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Review of the implementation of the programme of work 2017-2018

Sustainable urban development and smart sustainable cities

Guidelines on tools and mechanisms to finance smart sustainable cities

Note by the Secretariat

Summary

In 2016, the ECE together with the International Telecommunication Union (ITU) launched the global initiative United for Smart Sustainable Cities (U4SSC). One of the aims of the U4SSC is to develop guidance and training materials for city leaders to facilitate the transition of cities into smarter and more sustainable cities and to support the achievement of the international agreement such as the 2030 Agenda and the New Urban Agenda.

In 2017, under the umbrella of U4SSC, the secretariat of the Committee decided to support the development of the “Guidelines on tools and mechanisms to finance smart sustainable cities” (ECE/HBP/2017/2 paragraph 67). In 2018, a proposal for the Guidelines was presented at the 78th session of the Committee which approved the publication of the Guidelines on tools and mechanisms to finance smart sustainable cities as an official online publication (ECE/HBP/194 paragraph 29). This document includes the guidance on tools and mechanisms to finance projects for smart sustainable cities.

The Committee is invited to take note of the guidelines.

Disclaimer

This draft was prepared by a group of experts under the United for Smart Sustainable Cities Initiative and does not necessarily represent the position of the United Nations Economic Commission for Europe. Following the 80th Session of the Committee on Urban Development, Housing and Land Management this draft will be finalized and published.

Introduction

Promoting sustainable urban development and building smart sustainable cities is the focus of SDG 11 – “Making cities and human settlements inclusive, safe, resilient and sustainable” contained in the 2030 Agenda for Sustainable Development. Work on achieving SDG 11 is crucial for implementing the 2030 Agenda since more than half of the planet’s inhabitants live in cities and this number continues to grow. Achieving the 2030 Agenda Sustainable Development Goals (SDGs) is highly dependent on the joint efforts of governments and stakeholders working at national, global, regional and local levels, the civil society, including the private sector and local communities. Developing and applying effective methods of financing smart sustainable urban development is crucial to achieving the SDGs.

The Addis Ababa Action Agenda on Financing Development 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 UN agreements, such as the Paris Climate Agreement, Sendai Framework for Disaster Risk Reduction and others.

The Addis Ababa Action Agenda recognizes that funding from all sources, public and private, bilateral and multilateral, domestic and international, as well as alternative sources, will need to be tapped into in order to benefit the cities. It stresses the importance of moving from funding development to financing, meaning combining, putting together resources of national, local authorities, private sector together to support priority actions for achieving SDGs and to ensuring that no one is left behind.

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

1. Mobilize public finance
2. Set up appropriate policies and regulatory frameworks to unlock private finance, trade collaborations/opportunities, science and technological development, and incentivizing changes in production and investment patterns
3. Develop innovative financing instruments, such as people first public private partnerships.

This guidance document, firstly, offers an overview of the various financial mechanisms, their challenges, communication needs and methodologies; and, second, provides national and local authorities with recommendations on the approaches to financing smart sustainable cities projects.

I. Characteristics of Smart Sustainable Cities

The UNECE definition of specific SSC characteristics¹ focusses on what smart cities should “do”.

Smart Cities Characteristics

Combining the proposed Sustainable Development Goal 11 with the use of ICT, our “Smart City” should be *inclusive, resilient, safe, sustainable* and “*more connected*”. Hence, it should:

- ensure access to adequate and affordable housing
- provide access to safe, affordable and sustainable transport systems
- enhance inclusive and sustainable urbanization
- safeguard the world's cultural and natural heritage
- reduce the number of deaths, displacements and losses caused by disasters
- reduce its environmental impact
- provide universal access to safe and accessible green and public spaces
- support positive economic, social and environmental links between urban and rural areas
- integrate innovative technologies and ICT within its different sectors

Source: unece.org²

The notion of a 'Smart and Sustainable City' entails more than just 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 and its goals, its stakeholders and their priorities, and in that way, identifying the attributes that would tailor to the uniqueness of each city while enhancing its overall living quality and sustainability with the support of ICTs.

