year in infrastructure. To do so, governments will need to unlock private-sector infrastructure financing with partners in development finance institutions (DFIs). Solutions will go through innovative finance in order to increase the level of the much-needed private financing.
>
> Governments and DFIs have to establish infrastructure as an investable asset class, and can increase availability of funds (liquidity) from both domestic and international providers of capital; they can also increase the scale of investment by bundling together individual projects and providing a portfolio of products in which such providers of capital can invest; and, lastly, as proposed by many stakeholders, address the governance and capability gaps that often hinder private-sector investment.[9]

To clarify issues in attracting investors to close this development gap, the Guidelines focus on two elements: what the problem is and how it can be solved. The problem is fulfilling the needs of citizens, be this water, energy, or infrastructure of any type. The solution, in many cases, is the development of an efficient and successful "real asset"[10] (in this document, the term real asset refers to real estate and infrastructure assets), which would cover the needs of that group or community.

The Guidelines explain how these solutions can be designed as opportunities for investors, enabling the creation of feasible and financeable projects. They also provide a set of tools, which can be used to prepare a pipeline of projects for sustainable and smart city development. These tools help this pipeline to serve as a long-term cooperation roadmap between cities and investors.

Endnotes

1 U4SSC (2017). Collection Methodology for Key Performance Indicators for Smart Sustainable Cities. Available at: https://www.unece.org/index.php?id=47031

2 Project Assets comprise of all tangible and intangible assets relating to the Project Facility, as the case may be, excluding land but including and not limited to rights over the Site in the form of license, right-of-way or otherwise; tangible assets such as foundation, buildings, substructures and superstructures, pavements, over-bridges, works, subways, drainage facilities, sign boards, equipment, electrical works for lighting of and telephone and communication equipment; financial assets, such as receivables, cash and investments; rights under the Project Agreements and other agreements and insurance proceeds (Law Insider 2020).

3 United Nations (2018). Secretary-General's remarks to the High-Level Meeting on Financing the 2030 Agenda for Sustainable Development [as delivered], 24 September 2018. Available at: https://www.un.org/sg/en/content/sg/statement/2018-09-24/secretary-generals-remarks-high-level-meeting-financing-2030-agenda

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8 World Bank (2020). Urban Development: Overview. Available at: https://www.worldbank.org/en/topic/urbandevelopment/overview

9 McKinsey & Company (2019). Unlocking private-sector financing in emerging-markets infrastructure. Available at: https://www.mckinsey.com/industries/capital-projects-and-infrastructure/our-insights/unlocking-private-sector-financing-in-emerging-markets-infrastructure

10 Real assets are identifiable assets, such as land and buildings, equipment, patents, and trademarks, as distinguished from financial investments.

Chapter I: Definition of Sustainable Smart City Projects

Sustainable Smart City (SSC) Projects are those which help a city to become more sustainable and smart. U4SSC definition of the characteristics of Smart Sustainable Cities (later referred to as SSCs) focuses on what smart cities should "do":

Box 1: Definition of SSCs[1]

A "smart city" should be inclusive, resilient, safe, sustainable and "more connected".

Hence, it should:

(a) ensure access to adequate and affordable housing;

(b) provide access to safe, affordable and sustainable transport systems;

(c) enhance inclusive and sustainable urbanization;

(d) safeguard the world's cultural and natural heritage;

(e) reduce the number of deaths, displacements and losses caused by disasters;

(f) reduce the city's environmental impact;

(g) provide universal access to safe and accessible green and public spaces;

(h) support positive economic, social and environmental links between urban and rural areas; and

integrate innovative technologies and information and communication technologies (ICTs) within its different sectors.

The notion of a SSC entails the implementation of technologies and strategies aimed at meeting today's needs without compromising those of future generations. It is also about understanding the city itself – its identity, its goals, its stakeholders and their priorities. In this way, SSC projects can be tailored to the unique aspects of each city, supporting and developing them, while enhancing the living quality and sustainability of the city. In SSC projects, this is achieved using information and communication technologies (ICTs). Examples of these may include various software applications or operating systems, like smart water meters or "e-government", or even, simply, wireless broadband.

The successful development of SSCs requires assessment and evaluation based on the internationally agreed definition of an SSC, developed by the ITU and the UNECE:

> A smart sustainable city (SSC) is an innovative city that uses ICTs and other means to improve quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social, environmental as well as cultural aspects.[2]

The three dimensions of SSCs

Based on the definition, a set of international *Key Performance Indicators for Smart Sustainable Cities* (KPIs for SSCs)[3] to achieve the SDGs were developed by the ITU and the UNECE. A summary of the three dimensions of the KPIs for SSCs is provided in Box 2.

Box 2: Summary of the dimensions of SSCs in the KPIs for SSCs

DIMENSION	DESCRIPTION
Economy	ICT (including ICT infrastructure, water and sanitation, drainage, electricity supply, transport, and the public sector) Productivity (including innovation and employment) Infrastructure (including water and sanitation, waste, electricity supply, transport, and building and urban planning)
Environment	Environment (including air quality, water and sanitation, waste, environmental quality, and public spaces and nature) Energy
Society and culture	Education, health, and culture Safety, housing, social inclusion, and food security

The KPIs enable the establishment of a baseline for just how sustainable and smart cities currently are. They can also be used to measure progress over time, comparing performance with other cities through analysis and sharing. The KPIs can therefore facilitate the sharing of best practices and set standards for meeting SDGs at the city level.

What are SSC projects?

SSC projects aim to improve some, or all, of the three dimensions of SSCs, as described above.

For example, projects may implement a "circular city" approach.[4] An overview of this approach is given below.

Box 3: Overview of the "circular cities" concept

A circular economy in a city aims to create a sustainable system at the city level that allows for the long life, optimal reuse, refurbishment, remanufacturing and recycling of products and materials.

Four components constitute the key variables in the circular city implementation framework, that is, the necessary components that are needed to implement circularity in cities:

1. city assets and products, which encompass various city infrastructures, city resources, city goods, and services available for use/consumption in the city;
2. circular action items, a set of specific, outcome-orientated actions that can be applied to city assets and products that include sharing, recycling, refurbishing, reusing, replacing, and digitizing;
3. circular city outputs, i.e. outputs of circular action items applied to city assets and products; and
4. circular city enablers, including various supplementary and complementary items, which catalyse and support the implementation of circular city approaches.[5]

Projects implementing this approach can affect the economy (e.g. by improving the recycling infrastructure), the environment (e.g. by reducing energy consumption), and society and culture (e.g. by improving public health through reduced emissions).

Usage of the ICTs can be also beneficial for various types of SSC projects. For example – the collaborative platforms provide an opportunity for the citizen to participate in planning the urban design of their cities (Box 4).

Box 4: C³PO Collaborative ICT platform in Montreal

C³PO aims to provide a collaborative platform in the cloud for the co-design of cities. The C³PO platform is unique because it covers the entire urban project development process where cities empower, encourage and guide different actors (citizens, decision makers, architects, etc.) to develop an urban project together. C³PO does not intend to replace or modify existing applications by offering unique but partial city co-design solutions (simulation tool, open API, 3D modelling and visualization, game tool, etc.) but it can be seen as an open and generic intermediary that allows interaction between existing applications through a unique multidimensional semantic repository (covering the different types of information in city codes such as GIS, BIM, electrical networks, traffic, etc).

https://itea3.org/
https://itea3.org/project/success-story/c3po-success-story.html

Another example is projects that stimulate transition to a "green economy", as defined by the Green Economy Initiative, led by UNEP. The Initiative "aims to demonstrate that investing in green sectors – such as energy-efficient technologies, renewable energy, public transport, sustainable agriculture, environmentally friendly tourism, and the sustainable management of natural resources, including ecosystems and biodiversity – has a better chance of bringing about recovery and sustainable growth, increasing competitiveness, saving and creating jobs, improving the quality and decency of jobs, and reducing poverty, while tackling acute environmental problems".[6]

Green economy projects not only protect the environment, but also improve the economic, social and cultural dimensions of a city by increasing employment potential and public transport.

UNECE within one of its technical cooperation projects[7], developed an approach of work to support the SSC transition through evidence-based policies and innovative financing methods.

In order to determine what projects are appropriate for the local context, it is recommended to start by understanding the potential areas for improvement within the city. National and local governments can do this by conducting a SSC KPI evaluation using the U4SSC KPI evaluation methodology.[8] This can be done with the help of the experts from the U4SSC network, upon request by the government. The assessment can also be done "in-house", as the methodology is openly available and can be used by any urban development expert, inside or outside of the city or national government.

It is recommended that the assessment evaluation be made publicly available (e.g. on the website of the city or municipality). Based on the evaluation, the national or local government, with involvement of relevant stakeholders (e.g. civil society associations, private-sector actors, etc.), is able to develop an action plan for the city's sustainable development. It is recommended that this plan includes

both policy improvement and a list of costed city project proposals. Such an approach can help city governments to seek financing for development projects, both from private-sector stakeholders and from national budgets.

The UNECE works with cities from the UNECE region using the "Sustainable Smart Cities with Innovative Financing" approach[9] to build the capacities of city governments, both to evaluate their performance and seek financing for their development projects.

The first step in this approach is the development of a city profile, using the U4SSC KPI evaluation methodology. The profile covers the assessment of a city as smart and sustainable, and provides recommendations for future development. The city is then supported by UNECE experts in developing its action plan, based on recommendations provided in the city profile. The action plan consists of two parts: (i) policy improvement (legislation); and (ii) costed city development projects. Both parts of the plan are targeted at supporting the sustainable smart urban development of the city.

These Guidelines are aimed at supporting cities, with the development of a list of costed development projects as a part of the action plan. They will also discuss how to ensure that project proposals are understandable and attractive to potential investors, from both the private and public sectors.

Endnotes

1 U4SSC (2017). Collection Methodology for Key Performance Indicators for Smart Sustainable Cities, page 3. Available at: https://www.unece.org/fileadmin/DAM/hlm/ documents/Publications/U4SSC-CollectionMethodologyforKPIfoSSC-2017.pdf

2 UNECE, Committee on Housing and Land Management (2016). The Key Performance Indicators on Smart Sustainable Cities to address the achievement of the Sustainable Development Goals. ECE/HBP/2016/4. Available at: https://unece.org/fileadmin/DAM/hlm/documents/2016/ECE_HBP_2016_4.en.pdf

3 Ibid.

4 UNECE, Committee on Urban Development, Housing and Land Management (2019). A Guide to Circular Cities. ECE/HBP/2019/Inf.6. Available at: https://www.unece.org/fileadmin/DAM/hlm/sessions/docs2019/Info_6_Circular_Cities.pdf

5 Ibid.

6 United Nations (2016). Green Economy Initiative. Available at: https://www.unsystem.org/content/green-economy-initiative-gei

7 UNECE, Housing and Land Management. UNDA 12th tranche project on innovative financing for sustainable smart cities. Available at: https://unece.org/housing/innovativefinancing-sustainablesmartcities

8 U4SSC (2017). Collection Methodology for Key Performance Indicators for Smart Sustainable Cities. Available at https://unece.org/housing-and-land-management/publications/collection-methodology-key-performance-indicators-smart

9 UNECE. Short overview of the UNECE «Sustainable Smart Cities with Innovative Financing» Approach. Available at: http://www.unece.org/fileadmin/DAM/hlm/Smart_Sustainable_Cities/Resources/UNECE_Approach_Sustainable_Smart_Cities_with_Innovative_Financing_.pdf

Chapter II: Who are investors and what are they looking for?

An investor is a person or entity that provides capital for an asset in order to make a profit or gain an advantage (financial or non-financial). Investors look to maximize possible returns, while minimizing risk, in the least possible time. They make investment decisions based on their financing criteria and according to their management capacity, market size, geography, industry, type of company and the market share of their ventures.

This definition is appropriate in most cases; however, it is not sufficient for certain asset types and locations. An investor in a SSC project can be public (a government, an inter-governmental organization, or a non-governmental organization) or private. Moreover, profits or financial advantages are not the only way for investors to benefit from investments. Environmental, Social, and Corporate Governance (later – ESG) impacts, as indirect added value, or improved living conditions – either realized or potential – can also be sought as a return by investors.

Box 5: UNECE People-First PPP model

The UNECE PPPP model[1] can be used to attract investors from the private sector who are looking for "impact investing"[2] opportunities. PPPPs are a type of public-private partnership (PPP) designed to implement the SDGs. The "people-first" approach to PPPs helps to overcome weaknesses in the way the traditional PPP model is often implemented, particularly the lack of an explicit focus on generating public value, when private-sector partners prioritize profit. Traditional PPPs are contract delivery tools for public infrastructure provision, drawing on initial private financing. They fall into two categories: "government-pay PPPs", which are primarily funded by taxpayers, and "concessions", primarily funded by direct charges on the users of the infrastructure.

People-first PPPs, however, aim to make PPPs "fit for purpose" by orienting them towards meeting the needs of people first, and achieving the SDGs. The concept is critically important to ensure that PPPs focus on delivering desirable and necessary outcomes from infrastructure investment that provide "value for people".[3]

Annex I provides a list of the 10 principles of people-first PPPs. Each of these principles constitutes a response to a key challenge to PPPs for generating sustainable development, and should be implemented by undertaking a series of actions. The document *Guiding Principles on People-first Public-Private Partnerships in support of the United Nations Sustainable Development Goals* provides a comprehensive overview of such actions.[4]

For example, principle 9 of the Guiding Principles suggests using blended financing (a mix of public and private-sector money) to promote private-sector investment in people-first projects. The idea is not to put blended financing into projects that the private sector would have financed themselves, but rather blending public or philanthropic capital with private capital leading private investors to invest in areas where they otherwise would not have.

Two types of stakeholders often need to be engaged as part of people-first PPPs. These are:

(a) urban entrepreneurs, construction companies and project developers: these organizations are the engines that develop the urban ecosystem further by pushing (via their business missions, milestones and objectives) the growth of urban and suburban ecosystems[5] where most economic activity is done. They require financing in order to do this, and spend time, energy and resources on fundraising activities, and finding financing sources, such as investors, lenders and grant providers. They commit to timelines and quality regarding delivery. These stakeholders are often concerned regarding unfair valuations and bureaucratic hurdles and delays from their "public" partners; and

(b) ICTs, engineering, procurement, and construction companies, and service providers: urban development opportunities often require a whole set of solutions and equipment, from all sorts of providers. These include lawyers, financiers, information technology, consultants, engineers, architects, and manufacturers.

Investors can provide both funding and financing. The basic difference between these is that funders do not expect repayment, while financiers do, and charge interest. Repayment is usually financial, but non-financial returns are also possible. In simpler terms, "funding" is usually public money (collected through taxes, etc.), and "financing" is private money (private-sector investors).

Box 6: Sources of funding and financing

Funding sources	Financing sources
Property taxes	Commercial banks
Business taxes	Development banks
Municipal income tax	Municipal or project bonds
Tolls and user charges	Green bonds
"Pay-for-performance" [1]	Tax increment financing
Asset sales and lease	Leasing and vendor finance
Government grants	Credit guarantees

[1] *Environmental Incentives. Pay for Performance: Pay for Measurable Conservation Outcomes, Not Actions. Available at https://enviroincentives.com/services-overview/pay-for-performance/*

In cases where funds are provided in full by the government, it is advisable to spread payments (for example, to contractors) over the life of the real asset rather than paying upfront, as this reduces risk. Moreover, for projects which are able to generate enough cash flow to pay off private-sector loans, it is advisable to draw on both public and private sources of funding and financing respectively.

Types of investors in urban development

Debt and equity finance

Investors provide funds in two ways: debt and equity finance.

Debt finance is the process of borrowing money from a lender and, over an agreed time period, the money is returned with agreed interest. The "lender" is the provider of debt financing. This can be in the form of promissory notes, bonds, lending contracts, mortgages or other instruments that require the payback of the loan. The borrower gives priority to returning money to the lender over partners (equity financiers). The repayment terms may have a "grace" period during which no repayments are to be made. Usually this corresponds to the construction phase, or even up to the moment the infrastructure begins to function. Lenders do not generally have a say in activities during the project. Real asset developers, therefore, generally prefer this kind of finance, due to the independence it gives them to operate, since they do not need to consult lenders to make decisions.

Typically, lenders earn interest on their debt, at a rate reflecting the risk of default; the lower the default risk, the lower the interest rate. Lenders generally make loan decisions based on factors including credit, income, balance sheet/assets, cash flow, and collateral. By providing lenders with credit enhancement, default insurance, collateral enhancement, liquidation/creditor preferences

and superiority, interest rates can be lowered, making the loan cheaper and therefore more accessible for projects.

Equity finance involves lenders taking a stake in the project they are financing, giving them voting rights and control. Investors become partners, and receive their return – if any – after outstanding debts are repaid. Real asset developers commonly use this kind of financing when investing in public infrastructure.

In short, debt financing allows project managers to borrow money at a set interest rate and a fixed payment schedule that does not depend on how the project is implemented. Also, the finance provider does not control the process of the project implementation, so long as the debt is paid on time. A good analogy is a home mortgage. Equity finance, however, gives the investor the power to make, or contribute to, decisions about the project while it is being implemented. An analogy here would be buying a house for cash together with a partner.

Public and private finance

There are two types of lenders: public finance lenders and private finance lenders.

Public finance lenders include governments, non-governmental organizations (NGOs) and inter-governmental organizations (IGOs). Before describing their impact as investors, it is important to outline the role of public finance lenders. They usually act as "risk mitigators", who have the power, through their involvement, to attract private investors. The role of national and international institutions is to fulfil the greater needs of society and the environment. They define which areas of development require investment and, more importantly for the investor, they own or control most of the land and natural resources. They drive urban development plans and create the legal and fiscal frameworks that impact directly on investments, from general urban plans to regional/national economic development agendas. National and international institutions set and influence taxation, financial and legal frameworks; as such, they set the timing for every development project. Timing is as important to an investor as the capital itself, if not more. These institutions are therefore the biggest factor in the investment equation, with the power to reduce the risk that usually prevents investors from entering a project.

These institutions hold large amounts of capital, which they use to finance and fund projects in different ways. The three potential types of public finance lenders are:

(a) NGOs: not-for-profit organizations that work independently of governments. They expend a lot of effort fundraising, and often operate through hybrid approaches, such as partnering with for-profit businesses. NGOs serve as a neutral guarantor of the goals of a project, so as to reassure the public of its value to the community;

(b) IGOs: multilateral organizations established by treaty or other agreement. Examples include the United Nations, the World Bank, and the European Union. The most influential IGOs related to urban development are the regional development banks, including: Asian Development

Bank, Inter-American Development Bank, Black Sea Trade and Development Bank, Council of Europe Development Bank, European Investment Bank, European Bank for Reconstruction and Development. Other organizations and financial institutions with working programmes in the sphere of urban development are also influential, for example, the ITU and the United Nations Environment Programme Finance Initiative, as well as other organizations adhering to the wider investment ecosystem of the United Nations Principles for Responsible Investment, such as the OECD, the World Bank, and the IFC.

IGOs have a proven capacity to influence public policymakers regarding treaties and conventions. They can also provide financial assistance via financing and funding, activating credit enhancement and "reducing the risk" for investors, thus promoting investment and lowering interest rates and therefore the costs of capital. They lead PPPs, foster research into new technologies and support platforms which engage funds to impact projects. Ultimately, they use financial instruments to support the development of urban areas, in an effort to address global issues such as climate change. IGOs can effectively leverage their macro perspective, power and influence in order to facilitate, accelerate, and ensure the provision of resources such as capital investment, management capacity and technological advances for projects; and

(c) Governments: They establish legislation with the intent to serve the health, welfare, safety and security needs of the community they govern. Governments generate revenue from taxation, royalties, and tariffs. While many have economic development goals and investment programmes for stimulating jobs and attracting economic projects, these programmes and investments are often subject to delays and insufficient resources due to the lack of proper management skills and the short-term views taken by some interested parties.

Private finance lenders comprise international ("larger") investors, bigger local companies, international conglomerates, and other institutional investors, such as banks and funds. These organizations are often involved in larger-scale urban development projects, such as infrastructure, energy, and large housing schemes.

Private finance investors use their private capital, leveraged with either debt or equity instruments, to fund special purpose vehicle (SPV)[6] companies. These SPVs are specialized in urban development, and provide high returns while involving high risks. Private finance investors have a greater impact on the larger infrastructure projects, since they have a proprietary approach to the projects and a more traditional structure for controlling the risks. Equity finance is relatively new to urban development but is proven to have a potentially crucial role. This is because private finance investors using equity finance often invest eagerly in the innovative technology and start-ups that are shaping the "smart cities" ecosystem, providing new solutions to old problems, such as optimizing energy use, traffic solutions, water consumption, and waste upcycling.

Institutional and non-institutional investors

Private investors can be divided into institutional and non-institutional (retail) investors, depending on the investment.

Institutional investors are private investment entities normally formed by groups of individuals or companies. They handle large amounts of capital, allowing them to diversify their portfolios in order to obtain attractive returns at a relatively moderate risk level. These organizations are banks, pension funds, mutual funds, insurance companies, and investment companies.

Institutional investors are very important in financing infrastructure because they are focused on long-term, low-risk, fixed-income investments that match the nature of their other investments and instruments, typically sovereign insurance, pensions, liabilities, and large amounts of money in securities and funds.

As institutional investors take less risk than other investors, their returns are also smaller. There is a big "secondary" market for institutional investors within infrastructure projects. This usually works by big investors providing financing during the construction stage, where the risks are much higher, and then selling the debt to institutional investors during the operational phase of the project, where the risks (and returns) are lower. There has been a steady increase in the involvement of institutional investors in infrastructure projects.

Box 7: Investor involvement in types of infrastructure projects

<table>
<tr><th colspan="4">Institutional investor targets in infrastructure</th></tr>
<tr><th>Infrastructure</th><th>Private equity</th><th>Fixed income</th><th>Equity</th></tr>
<tr><td colspan="3">Brownfield projects</td><td rowspan="3">Public and listed infrastructure companies</td></tr>
<tr><td colspan="2">Equity funds (not listed)</td><td>Debt funds</td></tr>
<tr><td>Direct equity</td><td>Greenfield in developing economies</td><td>Project and corporate bonds</td></tr>
</table>

Non-institutional or "retail" investors are usually private or individual investors and privately-owned companies. Non-institutional investors can be any legal person gradually creating their own investment portfolio through small to medium-sized investments, usually similar in size and market reach. Each private investor has their own preferred kind of investments or type of project (e.g. residential, industrial, infrastructure, commercial, public, private, to-sell, or to-rent). Each also has their own level of risk tolerance.

Non-institutional investors invest for themselves, and manage their own capital. They often pay higher processing fees on their trades, as well as marketing, commission, and other related fees because of their relatively small purchasing power. They are also afforded certain legal protections, and are barred from making certain risky, complex investments because they are considered "unsophisticated" investors. In urban development, these investors are mainly real estate development companies and companies related to construction activities which are driven

by personal goals, such as financing the purchase of a real estate portfolio or making profits through the production of real estate assets to sell or lease.

Other "smaller" investors

These could comprise family and friends, "business angels" (individual financers), family offices, or trusts and foundations. None of these are typical urban development investors. However, if they are geographically or sentimentally close to the environment of the project, they may invest, with their main objective being to help the project progress. Generally, these investors lend small amounts of money in the short term during the first life cycles of the project, in exchange for a very small (sometimes even zero) return. In urban development projects, these tend to take the form of cooperative investments, crowdfunding structures, microfinance, or direct sponsorship/ donations to projects.

Smaller investors also sometimes invest in innovative companies during their initial stages of development. If these investors have economic and management knowledge, as well as experience, contacts, resources etc., their contribution to urban development projects can go beyond their capital contribution, involving performance control or even including lobbying capacity for larger projects. Otherwise, they tend to set up SPVs to deliver the operating assets, before transferring the liabilities and guarantees to larger investors and exiting with a financial return and reputational gain. Business angels are especially important as a source of capital for "smart" solution creators, since they tend to focus on innovative technologies.

A special type of "small" private investor with greater potential impact on urban development is philanthropist structures created by wealthy individuals and families. These usually take the form of foundations. They prioritize financial control over asset performance, and tend to get involved in projects where they have gained an insight into the needs of a community and feel certain about the impact their investment will have on these. Philanthropic investments in urban development can provide capital, and therefore help realize projects, in places where not even governments would invest due to a lack of guarantee on investment returns.

Strategic investors and financial investors

Investors can also be divided into two types depending on the objective of the investment: strategic investors and financial investors.

Strategic investors usually have a relationship with the project or company where they make the investment, such as the project's geographical location in an area where they and their competitors, suppliers and customers are already active or the project's position in a location or sector that they intend to enter in the near future. These companies aim to increase the added value from the project to their businesses in the form of management skills, capital and innovation, therefore usually making long-term investments.[7]

Financial investors usually have the objective of generating a financial return on the investment made. They look for sectors and projects where there is potential for strong growth, and establish a medium-term exit strategy without much regard to the responsibilities or risks associated with the long-term consequences of the project.

Local vs foreign financial investors

Local investors are those with local and/or national resources that are already active in the country where the project will take place. Foreign investors are those with foreign and/or international resources that may or may not have a local practice, but usually have the capacity to set it up in the country where the project is developed.

The main advantage of turning to local investors is their ready-to-go set-up in the phase of construction and knowledge of the local frameworks and regulations. Foreign investors, on the other hand, can be helpful when designing larger projects that involve international IGO sponsorships or are designed at an international level. Their experience in dealing with international "red tape" bureaucracy, accessing international capital, as well as their broader outlook, provides an additional guarantee for the completion of projects.

There are also cases when it could be beneficial to combine the local and foreign investors for a project. For instance, combining the access to international capital and strength of the international investor during the design and tendering phase with the local investor's access to resources and framework knowledge would encourage the successful and timely completion of the project.

In any case, foreign capital needs a local workforce and contacts to accelerate procedures and construction to ensure that capital can transfer to local contractors under the umbrella of international players, and these contractors can profit from their efficiency to gain contracts in foreign projects as both: investors and/or contractors.

What are investors looking for?

In order to make decisions about their involvement in projects, private companies need some basic data and knowledge about the resources available. This particularly includes answers to the traditional questions where, how, who and, ultimately, and why.

- Where is the project? What is the legal and physical status of the place where the project will be developed?
- How can the solution be achieved within local legislative frameworks, available technology, and human resources?
- Who will do it: local or external capacity for construction and finance? What are their procurement strategies?
- Why do it? A real asset development must promise attractive potential positive returns for investors. These could be financial (profit) or non-financial (positive economic, social or environmental impacts) that may translate into an improved reputation for the investor. These profits, financial or otherwise, can also take the form of new contracts and projects, better financing options coming from sustainably led financiers, or improved terms with current finance providers. The driver for establishing the value of the project to investors, and therefore generating financial returns is an understanding that a positive impact will be created by the public utilization of the assets (i.e. use of hospitals, parks, roads, etc.).