This section provides an overview of the key attributes that characterize cities, thus setting the basis for identifying the role of ICTs within the SSC context. Broadly speaking, there are three overarching and closely interrelated city dimensions at the core of a city (Table 1):³

- Environment and sustainability: Cities represent 75% of energy consumption and 80% of CO₂ emissions on a global basis and represent the largest of any environmental policy challenge.⁴ Therefore, sustainability and the environment are the most critical components in the functioning of any city.
- City level services: The second dimension of a city is its services and how they characterize a functional urban environment.
- Quality of life: Quality of life (QoL) is a recurrent theme in understanding the nature and operation of a city and a key dimension since it reflects how citizens or inhabitants of a city perceive their own sense of well-being. People are constantly striving to better themselves across many facets of their lives. The trend of rapid urbanization is reflected here because

¹ <http://www.unece.org/housing/smartcities.html>

² <https://www.unece.org/housing-and-land-management/projects/housingsmartcities/smart-cities-characteristics.html>

³ http://wftp3.itu.int/pub/epub_shared/TSB/ITUT-Tech-Report-Specs/2016/en/flipviewerexpress.html - page 14

⁴ <https://www.theguardian.com/sustainable-business/smart-cities-innovation-energy-sustainable>

of the migration to urban areas in search of better employment and hopefully improved living conditions.⁵

Table 1: Attributes for each Dimension of a City

DIMENSION	ATTRIBUTES
1) Environment and Sustainability	<ul style="list-style-type: none"> • Policy Management • Infrastructure • CO2 Emissions • Energy • Pollution and Waste • Social, Economy and Health
2) City Level Services	<ul style="list-style-type: none"> • Technology and Infrastructure • Sustainability • Governance • Economy
3) Quality of Life	<ul style="list-style-type: none"> • Well-being • Economy • Global Cities Indicators Facility

Each of these dimensions has several important attributes and in some cases, there is some overlap in what these attributes represent; it is recognized that the "lens" they are viewed through can vary and therefore a 360-degree view is important to consider.

The three dimensions can be reclassified into four areas (pillars), listed below. It should be noted that technology and infrastructure are discussed separately since they tend to have a broader role in a city landscape. Details of what each of these pillars encompasses are summarized in the Table 2.⁶

- Economy – The city must be able to thrive – jobs, growth, finance
- Governance – The city must be robust in its ability to administer policies and manage the different elements required to make projects successful
- Environment – The city must be sustainable, minimizing environmental impacts with detrimental effects for future generations
- Society – The city is for its inhabitants (the citizens)

⁵ Global City Indicators Facility: <http://www.globalcitiesinstitute.org/>

⁶ http://wftp3.itu.int/pub/epub_shared/TSB/ITUT-Tech-Report-Specs/2016/en/flipviewerexpress.html - page 19

Table 2: Smart sustainable city dimensions

Economy	Governance	Environment	Society
<ul style="list-style-type: none"> - Employment - GDP - Market-Global/Local - Viability - Investment - PPP - Value Chain - Risk - Productivity - Innovation - Compensation 	<ul style="list-style-type: none"> - Regulatory - Compliance - Processes - Structure - Authority - Transparency - Communication - Dialogue - Policies - Standards - Citizen Services 	<ul style="list-style-type: none"> - Sustainable - Renewable - Land use - Biodiversity - Water/Air - Waste - Workplace 	<ul style="list-style-type: none"> - People - Culture - Social Networks - Tech Savvy - Demographics - Quality of Life - User Experiences - Equal Access - End Consumers - Community Needs - The city as a database

The four pillars are enabled through a series of physical and service infrastructures which form a city's lifeline including (but are not limited to):⁷

- Real estate and buildings
- Industry and manufacturing
- Utilities/energy
- Waste, water and air management
- Physical safety and security
- Healthcare
- Education
- Mobility

Successful development of Smart Sustainable Cities requires assessment and reevaluation based on the internationally agreed definition for a smart sustainable city developed by the International Telecommunication Union (ITU) and the United Nations Economic Commission for Europe (UNECE): “*A smart sustainable city is an innovative city that uses information and communication technologies (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 (ECE/HBP/2016/4).*”

Based on the definition, a set of international key performance indicators (KPIs) for smart sustainable cities to achieve the sustainable development goals (KPIs SSC)⁸ have been developed by the ITU and UNECE. These allow urban stakeholders to measure their progress in relation to their individual smart city goals and the SDGs. Please see a summary of the Dimensions of Smart Sustainable Cities in KPIs for smart sustainable cities in Table 3.

⁷ http://wftp3.itu.int/pub/epub_shared/TSB/ITUT-Tech-Report-Specs/2016/en/flipviewerexpress.html - page 29

⁸ <https://www.itu.int/en/publications/Documents/tsb/2017-U4SSC-Collection-Methodology/index.html>

Table 3: Summary of the Dimensions of Smart Sustainable Cities in KPIs for smart sustainable cities

DIMENSION	DESCRIPTION
1) Economy	<ul style="list-style-type: none"> • ICT (including ICT Infrastructure, water and sanitation, Drainage, Electricity supply, transport, public sector) • Productivity (including innovation and employment) • Infrastructure (including water and sanitation, waste, electricity supply, transport, building and urban planning)
2) Environment	<ul style="list-style-type: none"> • Environment (including air quality, water and sanitation, waste, environmental quality, public spaces and nature) • Energy
3) Society and Culture	<ul style="list-style-type: none"> • Education, Health, and Culture • Safety, Housing, and Social Inclusion (including safety, housing, social inclusion and food security)

II. SSC Project Development

A potential project is built from the ground up. The fundamental message of the Sustainable Development Goals (SDGs) ‘leave no one behind’ requires that there is clear flow of communication from the citizens to the project developers, clarifying objectives and success matrix. Citizens input is an integral part of project identification; participation of the citizenship can happen directly in two ways; one, via their elected officials and second, and via investment opportunities (including tax breaks for project developers). There are some good examples of direct participation of people, in the process, such as the Governance Portal in India.⁹ The strong citizen participation provides credibility and collective ownership of projects.

The unique factor of a smart city is stakeholder engagement. As such, the input of the citizens, as a stakeholder and the expectation of the outcomes will dictate the success of a project. Local governments and city councils are the nexus for effectively communicating specific projects. Not only are they key in garnering input of their citizens and constituents, but they also encourage the flow of information to the other actors needed to implement and bring to a successful conclusion a project which delivers one or more SDG at the city level.

There are many organizations which have opportunities for project preparation and experts in helping make projects investment ready. Input into the preparation to make a project investment ready, needs to be provided by all of the participants; local governments, investors, legal professionals and the project developers.

⁹ <https://www.itu.int/en/publications/Documents/tsb/2017-U4SSC-Deliverable-Connecting-Cities/index.html> and www.mygov.in

Projects should draw on an ‘expert eco-system’. This refers to the community of experts needed for the implementation of a successful project, as well as for drawing on ways of funding which require expert coordination. The expert eco-system can advise on intervention in a city in three main ways: by playing the role of coordinator and bringing different interests and stakeholders together to establish new platforms for collaboration; by playing the role of funder, which consists of funding infrastructure and demonstrator projects; and playing the role of regulator, making sure that common standards and regulations are in place.

The experts required to originate and develop a specific SSC project include:

- Local Governments/ City Councils: stakeholder engagement professionals will ensure that the needs and wills of the constituents are included and encapsulated in any project that is launched.
- Investors/ Donors: given the phase of investors, early stage to developed projects will require bespoke expertise for both investors and donors.
- Private Sector: project development and origination innovation with a clear understanding of primary, secondary and tertiary impacts for the projects on the SSC, SDGs and associated SDGs.¹⁰
- Legal professionals: policy experts and contractual law skills will build capacity and establish credible timelines for project deliveries.

As the establishment of SSC is a long-term process and cannot be achieved overnight, it is essential that a set of indicators for projects are defined that allow for comparability, promote sustainable development and allow cities to quantify improvements as time passes.