If the accumulation of financial and non-financial[8] returns is lower than the investment, this will lead to the failure of the project. For this reason, it is vital to assess the resources available, quantify the costs in an accountable way, and translate the returns into financial KPIs beforehand, to ensure the minimum return expected of the project is accurately determined.

Stimulating urban investments

A list of typical financing mechanisms[9] includes, among others:

(a) project financing: this focuses on the financial assessment of a given project, rather than on the business/enterprise as a whole. The repayments and interest are set according to the estimated cash flows and profits generated by the project;

(b) traditional loans and leases: these focus on paying for infrastructure investment over time. Repayment can come from public-sector or third-party/user payments. This kind of financing is at the project level, and involves a private equity partner;

(c) vendor finance: in this case, an equipment vendor, an engineering, procurement, and construction contractor, or another supplier offers financing for the project. An equipment vendor, for example, might be more willing than a commercial lender to assume those risks because it has a better understanding of the technical risks of the project, or of the industry concerned;

(d) consumption-based financing: a project sponsor finances the creation of technology based on the usage, and adjusts capacity up or down as needed. Financing is, therefore, at the supplier level rather than the project level;

(e) "as-a-service" financing: in this case, rather than using finance to purchase technology, the project uses financing as a service. Financing is therefore at the supplier level;

(f) concession financing: this is when a project benefits from technology at very little or no cost, while enjoying incremental revenues and cost savings;

(g) revenue-share financing: this is financing in which a project obtains funding for technology investments in exchange for a share of the revenues from customer contracts. Revenues may be committed (planned and occurring regularly, for example, a subscription) or uncommitted (occurring on demand, for example, items purchased from a shop); and

(h) equity financing: traditionally, this kind of financing aims to scale business across multiple cities using capital and expertise provided by a strategic private equity partner who purchases a percentage of the company.

Four important financing tools

A more detailed list of several existing financing instruments that can be used to stimulate investment in urban development with the aim of producing economic, environmental and social benefits can be found in Annex II. While a lot of traditional and innovative financing tools exist, four exemplary tools are described in detail below:

1. Municipal bonds or municipal securities (munis) are bonds issued by states, cities, regions and other governmental entities to raise money to build roads, schools and other public infrastructure. These bonds pay the buyer a specified amount of interest and return the capital on a specific date; the maturity date ranges from short term (two to five years) to very long term (over 30 years). There are three common types of munis:

   (a) **general obligation bonds** are issued by states, cities or counties, and are backed by the "full faith and credit" of the government issuing them. Their creditworthiness is based primarily on the economic strength of the issuer's tax base;

   (b) **"revenue bonds"** are generally backed by fees or other revenue generated by a facility, such as tolls from a bridge or road, or leasing fees. Their creditworthiness depends on the financial success of the project they are issued to fund; and

   (c) **"conduit bonds"** are a type of revenue bond often issued to fund a private entity with a public purpose, such as a not-for-profit hospital or an affordable housing development. One common structure is for the private entity to use a governmental issuer (a city, state or instrumentality of a state, for instance) as a "conduit" for the financing of such projects.

   A good example of the potential bonds available to support public projects are property-assessed clean-energy bonds (PACE bonds), due to their high environmental impact. These

are municipal alternative bonds that promote investment in energy efficiency, clean-energy generation, water conservation, and other such projects. The bonds utilize tax assessment and enforcement by the government or tax authority to lower risk and, therefore, the costs of capital. PACE bonds ease traditional funding requirements (e.g. cash, credit and collateral) by increasing the value of the property as it is enhanced by the PACE improvements. Those with poor credit, inadequate cash, or owners with high debt ratios can still obtain PACE financing, as the tax assessment obligation runs with the property, and is not an owner obligation.

As PACE bond portfolios are possible to securitize,[10] they are high-performing, with low default rates, and have received AAA ratings from Standard & Poor's (S&P).[11] They are therefore very attractive to private capital, such as pension funds and insurance companies, which seek predictable, regular and secure returns at favourable interest rates.

2. Conservation easement is a voluntary, legal agreement, generally between a landowner and a land trust or government agency. It permanently protects land by giving incentives to those agreeing to conserve it, through activities such as land restoration, reforestation, species conservation, and maintenance for public use with specific allowed purposes (e.g. hiking, fishing, hunting, and camping). Incentives can include tax credits, charitable deductions, zoning variances, permitting, and carbon credits. The land is often maintained in private ownership. Governments can also suggest easements for projects involving soil remediation, restoration, and reforestation of degraded polluted lands and restoration of water bodies.

3. Green/climate bonds are a type of debt instrument created to provide financing for environmental projects. They are issued to raise funds for climate-change solutions, such as greenhouse gas reduction and other related projects or programmes. The bonds are often linked to the ability of the projects to make repayments through profits or their generated outcomes, backed by their balance sheets. Green bonds provide investors with a way to earn tax-exempt income while supporting positive environmental impact. The issuers of these bonds benefit from attracting increasing amounts of capital from a growing class of investors who want their money to be used to make a positive impact on the environment, in addition to providing them with financial returns.

   The first entity to issue green bonds was the World Bank, in 2008; since then, it has issued over USD 3.5 billion in debt designated for issues related to climate change. In the 10 years until 2018, the World Bank's green bond programme surpassed USD 10 billion, issuing over 130 bonds in 18 difference currencies.[12] With governments and financial powerhouses such as Blackrock, Van Eck and Allianz SE issuing and/or investing in green bonds, the market for them expanded significantly from USD 36.6 billion[13] in 2014 to USD 167.0 billion in 2018, and is estimated at USD 180.0 billion in 2019.[14]

4. Hybrid investment instruments (HIIs) utilize a mix of equity, debt and/or royalties with objective performance metrics and outcomes, in order to provide investors with higher security, greater diversification, and mechanisms to ensure performance and liquidity. HIIs also provide entrepreneurs, early-stage companies and project developers with the benefits of lower-cost capital, reduced time and due diligence needed for receiving investments, and clear deliverables and performance metrics that, if achieved or exceeded, allow lower dilution and maintenance of control. HIIs can be arranged to place investors in a secured creditor position, which converts

into equity at the time of receiving specified pay back and performance. Moreover, secured convertible debt can also be converted into capital by the investors through a royalty structure, which alleviates project defaults in the event of delayed revenues and/or investment, market and regulatory changes, or force majeure.

Endnotes

1 UNECE, Committee on Innovation, Competitiveness and Public-Private Partnerships (2019). Guiding Principles on People-first Public-Private Partnerships in support of the United Nations Sustainable Development Goals. ECE/CECI/2019/5. Available at: http://www.unece.org/fileadmin/DAM/ceci/documents/2019/CICPPP/Official_documents/ECE_CECI_2019_05-en.pdf

2 Impact investment - directing capital to enterprises that generate social or environmental benefits – in projects from affordable housing to sustainable timberland and eye-care clinics – that traditional business models often sidestep (McKinsey & Company 2018).

3 UNECE. International PPP Centre of Excellence. Available at: https://www.uneceppp-icoe.org/people-first-ppps/

4 UNECE, Committee on Innovation, Competitiveness and Public-Private Partnerships (2019). Guiding Principles on People-first Public-Private Partnerships in support of the United Nations Sustainable Development Goals. ECE/CECI/2019/5. Available at: http://www.unece.org/fileadmin/DAM/ceci/documents/2019/CICPPP/Official_documents/ECE_CECI_2019_05-en.pdf

5 Industrial areas which surround the cities and provide profits from their economic activities to the cities.

6 An SPV is a separate legal entity created by an organization. It is a distinct company, with its own assets and liabilities, and its own legal status. It is usually created for a specific objective, often to isolate financial risk. As it is a separate legal entity, if the parent company goes bankrupt, the SPV can uphold its obligations (Corporate Finance Institute).

7 Long-term investment (finance) can be defined as any financial instrument with maturity exceeding one year (such as bank loans, bonds, leasing and other forms of debt finance), and public and private equity instruments. Maturity refers to the length of time between the origination of a financial claim (loan, bond, or other financial instrument) and the final payment date, at which point the remaining principal and interest are due to be paid (World Bank 2020).

8 In recent years, there has been increasing business interest in adopting the triple bottom line - ESG impacts - approach to investment, mainly from institutional investors. Sustainable investments also procure the basis for financial gains in other projects, as improvements in society and the environment trigger a more resourceful economy where investors can also commit their capital with financial objectives in sight.

9 Deloitte (2019). The Challenge of Paying for Smart Cities Projects. Available at: https://www2.deloitte.com/au/en/pages/about-deloitte/articles/challenge-paying-smart-cities-projects.html

10 Securitizing involves pooling multiple types of contractual debt and selling their related cash flows to third-party investors as securities.

11 S&P is a business intelligence company which specializes in providing credit ratings for bonds, countries, and other investments. It provides customized analysis and establishes market indexes. The most well-known index offered by S&P Global is the S&P 500 (Amadeo 2020).

[12] Kenny, T. (2020). How Green Bonds are the Cornerstone of Responsible Investing. The Balance. Available at: https://www.thebalance.com/what-are-green-bonds-417154

[13] OECD (2015). Green Bonds: Mobilising the debt capital markets for a low-carbon transition. Available at: https://www.oecd.org/environment/cc/Green%20bonds%20PP%20%5Bf3%5D%20%5Blr%5D.pdf

[14] S&P Global Ratings (2019). Green Finance: Modest 2018 Growth Masks Strong Market Fundamentals For 2019, 29 January 2019. Available at: https://www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/Public-research-resources/SP-Global2019-01-29Green-Finance-Modest-2018-Growth-Masks-Strong-Market-Fundamentals-For-2019-130219.pdf

Chapter III: Creating a list of investable projects for sustainable development

The process of transforming a city towards becoming smarter and more sustainable is complex, and requires a comprehensive operational framework. This section of the Guidelines aims to explain how to set up such a framework for sustainable and smart urban development in a way that will support the transformation of the city through development projects. It also suggests how practical needs (creating development projects and seeking financing) can be reflected in the legislation of a city or government in a way that attracts investors. As an addition to this chapter, the gate system for urban development projects is described after the recommendations for creating the list of investable projects. The Gate system is also accompanied by a suggested project book structure.

Box 8: Technology Transfer for Smart Sustainable Cities

In the quest to frame appropriate solutions for smart and sustainable transitions, especially for developing countries, it is essential to map the technological applications that are appropriate in a low-resource context.

Cities around the world are facing key challenges related to water and energy scarcity, along with problems associated with food security. These issues are exacerbated by climate change, overpopulation, and excessive reliance on existing resources. Information and communication technologies (ICTs) can be leveraged to alleviate climate change risks and related sustainability challenges. The desired transition to a smart sustainable city predicated on an ICT infrastructure needs to be in line with the paradigm of mainstreaming green as well as knowledge economy. In the current scenario, to enable smart city transformations across the world, the process of "technology transfer" must serve as the fulcrum of knowledge economy embedded in the SSC ecosystem. The process of technology transfer requires consistent cooperation between multiple stakeholders.

In the context of smart cities, employing technology transfer facilitates organizational efficiency and allows for the integration of knowledge relating to utilization of emerging technologies at the micro- and macro levels for urban operations. Secure funding sources and financial mechanisms are essential to support participatory partnerships and stakeholder relationships to sustain or initiate technology transfers. Not only does the assimilation of technologies in smart cities require investment, different types of technologies may also need to be adapted based on the needs of the citizens. Most SSC endeavours are driven by public-private sector financing mechanisms which veer towards infrastructure development and creating an investment-friendly ecosystem that focussing on research and development along with the incorporation of technologies like artificial intelligence (AI), Internet of Things (IoT), digital twin, virtual reality among others. These guidelines shall further provide insights into appropriate policy frameworks and guidance schemes for generating and supporting source funding for the establishment as well as transition to smart sustainable cities.

Ten recommendations for creating a list of investment-grade projects and a sustainable urban development cycle

Below are 10 recommendations which can be used by city governments to improve their urban development policy and develop investable projects which will improve the lives of citizens. Each recommendation includes a short example, reflecting how it can be used in practice.

Recommendation 1: use the SDG framework as the language for urban development

SDGs can act as a new global development language for all United Nations member States. This language helps to develop a clear understanding of the aims of the project among stakeholders and, therefore, increases the chances of development projects finding the best possible partners and financial support.

There are a lot of efforts done globally on SSC standardization work which is in line with the SDGs as well as other international instruments including the *Paris Agreement*, the *2030 Agenda* and others. For example, the International Telecommunication Union (ITU),[1] through the ITU-T Study Group 20 on Internet of Things for Smart Cities and Communities (SG20) has conducted significant work in this sphere. The relevant ITU-T Standards can be found on the website of the organisation.[2]

The 2030 Agenda introduced 17 SDGs targeted at achieving "peace and prosperity for the people and the planet". Importantly, it suggested implementing these goals through global partnerships.

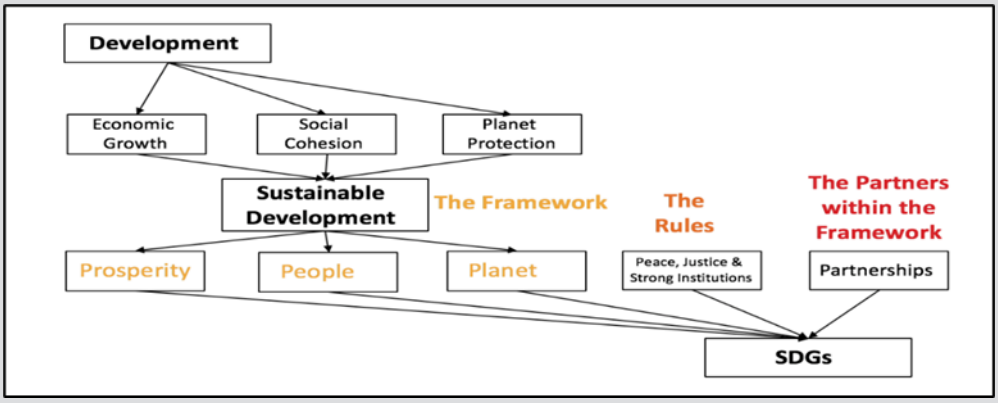
The language of SDGs is being used more and more in the private sector. While private-sector investors may not wish to donate money for a generic "city development" purpose, they might be eager to invest in a project which will have a tangible outcome, for example, improved efficiency of

water use or education for children from vulnerable communities. It allows private-sector investors to understand where the money will be used, while leaving space for ideas on how the investment could be paid back in financial and/or reputational profit.

The framework of the SDGs reflects an integrated approach to the three dimensions of sustainable development – people (social dimension), planet (environmental dimension) and prosperity (economic dimension). Every project taking this approach should aim for its implementation to trigger positive social impact (e.g. generate jobs), decrease the human environmental impact on the planet (e.g. reduce CO_2 emissions or improve water quality) and / or contribute to economic prosperity. These three dimensions should be used as a project framework.

The three dimensions should be applied to the development project by identifying the impact it will bring to each. In order to become operational within a project, the framework requires clear and transparent rules, and enforcement mechanisms. These ensure that all partners and stakeholders involved in the project are committed, and will adhere to achieving sustainable development as the goal of the project. The rules must be clearly stated, and the projects must identify the key partners who will operate within the proposed framework.

Box 9: SDG framework for urban development projects



Recommendation 2: bridge the funding gap by applying the language of the SDG development framework

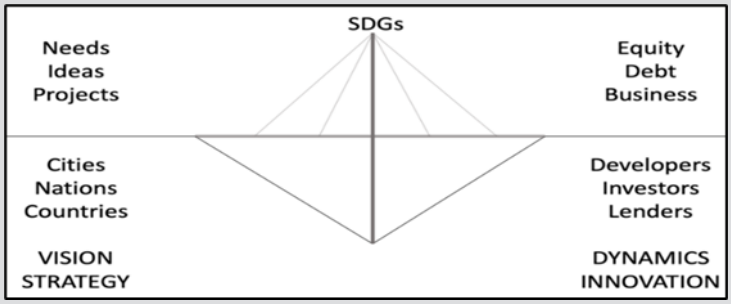
Urban development projects in cities result from the needs and ambitions of the communities living there. However, the financial resources which cities and communities have at their disposal are usually insufficient to implement transformation projects. Additional financing and funding solutions are required in order to achieve the necessary level of efficiency and capability to implement the project.

The needs and ambitions of citizens can be transformed into projects that serve the public interest and the common good. However, these projects should also be translated into a language

understood by investors, knowing that they are looking for financial return on, and other benefits from, their investment.

Investors are normally eager to finance or fund transformational projects. At the same time, however, they often lack an understanding of how they will get their money back, and what non-material benefits they can get from investing in city development projects. While financial return on investment is an essential part of the investor's interest, other long-term benefits can also be obtained. These long-term and non-financial benefits can be easily articulated using the language of SDGs.

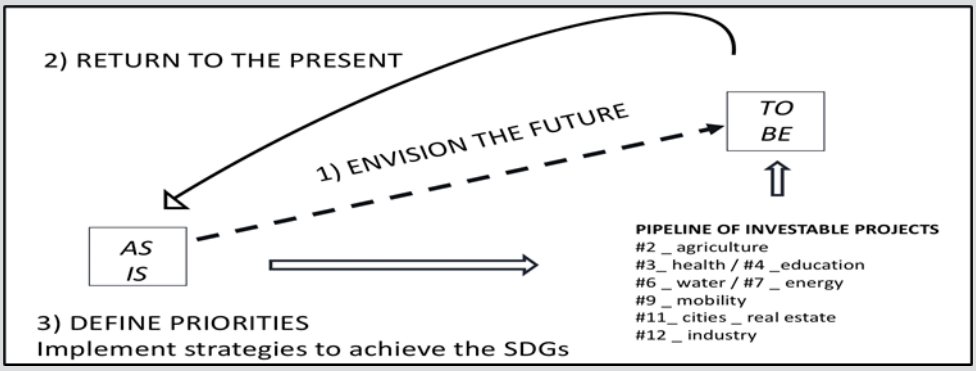
Box 10: Attracting investment using the SDG development framework



Recommendation 3: visualize the way to the future

Start by evaluating a baseline of where the city or region stands today, that is, "as-is". This may be done by assessing the city's profile using the U4SSC KPI Collection Methodology. Once there is an understanding of the areas in need of intervention, visualize what the city or the region of the city will look like by 2030 if all the needs and ambitions of the community are met. Use the SDG framework as a tool to define the objectives to be achieved. This will create a future that is "to-be" (a scenario representing the city's vision). Once this vision of the future is understood, the city should draft a list of necessary transformational projects. This will comprise a sustainable pipeline of projects, which will take the city or territory from where it is today to the envisaged future. Each project should support the achievement of one or more of the SDGs. Once the full list of projects is drafted, the municipality should prioritize them. The rest of the projects from the pipeline can be realized following completion of the first priority projects, or independently (not necessarily depending on the first prioritized project).

Box 11: Visualizing a way to the future

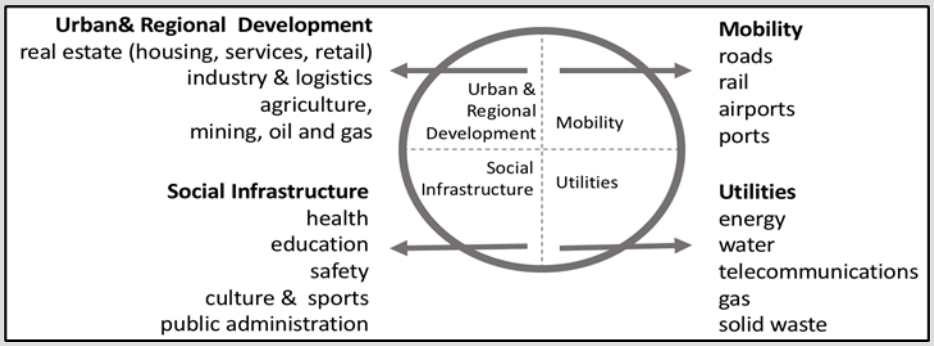


Recommendation 4: map the four types of urban development projects

This tool can be used during the process of developing a list of transformation projects to better understand what exists, and what is still needed for transforming the city.

Most transformation projects in urban development relate to one of four sectors. The first is mobility. This comprises projects which aim to build roads, railways, ports, airports and all infrastructure needed for people and cargo to move from location "A" to location "B". The second is utilities. These types of projects include those connected with energy, water and wastewater, solid waste, gas, telecom, and Wi-Fi networks. The third is social infrastructure. This covers education, health, security, sports, arts, public spaces, green spaces and, in some cases, social housing. The fourth relates to real estate, and usually accounts for the majority of projects which are able to generate returns for investors (known as "cash-positive" projects). This sector consists not only of projects transforming retail, services and housing but also logistics and industry. Cities and regions directly associated with oil, gas and mining exploitation or agriculture can also include these activities in the fourth sector.

Box 12: Urban development with four types of urban development projects



Recommendation 5: create a four-generation master plan for the city

Most cities already have their own spatial master plans, an important document for urban planning and development. However, city planning can be broadened by including other dimensions. These dimensions will help development projects distinguish between "outputs", "outcomes" and "impacts".

The first generation of urban master plan is the traditional spatial plan of the city. It shows the layout of the streets. It provides an overview of the use of space and the building capacity. On this layer, city planners map the physical locations of new projects. Once a project has been implemented, the output can be found on this first-generation master plan.

The second layer can be added to the first to reflect the economic dimension of the city's master plan. It indicates the value of the land and real assets shown by the city plan. Once a development project is implemented, it may also transform the value of some assets around it. This master plan can therefore demonstrate the economic outcomes of transformation projects.

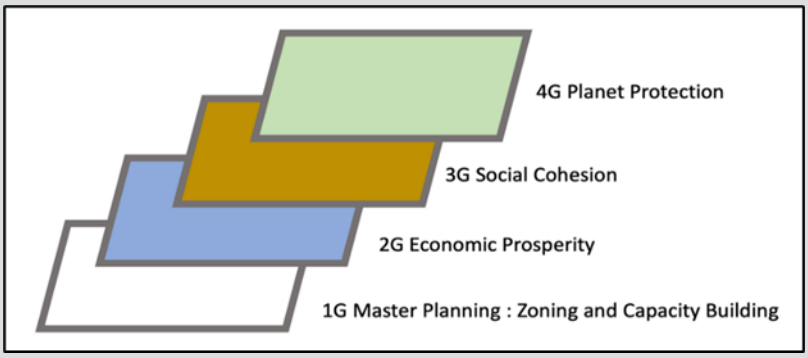
A layer for the social dimension can also be developed. This reflects the social impacts of development projects, for example, job creation. For example, job creation for young people, reduction of the gender gap, inclusion of older people and promotion of accessibility for people with disabilities.

The last layer reflects the environmental impacts associated with the transformation process. The most obvious examples are changes in the levels of CO_2 emissions, water quality, and solid waste impacts.

The final two generations of master plans map the impacts which transformation projects have over the longer term, both on people (societal impact, i.e. through improving cultural experience, job creation, feeling of human dignity due to proper sanitation system, etc.) and the planet (i.e.

improvement of the environment through lower CO_2 emissions, or cleaner water). These four master plans should be associated with urban geographic information systems (GIS).[3]

Box 13: 4G master plan



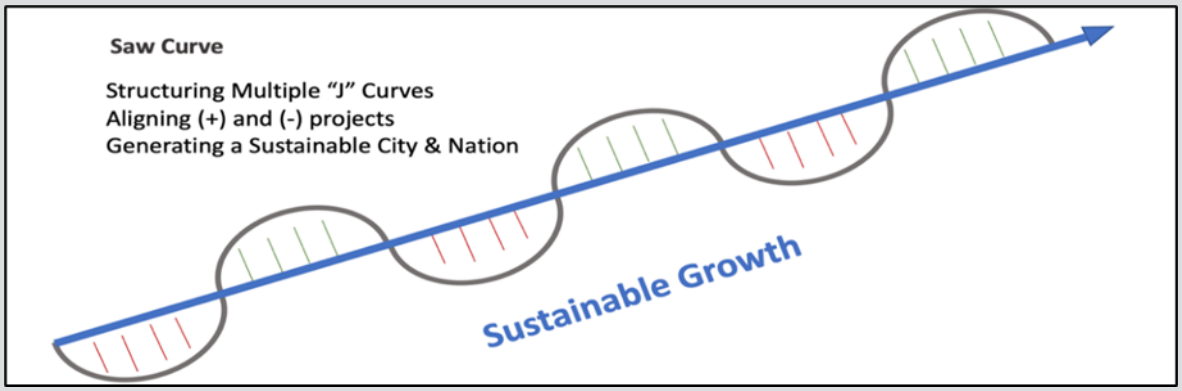
Recommendation 6: map cash-positive and -negative projects in perspective

Once a list of projects is identified, it is critical to assess which of them will provide a return on investment and which cannot. Not all the projects in the list will be attractive to private-sector investors. In order to prioritize projects to pitch to investors, it is recommended to present them in a way that will demonstrate their potential to provide returns on investment, and their role in the overall process of the city's development.

This latter is important, as it can demonstrate that, while some projects requiring investment may not provide financial returns immediately (or at all), they may serve as an important base for the development of the other projects in the pipeline, which could have a cash-positive potential (are able to provide financial returns to investors). It is important to plan projects in a way that the cash-negative ones (those unable to provide immediate financial returns) are compensated by cash-positive ones. This exercise can be visualized with the help of a "saw-shaped curve". The axis of this graph represents time: the higher the project is placed, the later it can be implemented; the lower it is placed, the sooner it must be done to enable future projects to be built using it as a base. The projects that are placed above the axis should be cash-positive; the ones below should be cash-negative.

The saw curve visually demonstrates whether there is a balance between cash-positive and cash-negative projects in a city, therefore ensuring that the overall transformation plan is economically viable. It also helps to demonstrate how each project builds on the partnerships or income generated by the previous ones.