Indicators should ensure consideration of each of the pillars of a sustainable city, which SDGs can be advanced through the project, but also the project’s ‘bankability’.

III. Innovative Financing

It is important to understand the difference between funding and fund-raising. The Oxford dictionary states that funding is defined as: Money provided, especially by an organization or government, for a particular purpose. Fundraising is denoted as: the seeking of financial support for a charity, cause, or other enterprise; seeking to generate financial support for a charity, cause, or other enterprise.

This is the key distinction between funding and fundraising. Most understand that funding is proactive, that funds are raised for a specific project or purpose. These funds are from a fund supplier to financially support a project for a service to the public, only. Whilst, fund-raising is actively looking for funds to support causes. These funds can be used for anything that is within the remit of supporting a cause.

This paper focuses on both fundraising and funding, with specific interest on the various financial mechanisms which can be used separately or in tandem to support SSC and SDG projects. An illustration of the variety of financial instruments available for funding SSC projects is given. Depending on the objective of the project, supporting the SSC concept, and the timeframe; a wide variety of instruments can be used.

¹⁰ See above, 1.1.4: illustration B.

Increasing bankability to fund the SSC Gap in line with the SDGs and the “Leave No One Behind” initiative behind the SDGs and Agenda 2030, requires several actions at the decision-making level:

A clear and definitive smart city strategy must be built and communicated: policy-makers at the city, municipal, regional and national levels must first ascertain how they will pursue SSCs and which SDGs this will benefit, building into their strategy future needs for the city in question, priority sectors for maximum impact, and funding needs. SDG commitments, the most relevant path to achieving them over a given time period and the additional costs of doing so, must be built into this analysis and the strategy. Tools such as the UNECE SSC Profiles¹¹ could greatly aid this process of building a definitive strategy.

Knowledge Hubs and Partnerships to reduce knowledge barriers, build capacity and create private- and public-sector stakeholder inclusion could be established.

A major barrier to bankability is the lack of knowledge of projects, their risks and rewards, complex financial instruments, and lack of stakeholder interaction. These elements are needed to measure success of the project and to indicate investability of the project. Shared forums, such as the Smart City Information Platform, directed at specific projects could help build understanding and confidence.

Evaluation of financial instruments appropriate to fund SSC projects (These instruments will be addressed in chapter 3) must be carried out, which is the domain of the investors and donors once the project has been flagged by local government. Feasibility studies should be used to identify relevant financing instruments and sources of sustainable finance, drawing wherever possible on existing examples. A handful of Evaluation Studies focused on financial instruments have already been carried out under the JESSICA Contribution Agreement between DGREGIO and the EIB¹² which could prove useful. This document, alongside the case studies could also prove a valuable tool. The question to bear in mind is not whether or not innovative financing is needed, but rather in what form, to make the project attractive to diverse sources of finance.

Policy makers must then ensure that necessary steps are taken to create an enabling environment to attract and sustain these feasible sources of financing. Reusable and sustainable platforms which are scalable for other planned projects should be prioritized. See appendix 1 for guidance on communicating with investors and stakeholders about SSC projects.

Blended Finance¹³ should be used to reduce project costs, linking the changing risk of the project over its life-cycle to investors most comfortable with such risk. One could envisage a production line style of financing, with early stage projects being financed by grants and public-sector money, later stage by a Fund, and the mid-term by a mixture of debt and PPP funding.

¹¹ Available at <http://www.unece.org/housing/smartcities.html>

¹² Joint European Support for Sustainable Investment in City Areas (JESSICA) is a new policy initiative of the European Commission (EC), supported by the European Investment Bank (EIB). The Council of Europe Development Bank (CEB) has also agreed to participate, following a tri-partite Memorandum of Understanding between the EC, EIB and CEB, signed in May, 2006, which agreed to more cooperative working between the respective institutions. http://www.eib.org/attachments/jessica_preliminary_evaluation_study.pdf

¹³ Blended finance is a mix between charitable (grant funding) and high-risk funding.