Box 14: Saw-shaped curve to map cash-positive and -negative projects

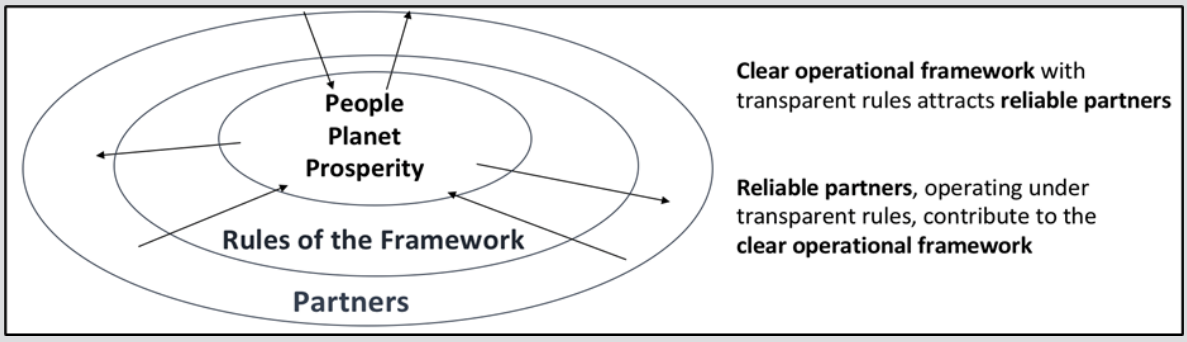


Recommendation 7: use multilateral dialogue to inspire institutional innovation

It is critical to ensure that the legislative component of the development framework of a city is transparent, making it easy for all involved stakeholders and partners to operate. An investment environment which is supported by transparent legislation makes a city attractive for potential investors.

In order to create transparent rules and enforcement mechanisms, intensive participation by the public sector, civil society, academia, and the private sector is required; this is mainly in order to determine the conditions that will facilitate stakeholder involvement in urban development projects. This "multilateral dialogue" can generate "institutional innovation", resulting in clear and improved legislation and frameworks. A clear operational framework with transparent rules will attract reliable partners. Moreover, reliable partners who agree to operate within the transparent legislative system, once involved in the project, will enhance the quality of the framework. As discussed above, all parties should adopt the sustainable development framework with people, planet and prosperity at its centre. This factor should also be considered when creating legislature. As well as developing new transparent legislature, cities should examine existing frameworks, reconsidering rules and enforcement mechanisms, questioning them, and accepting the creation and use of new ones.

Box 15: Multilateral dialogue and institutional innovation

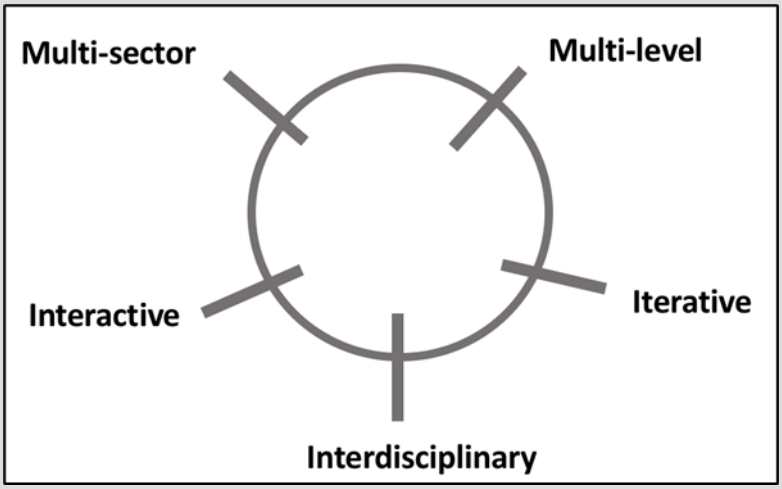


Recommendation 8: use the round-table approach for stakeholder engagement

In order to facilitate multilateral dialogue between the partners involved in the sustainable development framework, governments should consider adopting a round-table approach where stakeholders will be heard.

This interdisciplinary approach means embracing formal representation from the stakeholders involved in urban development at multiple decision-making levels and across sectors, including both central and local public-sector administration, and private-sector stakeholders, including developers, investors, lenders, civil society, and academia. A round-table approach should also be iterative and interactive, meaning that the process is flexible, and evolves based on data provided by stakeholders.

Box 16: Round-table approach



Recommendation 9: use a multi-level approach for developing policies and transformational projects

A multi-level approach can be used to link transformation projects and development policies, and to classify the projects within different investment programmes.

These are the three levels in a multi-level approach:

(a) transformation projects;

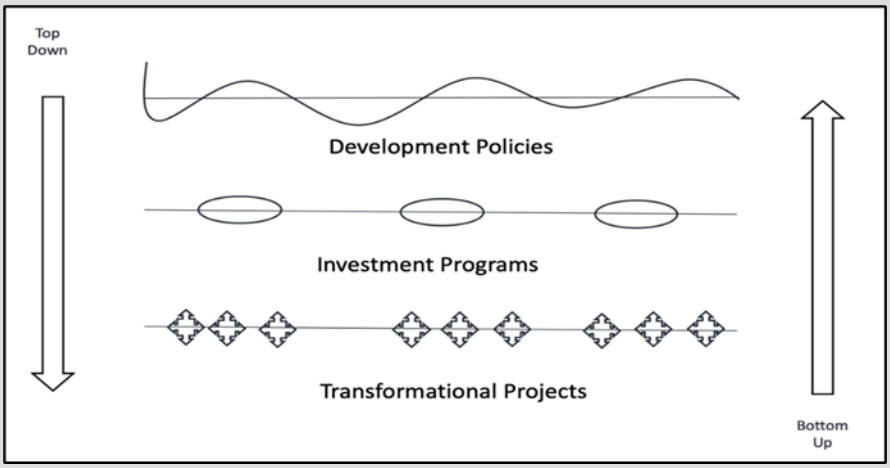
(b) investment programmes; and

(c) development policies.

In order to ensure economic and financial sustainability for transformation projects, they should be grouped under investment programmes. Investment programmes should, in turn, be linked with an overarching development policy (outlined by the triangle in Box 14). This can be done through a bottom-up approach, with the projects identified and grouped into investment programmes which define the development policy of a city; or through a top-down approach, with policies stimulating a generation of investment programmes which are then implemented through transformation projects.

A multi-level approach means that information should circulate from the "top" and the "bottom" simultaneously, ensuring alignment between all levels of decision-makers. If successful, this increases the chances of obtaining the desired outputs, outcomes and impacts. This approach also helps to unify "ways of doing business" across levels. Making ways of doing business consistent and predictable is vital for attracting investors.

Box 17: A multi-level approach

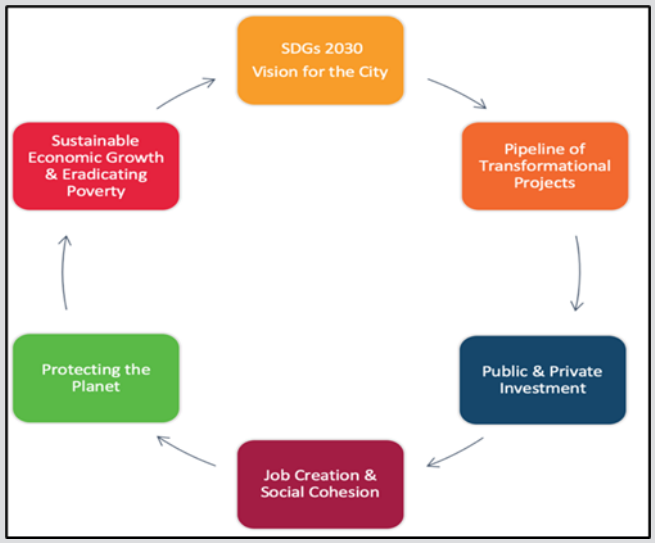


Recommendation 10: create a sustainable urban development cycle

Demonstrating that a "sustainable urban development cycle" has been created helps to ensure that investment is directed towards the right projects.

It is essential that narratives around projects demonstrate that they are part of a positive context. This helps investors understand that the project will be sustainable, due to the positive business environment around the programme. A sustainable urban development cycle requires coherence between a given project, the investment programme it is part of, and the development policy of the city. This enables the creation of a narrative that demonstrates how the project (once implemented) leads to social cohesion, to protecting the planet, to economic growth and, therefore, to a sustainable urban development cycle.

Box 18: A sustainable urban development cycle – Lisbon

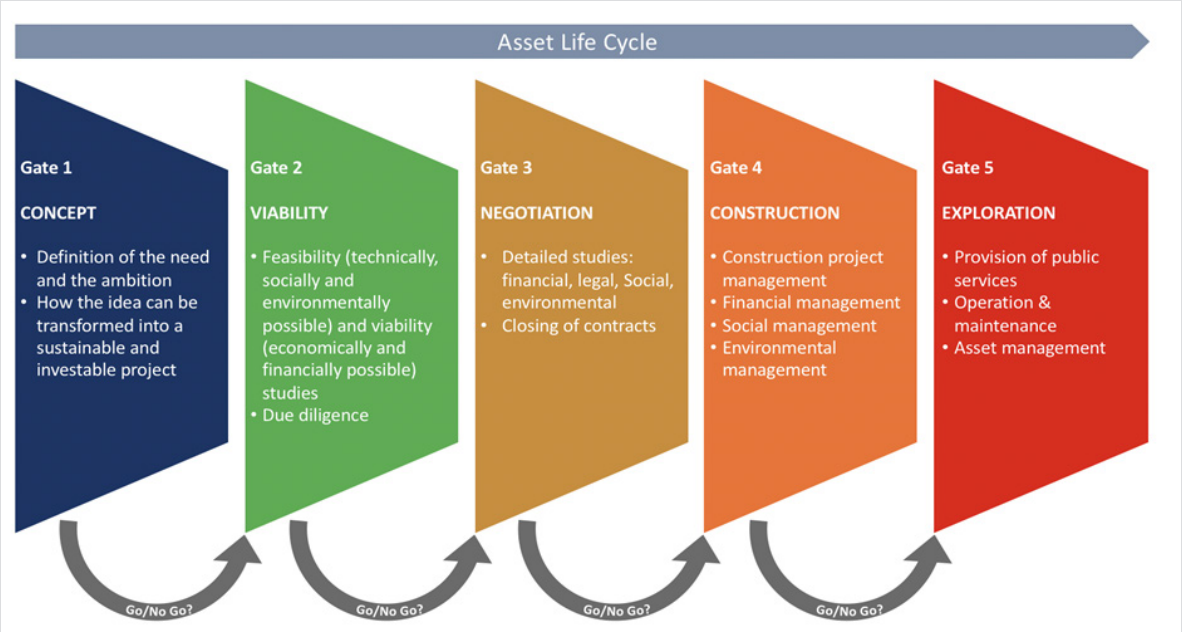


Project gate system for urban development projects and project book structure

As briefly mentioned in the beginning of this chapter – it is vital to have a comprehensible stage-gate system for each project to be clear when the decision to proceed, revise or drop a project is taking place.

It is suggested to use a traditional stage-gate project management model, shown below, to plan each project implementation. This will also give a coherent picture for the planning of the timeline and of informing key stakeholders on the progress of a project.

Box 19: Project management stage-gate process



Besides the planning project stages, it is critical to ensure that each project has a logical role in the long-term city investment plan, which should be described in a consolidated investment project book. This will enable potential investors and city partners to see the city development strategy in perspective and may help increase their motivation for long-term cooperation.

The project book should include information on six dimensions/sections:

1. Where: the context of where the project will take place

   Country, nation, city, population, government, state-owned enterprise, pathology, ambition, vision 2030, gross domestic product, Gini, Human Development Index.

2. What: the product that needs financing

   Description of the infrastructure, purpose, public service to be provided by the asset in the system.

3. How much: the budget required

   Global investment values, CAPEX, OPEX, payback period, financing and funding, IRR, NPV, equity/debt ratio, value for money, value for people, value for the planet.

4. How: the transformation and impact – why this project is needed in the long term

   Transformation and value-creation process, people and planet impact.

5. When: the milestones

Key delivery dates, history of projects, future dates influencing the project (elections), international commitments, SDGs

6. Who: the organization

   Main decision-making stakeholders, influencers, and the implementation process.

Examples of implementing the 10 recommendations in Portugal, Wales and Japan

1. Parque das Nações, Lisbon (Portugal)

Visualizing a way to the future (Recommendation 3)

The urban renewal project in Lisbon – Parque das Nações – reflects the visualization of the way to the future. The perimeter of the city, defined as an intervention area, went through a 180-degree transformation process, where a new liveable city quarter, with 25 000 new inhabitants and 18 000 permanent new jobs, replaced a refinery, a slaughterhouse and a waste dump. This was possible by creating a vision of what the area should look like, identifying the list of projects and interventions which needed to happen in order to achieve this, and lastly, finding financing to implement this vision.

Urban development with four types of urban development projects (Recommendation 4)

A key success factor for the Parque das Nações project was that it was developed with a people-centric, integrated approach. The question to consider is: what do people need? In many cases, this is to have a house to live in, to have a workplace to earn money, to buy goods, to educate children, to have access to health, cultural and sports facilities, and to have police and fire stations to ensure safety and security.

The 4G master plan (Recommendation 5)

The Parque das Nações development started off using a traditional first-generation master plan, and quantifying the second-generation plan. This was done by calculating the number of square metres necessary to ensure the economic viability of the transformation, following the composition described using the approach with mapping four types of urban development projects (mobility, utilities, social infrastructure, urban & regional development). The third-generation master plan was used to plan the number of jobs. The fourth-generation plan was developed using a qualitative approach.

Mapping cash-positive and -negative projects in perspective (Recommendation 6)

For the Parque das Nações project, the programme involved projects to create schools, museums, roads, and waste collection networks that were cash-negative. At the same time, office buildings, retail shops and housing projects were generating positive cash flow that could compensate for the cash-negative projects.

Cash-negative projects, however, also served as a necessary base for building the cash-positive developments. This means that, for example, in order to have an attractive office space building, it is vital to have waste collection networks in place and, in order for retail shops to generate profit, it is necessary to have roads in place, connecting housing where people live to where they do their shopping.