One thing is clear - there is no one generic solution but rather several, based on factors not limited to life cycle, risk and return, investor preferences, depth of capital markets and supportive legal, governance and policy frameworks. Shared innovative finance experiences from within and outside the region, adapted for local use to meet their specific bankability challenges is a good starting point for meeting the financing needs for the region's smart city ambitions and to meet their commitments to the sustainable development goals.

IV. Financing Mechanisms Once allocation of projects has been identified, funding and finance of projects initially look for traditional financial instruments. However, more unique and modern instruments have been developed which may add to the variety of financial mechanisms. What is important is to be able to implement projects and measure the impact of the projects on SSC objectives. There therefore is a need for the various participants to add expertise and capacity into the construction of projects, not only to aid in determining feasibility but give the project the best chance of success in supporting SSCs. See appendix 2 for guidelines on presentation requirements for SSC projects.

Some International financial institutions [IFIs, DFIs or MFIs]¹⁴, UN organizations, national sources and other donors, include some sort of funding, in-kind or otherwise to support in the preparation or investment readiness of projects which identify SSC initiative and SDGs appropriate projects.

Sources of Finance

How investors, donors or procurement authorities choose the most efficient financing depends on a variety of factors, not least of which is to ensure that any project is appropriate for the city and to support the endeavor to become an SSC.

Whether specific financing tools, such as a loan, debt private placement or project bond finance in the capital markets are appropriate for a specific SSC project depends on factors such as: transaction size and type, complexity, conditions of bank and capital market at the relevant time, administrative costs such as issuance and swaps, the requirement for special terms, any non-standard covenants, the time available for the marketing, preparation of the financial documentation, strategic considerations such as investor diversification and public visibility and if staged drawdowns of funds are available and if not, the expected costs of negative carry.

In some cases, the rules of bidding processes require certainty of financing, which may limit the choice of financial tools. For example, in certain jurisdictions, the choice of financing for local or city authorities may be shaped by access to traditional financial tools and practice rather than by legislation. For example, in France their public procurement rules oblige the public authority to agree on a total cost of the project at an early stage; a behavior which is not legislative but, by tradition, may lead transactions more comfortably toward bank financing and private placements, and away from the municipal bond market. This is because for a municipal bond issue, the price is set at the 'pricing' stage (a few days before issuance), creating uncertainty in the exact total cost of the Guide to infrastructure financing.¹⁵

In these cases, to help eliminate any potential uncertainty in price between the bid stage and the time of bonds issuance, a risk-sharing mechanism between the public authority and

¹⁴ These acronyms will be used interchangeably. IFI are international financial institutions, MFIs are multilateral financial institutions, and DFIs are development financial institutions.

¹⁵ <http://www.eib.org/epec/index>

investor/bondholder should therefore be discussed with bidders at an early stage of the procurement process. The risk of price fluctuations is shared between parties enabling an upfront concrete financing commitment. Moreover, it should be noted that even ‘certain financing’ from banks may be subject to some conditions; despite fixed margins, and pricing depending on market swap rates at the time of financial close.

However, financing processes for bank loans and bond market finance differ greatly. The differences can include: the participants, the issuance process and timing, the process of pricing transactions, credit worthiness, credit vetting processes, documentation and key terms (including covenants), all-in costs, and the use of official credit support programmes (such as from the IFIs, UN Organizations and/or other public-sector entities, including sub-sovereign institutions).¹⁶

The sources of funding are as diverse as financial market players. It is imperative to use every tool in the financial toolbox to support and bring projects to bear in bringing SSC initiatives and appropriate SDGs to fruition. There are some notable opinions stating that exclusively traditional financial models and tools should be used as investment vehicles to fund SSC projects. The current initiative, however, will expand beyond traditional finance to seek other, more modern, avenues for fund raising and funding. Some examples of sources of finance, using a variety of financial instruments from within table 1, are listed below, this is not an exhaustive list, but recognizes the variety of financial tools available to support SSC and SDG themed projects.