Developing institutional innovation inspired by multilateral dialogue (Recommendation 7)

To develop Parque das Nações, the updated legislative framework had to be approved by Parliament. The biggest change was to give the development company the authority to manage the zoning and permissions required to transform the land in a way that would be attractive for foreign investment. Due to consultations, where investors were seen as key players, it was discovered that existing rules for the use of land were not fit to transform the area. Local government took this input on board and adjusted the legislation to be more fit to attract the needed investment. As a result, institutional innovation was applied, generating improved legislation.

Using a multi-level approach for developing policies and transformational projects (Recommendation 9)

Within Parque das Nações, groups of projects were developed under the mobility investment programme, including roads, metro, railway station, and parking lots. The mobility, utilities and social infrastructure programmes were part of the urban development policy defined for the area. As the new city created by the projects evolved, more new products were considered necessary. In this case, several five-star hotels were developed. In order to accommodate this evolved vision, urban policy was adapted, and new projects were developed.

Creating a sustainable urban development cycle (Recommendation 10)

The city of Lisbon, as part of the Parque das Nações project, generated this sustainable development cycle. The starting point was a clear vision about the future, aligned with the sustainable development framework. There were many projects for investors to choose from, all different sizes and different sectors, but all of them were part of the same programme. There was a clear opportunity for public and private investment. The saw curve demonstrated that the public sector was investing on the cash-negative projects with capital raised from the cash-positive projects. The projects generated a positive business environment, encouraging companies to move to the city, leading to the creation of new jobs. For all these reasons, the programme was perceived as an example of a project focused on people, planet and prosperity, with clear rules, and which was open to multiple and diverse types of partnerships. A virtuous, sustainable urban development cycle was created.

2. SDG framework for urban development projects - the city of Cascais, Portugal (Recommendation 1)

The city of Cascais in Portugal adopted the SDGs as their development policy, and is now localizing them. This means that the city ensures that all personnel working directly for the municipality have the SDG goals embedded in their development strategy. In localizing the SDGs as a framework, the "rules and the partners" approach is now being used.

3. Attracting investment using the SDG development framework – Welsh Infrastructure Investment Programme (Recommendation 2)

The Welsh Government bridged its funding gap with the help of the Welsh Infrastructure Investment Programme, using a sustainable development approach to attract developers, investors and lenders to become development partners in Wales.

4. Using a round-table approach for stakeholder engagement – Shiwa, Japan (Recommendation 8)

The town of Shiwa in Japan is a living example of an ongoing round-table approach. The municipality meets frequently with academia, developers, investors, civil society, parent associations, and farmers, in order to continuously improve the attraction of the city to all stakeholders.

Endnotes

1 The International Telecommunication Union is the United Nations agency for information and communication technologies. It also serves as an international standards developing organization (SDO).

2 ITU. ITU-T Recommendations. Available at: https://www.itu.int/itu-t/recommendations/index.aspx?ser-Y

3 A GIS is a system designed to capture, store, manipulate, analyse, manage and present all types of geographical data (University of Wisconsin Madison Libraries).

Chapter IV: How to attract investors to enter into SSC projects

Checklist for investors: the preliminary "go/no-go" decision

Numerous conditions must be met early on for a private investor to become interested in investing in a project. In order to ensure that investors can tick these boxes, projects must undertake certain actions and create pre-existing resources. These are needed in order to define the financing (and funding) possibilities of a project, and to attract investors to provide capital beyond public funding.

Private developers and investors usually make preliminary decisions on investments based on their estimation of market opportunities and gaps. In SSC projects, these gaps and opportunities are problems or needs which exist within a community. Sometimes the information used by investors for analysis before deciding to go ahead with the project comes from governments. This can come in various forms and through various channels, such as: investment forums, calls for tenders, or direct contact. Sometimes information comes from third parties, such as IGOs or NGOs, as they look for agents to help bridge gaps in basic infrastructure. Sometimes information can come from financial partners and sponsors, such as pension funds, development funds and other institutions where large pools of capital are available to invest. Commercial banks could also trigger the interest of a private company to enter a project and invest its resources in it. These organizations, when providing information to potential investors, act as inviting sponsors.

When an invitation to invest is made, it usually includes the offer of potential "extraordinary" gains. These could be in the form of higher or guaranteed returns, lower cost of capital, tax incentives, new market niches, and others. However, the potential for extraordinary gains is not sufficient. A pre-existing level of legal security and fiscal stability is also necessary to minimize risk and ensure returns for investors. If this does not exist, the inviting sponsors will have to provide security for investors by other means. The offer of extraordinary gains is an important way of doing this. In these cases, the "extraordinary" element, which in the developed markets would be perceived as a fraud to the free market rules, is essential to trigger a decision to invest in places with greater instability.[1]

Also, investors may be interested in the extraordinary gains or the ESG impacts, but may only possess a limited preliminary knowledge of the environment where the investment is to take place. Developers and investors, in this case, need a practical approach to check the quality and capacity of the resources available, before deciding whether to invest in the project. Every company, be it public or private, large or small, should ask some basic questions and complete a due diligence check before any further consideration of the project.

Conducting due diligence in the form of a preliminary checklist is a good way to start acquiring information on the resources available, as well as the expertise at hand to manage these resources in the developmental and operational phases. Eventually, this exercise leads to further questions regarding quantifying the risks of committing to the project. If the results are negative, the level of bearable risk should be established before addressing the question of financial resources.

A detailed template guide on preliminary questions for conducting due diligence regarding the four basic types of resources can be found in the Annex III. These are:

(a) land: property status. What real and/or contractual rights are there on the development site?

(b) law: urbanistic and legal status. What can we develop according to the planning and licensing requirements and permits?

(c) technical: construction and technology solutions. Who will construct and operate, and how will they do this (stakeholder mapping)?

(d) value: use of the assets. An assessment of this should use cash flow and feasibility models based on KPIs.

Once the quantity and quality of the available resources are determined, in order to create the business model that will accompany the proposed project, it is recommended to quantify the potential performance of the project, using financial indicators of its direct value: rents, fees and present sale/securitization value; and its indirect value: land value increases, savings and greenhouse gas emission reductions.

With this step in mind, due diligence (Annex III) should provide conceptual designs, infographics, and control tools that demonstrate the value of the project, particularly in relation to the expected use of resources and the purpose of the project. Furthermore, it should suggest templates for the accounting and financial control of the construction and operational phases. These templates should include feasibility studies, development charts, cost-control charts, cash flows, and all other elements that help to control the flow of capital involved. Depending on the nature of the project, these documents could also include a valuation of the project as part of an exit scenario, investigating the potential for sales, leases, or sale and lease-back scenarios for the real asset which is created by the project.

A more extensive feasibility study could also be conducted to estimate the indirect value created by the project. For example: an increase in the value of neighbouring areas/projects, the savings provided by the eventual extension of the life span of the affected assets, the environmental impact of reducing emissions, and improvements to the quality of life of the stakeholders.

In the early stages of creating a project, it is particularly important to define the financial dynamics, the potential risks, the costs to be incurred, when they will be incurred, and from what sources income will be derived. Likewise, when initiating a project, cities should model free cash flow (remaining cash after all costs are paid), which can be used to pay for any external financing used.

In order to find a formula that can be used to measure the performance of a project in revenue terms, we can adopt certain well-established models already working globally. Some of these are listed in Box 21.

Box 20: Revenue models[2]

Source	Type	Description
Public sector	Financing payments	Amounts received from public institutions to pay the costs (including finance), recover the expenses and receive the agreed returns.
	Availability payments	Payments linked to the performance of the private-sector operator and the availability of the service/asset in line with the agreed performance conditions.
	Savings share	Some services could generate measurable and accountable savings for the public sector that guarantee a budget to help fund the asset or service.
	Tolls	Based on utilization of the service/asset, the public sector pays the private operator. Continuous payment schemes apply, to reduce risk.
Public and third party	Pay-as-you-go	Services charged directly to users in a recurring way or on a "pay-as-you-go" basis, depending on the contracts with the final user. The bill of the operator may include the collection from users.
	Subscriptions	Unlimited users pay a fixed amount for the service, regardless of level of use.
Third parties	Advertising	Selling advertising space on assets generates revenue.
	User fees	Direct payments of end-users for the service (e.g. road tolls).
	Rate type	Private operators get paid for specific services/assets (e.g. water and power utilities) with the revenues the administration collects from the public.

Risk: why the "no-go" decision

The performance of every participant in a project (investors and contractors, sponsors and lenders, public administration bodies and asset operators) poses a risk to the performance of the real asset which the project will create. Each of these participants must decide which risks, coming from other stakeholders and circumstances, they can manage, and at what level. While conducting due diligence, cities should have defined and made assumptions about elements that could affect the project's performance and threaten the cash flows necessary to enable the project to pay back its debts and sustain the service for citizens.

Stakeholders, especially internal,[3] should consider the location, project size, availability of resources (including human resources), sector, revenue model and, ultimately, the expected performance. These are all sensitive factors that affect the perception of risk.

As a rule, project risks are borne by the party best able to manage them. Although risk allocation strategies may vary between projects and countries, risks related to the overall environment within which the project is implemented are usually borne by the public authorities. These include political risk (change of government policy, etc.), financial risks (e.g. inflation or currency risks) and legal or regulatory risks (e.g. changes in law, inefficient legal processes or slow bureaucratic procedures). However, project-specific risks (e.g. construction, operation and performance risks) are, in theory, allocated to the private sector. Some risks that are beyond the control of the parties (e.g. demand and supply risks) could be shared.

Existing potential risks for most projects are listed below.

The legislative framework risks

This refers to risks related to legislature in general, especially urban development-related laws, fiscal laws and tax laws. Laws should remain consistent throughout a project, in order to mitigate risk. Any changes in the law that could affect the use, price, terms or contractual framework of an investment should never be retroactive (affecting things which have already happened), as this would be perceived by the markets and investors as a sign of weakness and uncertainty. This could prevent further investments, and may even lead to existing investors seeking compensation if changes affect ongoing projects. For instance, this could occur if a government introduces new tariffs on imports of technology, or labour codes with more restrictions, as this would increase costs and therefore impact the potential returns of a project. Modifying market conditions, such as introducing higher prices for energy, or changing the use of existing ones (for instance, changing zoning and development rules), may also negatively impact investment decisions.

Recommendation: ensure that contracts involved in a project clarify the laws on which they are based.

Construction risks

These include factors which delay or prevent the completion of projects, increase originally estimated costs, or impose contractual challenges. A strong supply chain, involving experienced contractors and strong guarantees, may reduce the level of these risks.

Recommendation: it is suggested to clarify the procurement procedure with the general contractors, and agree on retainers, guarantees, and warrants covering not only the construction phase but also the minimum period after commencing operations. Avoid contracting construction companies and resource suppliers specifically created to serve the project.

Operational risks

These are risks coming from the project operator once the construction is completed and the project begins operations. Lenders are mainly concerned with the capacity of the project. The ability of the operator to adjust to the operating budget, and have enough human and financial resources, helps the operator maintain operations according to the plan. This concerns lenders, as operational problems affect performance payments, including payments to financers.

Recommendation: it is best to agree on retainers and guarantees, covering not only the returns but also liquidated damages, to the amount equal to the revenue generated if the real asset is operated by a different operator. Avoid contracting operator companies and suppliers specifically created to serve the project without bankable guarantees or mother-company guarantees.

Sponsor risks

Sponsor risks emerge from a lack of resources in the project sponsors (in SSC projects, usually cities or municipalities) and the skills necessary to deliver the project on time and according to budget, or a failure to resolve problems in the construction phase. Lenders also assess the levels of capital available to projects, and the ability of the sponsors to raise additional capital, if required.

Recommendation: it is best to agree with the sponsors on retainers, guarantees and warrants explicitly covering delays in the construction phase. If possible, make sure to include a first-refusal bank guarantee, amounting to the costs expected in changing the contractor, even if this means having to abandon on-site resources, materials and employees. Avoid construction companies and resource suppliers specifically created to serve the project.

Technology and technical risks

Construction risks, such as equipment malfunctions or malpractice, can threaten the operational phase or prevent the project from operating at all. These include poor construction, hidden defects and obsolescence of assets. One of the main obstacles to financing infrastructure and smart cities projects (particularly where technology is associated with long-term projects) is that many construction companies articulate their activities through SPVs, with relatively weak mother-company guarantees. If an SPV lacks the necessary technological and technical expertise to complete the project, and problems emerge due to weak guarantees, the costs can be transferred to the project itself, affecting returns for investors. Technology and technical risk in urban development projects can therefore be high.

Recommendation: usually, only warrants and guarantees can mitigate technology and technical risks. Ways to manage these include the provision of additional equity by the constructor or the vendor, and public-sector support for the project by adjusting legislative requirements.

Planning risks

Planning risks can be prevented by obtaining all the necessary licences, permits, consents and approvals connected with the planning. Lenders need to know if changes in planning, zoning or environmental regulation could affect the future economic performance of the project, as this increases risk.

Recommendation: as planning licences and permits usually expire after a specified period, it is suggested to check the validity of documents before starting a project, and make sure not to take on a new project based on old information (for instance, obsolete municipal plans might not include the latest developments in land law).

Environmental and force majeure risks

Environmental and force majeure risks are normally due to natural disasters, war, political unrest, pandemics and similar concerns, which are beyond the control of any party to the project. Force majeure excuses the lack of performance by a party in any contractual relation.