Table 3: Description of Individual Instruments

	Finance Type	Description
Mezzanine Finance	Subordinated loans	A loan that, in the event of default, will only be repaid after all senior obligations have been satisfied.
	Preferred equity	Equity, in the case of default, will be repaid after all senior obligations have been satisfied and before paying common equity holders.
	Convertible debt/equity	A form of hybrid mezzanine finance denoting a loan that can, at some point in the future, to be converted into shares.
Non-mezzanine Financial Instruments	Loans with publicly funded interest subsidy	A payment blended to soften terms of private export credits, or loans or credits by the banking sector.
	Syndicated loans	An IFI provides a parallel loan to one that is provided by a private investor, also a loan from a group of international capital players.
	Shares in collective investment vehicles	Collective of pooled funds for investment in financial or non-financial assets or both. These vehicles issue shares or units, by corporate structure or trust structure, respectively.
	Bonds	Fixed-income debt instruments, issued by governments, public utilities, banks or companies, which are traded on liquid capital markets.

¹⁶ https://www.afme.eu/globalassets/.../afme_guide_to_infrastructure_financing2.pdf

	Finance Type	Description
	Additional finance mobilized by cash grants	Grant funding for a proportion of a project's costs or capital guarantee may improve the viability of the project and make it more attractive to investors.
	Asset-backed securities	Securities whose value and income payments are derived from and backed by a specific pool of underlying assets.
Unfunded Liabilities	Funds mobilised by guarantees	Guarantees are risk-sharing agreements. Whereby, the guarantor agrees to pay part or the entire amount due on a loan, equity or other instrument to the lender or investor in the event of non-payment by the borrower or loss of value in case of investment.
	Funds mobilised by insurances	Insurances typically cover specific risks, such as political risk insurance.
Other	Advanced market commitments	A contract offered by a government or other financial entity, used to guarantee a viable market if a product such as a SSC project can be successfully developed.
	Common equity	Equity is the value of an asset less the value of all liabilities on that asset.
	Technical cooperation another in-kind effort to mobilize private investment	Technical cooperation is used to conduct a feasibility study to establish the investment potential of a project
	Crowdfunding	Crowdfunding is the use of small amounts of capital from a large number of individuals to finance a new business venture or project.
	Cryptocurrency	A digital currency in which encryption techniques, such as block-chains, are used to regulate the generation of units of currency and verify the transfer of funds, operating independently of a central bank; peer to peer fund raising.
	Private Equity	Private Equity is a non-publicly traded source of capital from investors who seek to invest or acquire equity ownership in a company.
	Venture Capital	Venture Capital is money provided by investors to startup firms with long-term growth potential.

City population through general taxation

Public financing is one of the most basic ways of raising funds to support appropriate projects. However, given the squeeze on municipal budgets or the inability, in some cases to collect taxes, this avenue is fraught with challenges that could possibly put any project that relies solely on funds generated by taxation in real jeopardy.

The city can raise marginal taxes and earmark those taxes for a specific project. For example, a minimum increase per litre of petrol and using that increase to fund a mobility project. The effects of the increase would be to move the population from fossil fuels to more renewable

ways of transport.

Specific taxes, e.g. property taxes for Energy Efficiency (e.g. PACE)

Property Assessed Clean Energy (PACE) is a way of financing energy efficiency updates or renewable energy installations for residential, commercial and industrial property owners. This is one way that already established legislation for renewable energy or retrofitting current property assets can be used as a funding vehicle. A notable downside is that not all areas or cities have the requisite legislation in place, thereby making funding challenging.

Commercial banks (debt)

Another traditional way of raising funds to support projects is through drawing on the issuance of bonds and loans. In these cases, the SSC or project developers raise funds through loan facilities via commercial banks or bond issuance. Depending on the size of the tranche and thereby the project, a series of commercial banks may need to form a syndicate to generate a large enough loan facility to support the project. This may include the construction and distribution of municipal bonds. In addition, convertible bonds may be used with project developers to mitigate and more effectively measure the risks inherent in the project's development.