Recommendation: having strong, reliable cash flow is essential. Beyond this factor, however, environmental and force majeure risks are the hardest to mitigate.

Economic and political environment risks.

Private investors usually prefer politically independent markets, where a strong legal framework establishes the same rules for all participants. Small and medium-sized companies are cautious about investing in controlled markets, since they would not be able to fight the system if rules change suddenly, or they will be cautious in order to secure their relationships with government and government affiliated organizations. In these economies, international institutions therefore play a very important role as security guarantors, ensuring that investors can deliver the project under the conditions established at the start of the project, rather than any new conditions imposed once the investments are in place. International arbitration has been able to prevent companies from abandoning projects, by giving them the security they lost due to insufficient information, unclear contractual terms, or changes in the legislation of the receiving location.

Recommendation: it is recommended to engage partners to manage these types of risks. In order to mitigate them, ensure that the central government, state regional government, local government or any institution above the contracting one is aware of the investors' involvement, and is present at the negotiations so that they can be called upon in arbitration courts, if need be. International arbitration courts should be explicitly agreed upon and formally indicated in the contract.

Risks of partnering with public entities

A private investor would usually prefer not to enter a project where control lies outside the project. Private capital, especially when debt is involved, has financial obligations to fulfil, which could be delayed by bureaucracy or lack of management tools within the partnering public institution. These delays may force the private partner to incur additional costs, which would decrease investor returns from the project. This is particularly true if the additional costs are considerable, as is often the case in large infrastructure projects. Investors become interested in forming PPPs when the arrangement allows them to gain certain "exceptional" working conditions for the given development that could not be achieved without a public institution or the specific project itself. Examples of such conditions could be: entering into a new market (by gaining ground in the country, contacts for future developments and favourable ratings within the local financial market), a new sector (construction companies looking for new expertise in different sectors), or when there is potential for a framework to develop projects of the same nature to be established and therefore create new opportunities.

Investors have limited risk tolerance and, despite risk management tools, the perception of insufficient institutional mitigation will prevent their engagement in the project.

Recommendation: Public institutions should therefore do as much as possible to implement mitigating measures and, similarly to the above recommendation, engage partners to manage these types of risks. In this case – IGOs, NGOs or Embassy representatives could be most relevant to engage.

Overall: what attracts investors?

Investors, lenders, sponsors, developers, contractors, involved parties, stakeholders and, especially, end-users want projects to be successful and to deliver the value for the citizens they were designed for. Success can mean different things for each stakeholder involved in a project. Most likely, the perception of success will fall into one of three categories: "operational success"; "financial success"; and "reputational success".

A project is successful in its operational phase if it fulfils its purpose and provides the service that closes the previously existing gap, for example, through the provision of previously inexistent water and energy, more hospital beds, or bridges that reduce travel time. A project that is successful financially provides the expected financial returns, and the repayment of the capital invested plus the agreed interest in the agreed period of time. Financial success could also involve providing accountable economic benefits, such as direct or indirect savings in expenditure from government budgets, for example, reducing risks that lead to other expenses, adding value to communities (for example, a bridge that reduce travel time and therefore pollution), decreasing expenses in health services, and raising productivity. To this end, it is important to define the materiality of the impacts with a series of KPIs to calculate direct and indirect returns.

Lastly, a project that proves useful to the community, whether it makes financial or economic sense or not, will improve the community's perception of the parties involved. All involved parties, from the sponsoring institutions to the construction companies and financing providers, will take credit for a successful real asset or service in its operational phase, sometimes regardless of whether or not they were accountable for the performance of the project in economic or financial terms.

In order to identify and attract investors, it is important to understand which of these categories of success is appropriate for them. It is also important to note that the longer the life of the real asset created by the project, the better for the community. The extension of the life span of the whole asset – in its operational life or afterwards – will create wealth and public value to the community. Sustainability always makes sense for the environment, society and the economy. and will therefore help to attract investors.

The decision to invest in an urban development project does not relate directly to the nature of the investors themselves but rather to the level of risk that the investor finds acceptable. In this respect, the greater the involvement of public institutions, the more stakeholders will be willing to accept the risk . The involvement of public institutions in projects is therefore crucial in attracting investors. Public institutions, IGOs and NGOs involved can control many of the risks related to large projects. They can advise local governments, by justifying why it is important to reduce red tape, or by advising that they provide guarantees and warranties to the investors and contractors, ultimately paving the way for the work to be done.

Private investors in urban development have learned that SPV companies should be created to isolate risks and liabilities related to the project itself from the rest of their activities. However, the reputational exposure is still there. Therefore, even if predicted returns on investments are likely to be achieved, the lack of institutional stakeholders leads private investors to be active only in well-developed economies where there are fewer unknown risks to projects and where more insurance is available. It is not necessarily a matter of the cost of the capital or the amount of the returns that matter, but the amount of risk involved.

In order to make investments more attractive, public institutions, NGOs and IGOs should create platforms to guarantee the correct performance of all stakeholders in the project. This should take place in both the construction and operational phases, with legal and economic expertise supporting both the investors and the developers, and a strong arbitration presence, to prevent and potentially solve disputes. Smaller investors and companies will also be attracted to these projects if "extraordinary" returns became more evident to them.

Public investors do not measure success primarily by short-term financial gains. Instead, they look to make sure that the project provides free cash flows, accountable in an agreed way with the financing parties. Private investors look for a positive impact on the balance sheet of the project, and need the financial income to meet the rate of debt payments agreed with the financiers. Public institutions are learning to make projects financially sustainable, and private investors are realizing that non-financial returns, including reputation, do have a long-term impact on the financials of

their projects, as these sustain the well-being of the urban development investment ecosystem in which they are developed.

When seeking investment, cities must take into account these diverse aims and the needs of various sources of investment for SSC projects. Once investment is attracted, PPPs can, and do, deliver successful projects which have a positive impact on achieving SDGs in cities, and on providing economic returns to all stakeholders, while focusing on the people-first principle.

Endnotes

1 Essential, but not definitive. As we know from experience, changes in legal or fiscal frameworks can modify the market conditions, and threaten, or altogether prevent, the expected returns for the investors. This makes infrastructure and urban development in these locations more challenging.

2 Deloitte (2019). The challenge of paying for smart cities projects. Available at: https://www2.deloitte.com/au/en/pages/about-deloitte/articles/challenge-paying-smart-cities-projects.html

3 Owners and workers in a company or project, including directors.

Chapter V: How will the COVID-19 pandemic affect investment in urban development projects?

With the recent outbreak of COVID-19 around the world, the three priority areas for every city and government will be to respond, recover and rebuild. While it is too early to judge what will change, this chapter provides a short outlook on the trends that may develop as a result of the pandemic and that may influence approaches to urban planning, and therefore investment behaviour in this area.

The response to the pandemic has halted society and, as a result, the economy is suffering. Less economic activity means lower tax revenues and, in combination with increased health and social care costs, the result will be an extraordinary increase in debt levels. There will be a need for rapid legislative adaptation and significant fiscal actions by governments to cope with the crisis, in time to recover and rebuild capacity. Governments will need to prioritize the most impactful responses, such as protecting productive capacity, increasing public spending, providing credit to small and medium-sized enterprises, and attracting investors.

There is not enough evidence to study the impact of the pandemic on infrastructure projects. Public expenditure will most likely revamp this sector, as a first step towards revitalizing economic activity as quickly as possible. However, the potential implications of this period for traditional models of urban development can already be foreseen. With the lack of traffic and the need for servicing the less movable segments of the population, "last mile" distribution logistics in cities boomed during the lockdown. As activities and movement return to usual levels, or close to them, member States of the UNECE region will likely feel the effects of increasing numbers of vans, bikes and trolleys with boxes and packages for home delivery, as well as the current lack of areas for parking that allow the time for delivery from vehicle to door. The gap between the existing infrastructure and what will be required by the new normal is a vital consideration for future urban planning, that is, new spatial zones. Governments will need to adapt urban planning legislation to allow these, and take into consideration other traffic impacts, such as those resulting from reduced use of public transport due to fears of infection and the already-felt lack of desire for car ownership. The immediate answer appears likely to be single person vehicles, bikes, scooters and car-sharing. Traffic lines for these narrower, smaller units will be needed and, at the same time, will leave space for pedestrians, most likely at the expense of cars. Parking areas in office and residential areas will also be adapted accordingly.

Since 2014, industrial and logistics projects have shown strong growth. This will be felt even more, given the increased demand on "cross-docking", e-commerce and "cold-chain" (temperature controlled) logistics. Improvements in technology, the "internet of things" and robotics will be required due to pandemic restrictions, requiring workers to distance. However, these will increase the value of organizations that service these activities, and will also reduce production costs. An increase in capacity is another positive effect of the innovative solutions which the pandemic will introduce.

Commercial real estate will experience different effects, depending on the type of use. Retail distribution will be required to adopt hybrid practices, as shopping and logistics activities continue to merge in the future. E-commerce and concept stores/show rooms with home delivery will continue to increase. The balance between home delivery, takeaway and in-store servicing will be redrawn completely, to adapt the resources and practices to the increasing demand for the former two items. These changes will likely have a negative impact on high street retail.

Hospitality, including hotels and resorts, student residencies, short-term rental apartments and other non-proprietary uses of serviced premises, will need to adopt technologies that enable maximizing occupancy without risks, in order to achieve a break-even occupancy rate. Restrictions on international travel will have a negative impact. Investment will be required to finance the different layouts and fit outs to accommodate the new distancing requirements. Restaurants will face similar consequences, adding home delivery and takeaway to their services in order to make the most of kitchen capacities. Drive-through stores and service kiosks will spread. Therefore, urban planning and municipal licensing must allow new forms of optimizing capacity to serve demand.

Geriatric and nursing homes will need to add critical-care services. A particularly difficult part of the crisis has been the inability of countries to provide care for the elderly, due to lack of capacity and facilities.

Offices are perhaps the most affected, due to the proliferation of home-based working. There are two possible trends concerning the perceived need for increasing office facilities. For many, the home working experience has proven effective, and their need for office space in single-purpose office buildings may have reduced. However, it has been a very poor experience for others. The effects of isolation and home working on the rates of domestic violence and poor mental health are well-documented.[1] Moreover, some industries, such as training and hospitality providers, are not able to conduct businesses as effectively in a home working environment. Some, therefore, will value the return to traditional office-based activity. However, for workers who return to the office, distancing requirements will mean increased space.

If spatial organization within office buildings remains unchanged, the reality is that all common areas and workstation layouts will require redesigning. Distancing will require much larger workspaces and, consequently, increased square metres needed per worker. The same is true for parking, including increasing capacity for users of individual means of transport, such as bikes. If they hope to return to pre-COVID occupancy figures, co-working premises, usually designed to maximize comfort and spatial freedom, will need to rethink their layout, including introducing air-filtering technologies and expanded sanitation facilities.

Residential real estate will also need to adapt to changes in buyers' criteria. Previously, buyers may have valued a location close to work, school or public transport. Increasingly, size, the availability of open areas such as balconies and terraces, access to green/open spaces, gardens and parks, and designs which facilitate home office needs, such as specific rooms or even good Internet connection, will be highly valuable.

Public urban facilities will, in many cases, require redesign to make the cities more liveable. Wider streets, more green areas, wider pedestrian paths, and fewer obstacles for handicapped citizens should be valued when developing urban environments. Another important consequence is a potential increase in suburban development, where these changes would not be applicable.

Endnotes

[1] Mlambo-Ngcuka, P. (2020). Violence against women and girls: the shadow pandemic. *UN-Women*, 6 April 2020. Available at: https://www.unwomen.org/en/news/stories/2020/4/statement-ed-phumzile-violence-against-women-during-pandemic

Conclusion

Overall, we see that the COVID-19 pandemic did not stop construction for long, and many projects which had already begun have continued. Future projects will have to wait before being launched, due to market uncertainty, lack of knowledge on public aid measures, credit markets and government legislative requests. Sales have slowed down or halted, and most forecasts suggest that recovery could be expected before the third quarter of 2021. Prices for housing are likely to remain similar to pre-COVID for new units, but to decrease for second-hand units if they are not adapted to new technical codes and energy-efficiency requirements. Housing rental and sales for units in prime locations with the latest technologies are likely to be even higher, as they have the characteristics of the "new normal" that is lacking in older units.

Investors with ongoing projects will adopt as many layout and technology upgrades as possible, in order to be competitive. New investments are likely to be put on hold by private investors until new legislation, adapting to the new normal, comes into force. Governments will likely attempt to promote investment by fast-tracking permits, reducing red tape, and opening new territories and sectors for land development. Investors will play a crucial role in making sure all incentives agreed at the political level reach project-finance status at investor level, and loan facility at buyer level.

The single most powerful piece of information that investors use to decide whether a real estate project is viable is the general plan of the city. The general urban plan is the guarantee that there is a fair and balanced distribution of burdens and benefits. For this reason, this plan allocates specific urban parameters for the urban development of the city for all its parts or sectors. These are, in turn, divided into smaller units, making the balance evident with a series of conditions that determine what can be done. The determining factors are called the urban parameters, and comprise the use, intensity, occupation, and percentage of green areas. All these parameters determine the potential of each spatial unit or plot to be developed. This potential for development is what determines the value of various parts of the urban environment, and therefore the potential for returns for investors in urban development.

These plans, however, may need to be completely redesigned or, more practically, may need to allow the complete recalculation of values of many units. This will likely lead to a complete recalculation of values throughout cities. This may generate cities that no longer grow in height but in width. Distancing requirements might necessitate more common spaces, reducing the space available for private development. This, in turn, may make the real estate business limit the returns for some investors.

The pandemic is not yet over, and its implications are still to be learned by the global community. Its effects will not leave any part of the world untouched. Governments, civil society, businesses, and investors will all need to adapt to the "new normal", which is yet to be defined.

Annex I: 10 Principles of People-First PPPs

Principle 1: Build the people-first transformative agenda into infrastructure strategies, ensuring that people's needs are listened to.

Principle 2: Deliver more, improved and simpler people-first projects, by joining up government and other stakeholders, and allowing cities and other local levels to develop projects themselves.

Principle 3: Increase officials' skills in delivering people-first projects, particularly in ensuring that governments know how to better empower women as part of projects, and encouraging the private sector to contribute to the necessary transfer of skills.

Principle 4: Create inclusive policy and legal frameworks that allow for active engagement by communities, and that take a zero-tolerance approach to corruption.

Principle 5: Disclose more information about projects to society, especially around the commitments made to various partners in the project.

Principle 6: De-risk projects, by providing greater predictability in the enabling environment.

Principle 7: Clearly set out the project's criteria for selecting people-first projects that promote "value for people".

Principle 8: Make environmental sustainability a key component of evaluating, awarding and implementing people-first PPP projects.

Principle 9: Use blended financing to encourage private partners to invest in people-first projects.

Principle 10: Avoid debt traps, by ensuring the fiscal sustainability of people-first projects and the transparency of fiscal policies.

Annex II: Types of financing

Characteristics of various types of financing[1]							
Type of finance	**Available to**	**Short-term versus long-term**	**Cost**	**Sectors**	**Complexity**	**Geography**	**Potential scale $M**
Municipal bonds	Government	Medium- to long-term	Low-medium	Transport, schools, airports and seaports	Low	Used globally, but mainly in the United States	200 billion
Dim sum/ Panda bonds	Corporate/ government	Long-term	Low-medium	Corporate finance	Medium	China	200 billion
Qualified public infrastructure bonds	Government-focused	Long-term	Low-medium	Public infrastructure	Medium	United States	200 billion
Industrial revenue bonds	Corporate/ government	Medium- to long-term	Low-medium	Airports/sewage facilities	High	United States	100–500
TIFIA loans	Government	Medium- to long-term	Low	Infrastructure	Low	United States	–
Tax increment financing	Corporate	Medium-term	Low-medium	Construction	Medium	United States	–
Debt							
Institutional investors (incl. pension funds)	Mainly corporate focused, although now entering the project market	Medium- to long-term	Medium (high in the case of equity)	All sectors – depending on experience, may only finance post-construction phase	Medium	Mainly developed countries, such as Canada, United Kingdom, United States, and the Netherlands	50–1 000
Senior debt – bank funding	Corporate/project finance	Short- to long-term	Low-medium	All sectors	Low	Used globally, although not all banks/ countries provide long-term debt products	50–2 000
Project bonds	Project-focused	Long-term	Low-medium	All sectors	Low	Globally used	200–2 000
Sukuk bonds	Project-focused	Medium- to long-term	Low-medium	Renewables, social development	Low	Islamic-based countries (e.g. Middle East and Southeast Asia)	50–1 000
Export credit	Corporate/ government	Medium- to long-term	High	Corporate finance/projects	Medium	Globally used	20–500
Green bonds	Corporate/project	Long-term	Medium-high	Utilities/sewage facilities/ renewables	Medium	Globally used	100–2 000
Social impact bonds	Corporate/project	Long-term	Low-medium	Social development	High	Globally used	0–100

Characteristics of various types of financing[1]							
Type of finance	**Available to**	**Short-term versus long-term**	**Cost**	**Sectors**	**Complexity**	**Geography**	**Potential scale $M**
Hybrid financing products							
International NGOs	Project/corporate/ government	Long-term	Low-medium	Social development	High	Emerging/ least developed countries – capital being provided by developed countries and IFIs (e.g. EU/EIB, WB, USAID)	20–500
Multilateral financing	Project/corporate/ government	Short- to long-term	Low-medium	All sectors	Medium	Developing countries	50–1 000
Mezzanine/ subordinated debt	Corporate/project	Short- to long-term	Medium	All sectors	Medium	Globally used	20–500
Vendor finance	Project/corporate	Short/medium-term	Low-medium	Energy/ technology	Medium	Globally used	0–200
Alternative lenders	Project/corporate	Short/medium-term	Medium-high	All sectors	High	Developed markets	25–500
Equity							
Contractors (e.g. construction firms, operators)	Project	Medium- to long-term	High	All sectors	Low	All countries	5%–10% of equity
Infrastructure funds	Project	Medium- to long-term	High	All sectors	Medium	Developing countries	50–1 000
Sovereign wealth funds	Project	Medium- to long-term	High	All sectors	Medium	All countries	100–1 000
Crowd-funding	Corporate-focused	Long-term	High	Soc. development, tech infrastructure	High	Mainly North America and Europe	–

Annex III: Pre-development study checklist

**Date, place and relevant contact person*

I. Legal due diligence

1.0. Acquisition grounds and ownership title: "Object X" denomination and definition of the real estate/s.

1.1. Ownership documentation, title deeds and contracts of acquisition.

1.2. Property individualization, according to ownership title and latest registration in property registry.

1.3. Third-party rights, encumbrances and obligations registered as real rights or contractual rights, or historical rights.

1.4. Ownership history.

Property title track for a minimum period of 10 years, or the period required by the local legislation. It is important to be able to prove good faith in the acquisition/use of rights over the real estate.

1.5. Examination on the state institution for ownership rights on the property.

Official certificates of the competent state, regional and municipal administrations, confirming the absence or existence of such rights. In cases where the findings reach the conclusion of the existence of such rights, then presentation of an additional statement resolving such issues.

1.6. Examination of restitution claims.

Restitution claims arise from the claims of those who were owners prior to the nationalization of the real estate by governments in former totalitarian states. This claim usually emerges in places were private property was abolished and the owners were obliged to "sell" or "donate" their estates. Depending on the case, those rights might be relevant and would pose a legitimate claim over the real estate property.

1.7. Bankruptcy procedures.

Real estate might have previously been the property of a company, either state or private. When/if it filed for bankruptcy, its assets, mainly real estate, were most likely legally seized and put under administration of the state bailiffs. The bailiffs might hold this in order to produce enough funds

to pay the debts of the bankrupted company, no matter how long ago the bankruptcy took place in some cases.

II. Urbanistic due diligence

2.0. Urban planning evidence, in the form of sketches and excerpts from the general development plans, be these general urban plans (GUPs), regional development plans (RDPs), strategic development plans, or any other plan setting the zoning, use and design for the future development of land in cities, suburban and rural areas.

2.1. Graphic individualization of the real estate, according to the schemes of the GUP of the city, RDPs, or any other urbanistic code that sets out the purpose of the land as per the spatial planning system.

2.2. Designation and limitations, according to the GUP and the detailed urban plan (DUP): references in the GUP of designating the area of the plots in the urban zone, and the generic use (residential, tertiary, public services, green areas, infrastructure) and purpose designation as set by the plan.

The DUP designates the area of the plots as urban zones with territories with specific use and purpose designation set by the law for the specific sectors and plots. In cities, these should necessarily include: urban standards and limitations on urban planning, such as green areas and service areas, streets, roads, communication lines , electricity lines, sewage, parking, etc.

2.3. Urban parameters according to the GUP:

max. building density (%) max. intensity factor x,x min. green areas (%) max. height allowed (m)

2.4. Regulation status and history: latest registration recorded in the property registry on activities of creation and amendment of regulation plans affecting the real estate.

2.5. Cadastre proofs: information from the geodesy and cartography agency and the cadastre office, with the valid cadastral map approved for the locality.

2.6 Applicable sectorial law.

2.7 Applicable tax and fiscal law.

Note: even when urbanistic documents are provided during the analysis, many questions shall remain as to whether all urbanistic procedures (regulation, expropriation, addition, donation, etc.) have been completed correctly. Questions will remain also in relation to mortgage beneficiaries of explicit agreements for the partial or total lift of the established mortgage over the real estate, which, besides the urbanistic, might also have legal implications.

It is always advisable to perform a check for the current status of this information, and to obtain copies of the relevant documents.

Compile codes and a legislative base to assess the overall framework affecting the construction and operational phases.

III. Technical due diligence

3.0. Building/s status – existing objects.

As-built documentation and demolition project, including waste disposal strategy and permits.

3.1.a Land status.

Hydrogeologic, geodesic, edaphology, seismic status, and natural disaster history.

3.1.b Soil quality.

Pollution status of the soil, with test results. Remediation possibilities, including the disposal of contaminated soil and the overall strategy assessing technologies, time-frame and costs.

The ministry of environment records decisions issued regarding the necessity to conduct environmental impact assessments.

In soil with current or past industrial or farming activities, pollution and remediation reports are especially important: findings (in words and graphics), technology, budget, allowed uses, and time-frames.

3.2. Servitudes and rights of existing and decommissioned infrastructure.

Historic or contractual, these could be shown in cadastre documents, among others.

3.3. Neighbouring agreements.

Rights and obligations with neighbouring plots, construction, use and passage rights, utilities, cost splits, and others.

3.4. Municipal, regional and national infrastructure networks.

Rights and obligations to these, such as height allowance in airport areas, residential area distances to train lines, or police lines for construction/use of land.

3.5 Green areas.

There could be a required minimum percentage of the development devoted to green systems, with specific types of plants and trees. There could be a preservation mandate for certain types of vegetation. It is also important to know the procedure to compensate for the reduction of such areas, when possible.

3.6 Utility company agreements.

Coordination letters and pre-existing or current contracts with the companies supplying water, electricity, sewage, and gas. Electricity transformation posts and substations, designed or installed, serving the real estate can be an asset or an expensive liability.

3.7 Preserved elements, such as archaeological sites, natural parks and other areas of special interest, might be affected by the development, and preliminary conversations and agreements with the institutions in charge are advisable, not only at local level but also at regional and national levels.

Note: While assessing the technical resources, innovative technical solutions for construction should also be considered, as they are available together with all technologies applicable to the development and their costs, delivery time-frame and on-site availability. Especially important for all projects is to have a land remediation strategy for potentially polluted industrial/farming soil. This should include available technologies, timelines, budget and other costs, such as those arising from the disposal of polluted soil into newly or especially created dump areas.

IV. Value: utilization of the development.

4.0. Layout planning and feasibility concepts.

Graphic layouts, considering the existing and post-development landscape characteristics, provide a good idea of what is possible before running the numbers.

Define the returns and the desired life span to get these. Envision the disposal and/or reuse of objects after their intended use; is there a potential circularity to them, or to their materials or parts thereof?

4.1. Location, catchment area and transport connection. Potential value added.

The immediate catchment area within 5-, 30- and-60-minute drive zones, including the approximate population affected, is to be investigated, including the infrastructure impact of the development and the pollution impact of the future activity. Connection for access by all kinds of transport.

4.2. Investment and returns. The feasibility study, cost and time-control charts, and cash flows.

A preliminary run of the financials defining the returns should be already feasible, considering the direct cash returns (fees, rents, and sales) and the accountable KPIs.

Please note that, although more complicated for private investors, public investors should be able to calculate and account for the KPIs, taking into consideration important values of indirect return, such as land value increase in neighbouring areas, the recycling of assets, and the life span extension of those assets.

Note: All official documents, certifications, permits, plans, and deeds, existing in any public or private body, are of utmost importance for any further permit or licensing procedure in the development process, as they could lead to potential challenges by third parties, incurring costs in time and money that would hamper chances of success. The best strategy is to divulge them if found, undertaking a procedure to modify or adopt what is said in these, or, if not found, to make a clear statement of the lack of these and therefore show good faith in the proceeds by the developer/investor with "good business manner" and to their "best knowledge". Receiving independent local legal and technical professional advice is mandatory.

Annex IV: Sources on COVID-19 and its implications on real estate, construction and related activities

1. European Commission: https://ec.europa.eu/info/live-work-travel-eu/health/coronavirus-response_en#areasofthecommissionsresponse
2. United Nations: https://www.un.org/en/coronavirus
3. European Investment Bank: https://www.eib.org/en/about/initiatives/covid-19-response/index.htm
4. European Bank for Reconstruction and Development: https://www.ebrd.com/what-we-do/coronavirus
5. International Finance Corporation, World Bank Group: https://www.ifc.org/wps/wcm/connect/news_ext_content/ifc_external_corporate_site/news+and+events/covid-19
6. World Bank Group: https://www.worldbank.org/en/who-we-are/news/coronavirus-covid19
7. European Union Central Bank: https://www.ecb.europa.eu/home/search/coronavirus/html/index.en.html.
8. International Monetary Fund: https://www.imf.org/en/Topics/imf-and-covid19
9. Ernst & Young: https://www.ey.com/en_gl/covid-19
10. KPMG: https://home.kpmg/xx/en/home/insights/2020/03/the-business-implications-of-coronavirus.html
11. McKinsey & Company: https://www.mckinsey.com/featured-insights/coronavirus-leading-through-the-crisis
12. Boston Consulting Group: https://www.bcg.com/featured-insights/coronavirus.aspx.
13. PricewaterhouseCoopers: https://www.pwc.com/gx/en/issues/crisis-solutions/covid-19.html
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Endnotes

[1] Deloitte (2018). Private Sector Participation in Public Sector Financing: An Introduction. Available at: https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Public-Sector/gx-ps-funding-and-financing-smart-cities-20181.pdf

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