Banks are intimately involved with all aspects of debt particular to capital markets, including:

- Syndicated loans,
- Bonds,
- Asset backed securities,
- SPVs,
- Loans,
- Mezzanine,
- Non-mezzanine products

IFIs (debt, mezzanine finance, equity, and guarantees)

Depending on the geography and the city, IFIs may be the first place to source funds to underwrite SSC projects. There are a series of basic tools IFIs use to fund projects, they include:

- Debt - a loan facility to either the SSC or the project developer to fund an appropriate project. An IFI may be seen as a last resort in some regions. However, the benefit of IFIs is that they may have some influence on governments that are beyond the scope of commercial banks and may aid in reducing the uncertainty of default.
- Mezzanine Finance - using a hybrid of debt and equity financing that gives the lender the right to convert to an ownership or equity interest in the company in case of default, after venture capital companies and other senior lenders are paid. This type of financing is most appropriate for project developers.
- Equity - Some IFIs invest in firms via equity purchases. Again, this tool used by the IFIs is one that is appropriate for the project developers.
- Guarantees – This are capital guarantees for municipal bonds, involving the development of a fund specifically to be used in a region which will take over the first loss. This will encourage commercial banks or venture capitalists to participate in co-investing in projects.

Sovereign Wealth Funds (SWF)

These types of funds differ from commercial banks and IFIs in one key area; they consist solely of pools of money derived from a country's reserves, set aside for investment purposes to benefit the country's economy and citizens. In most cases these funds originate from the selling of the country's resources; oil, gold, etc.

Family Offices: Diaspora

This is one avenue of funding that is unique in both structure and deployment. Family offices are funds and investment vehicles that are backed by ultra-high-net-worth individuals or families. These funds may also include aggregate diaspora funds. A diaspora is a scattered population whose origin lies in a separate geographic locale. Most noted diaspora communities maintain strong political ties with their homeland, this includes financial ties. Diasporas are therefore known to fund projects that are in a specific country and focus on a specific area with which they have a connection. This source of funding would be mainly appropriate for states with significant diasporic populations elsewhere in the world.

Crowd Funding

Crowdfunding is a new investment source that can raise funds for small to medium size projects, with a maximum capital ask of \$5 Million. Investment crowdfunding is a way to source money for a company by asking a large number of backers to each invest a relatively small amount with it. Crowdfunding offers a new potential point of entry for investors, especially those with more limited funds.

Crowd Funding is highly successful for projects, goods and services requiring funds that may not be available via corporate banks, bonds or private equity. The terms crowd funding and crowdsourcing are often used interchangeably and both refer to the practice of funding a project or venture by raising small amounts of money from a large number of people, typically via the Internet or other crowdfunding platforms.

Funding through (energy) savings

Although energy saving funding is listed here, it is not necessarily a way to raise funds but to reap the savings of energy efficiency. When costs go down, then the difference, or 'cost saving' can be used to fund other projects. Funding via energy savings is wholly dependent on a well-regulated energy market with a clear way to measure the savings.

Grant funds: Governments, IFIs, other donors for grants

Grant funding is another traditional way to support projects, used most effectively as a first loss guarantor. Grants, it must be noted, have a negative 100%. Grants can be used most effectively when funding project preparation or to leverage a blended capital approach.

Seed money: Private Equity and Venture Capital

Private sector instruments include Private Equity and Venture Capitalism. Private Equity is a non-publicly traded source of capital from investors who seek to invest or acquire equity ownership in a company. Venture Capital is money provided by investors to startup firms with long-term growth potential.

Seed funding can be some of the trickiest type of funding to achieve. There are financial players that exclusively invest at the seed funding or start up level. These players may be dedicated private equity funds, venture capital, angel investors or family offices.

Private equity and venture capital investors look for high return, because of the risks they bear when investment in a new project and/or venture.

Cryptocurrency: Coins and Tokens

This is the most innovative and hyped, as well as the riskiest, of the fund-raising avenues for projects to support SSC and SDGs. A cryptocurrency is a digital currency based on the block-chain technology without the use of central banks. The tokens/coins are a highly risky but viable fund-raising option for project developers and local government that do not have ready access to capital markets or that experience high levels of corruption.

Every cryptocurrency is built on innovative, open-source block-chain technology. The reach of cryptocurrencies is ideally suited to raise funds for the SSC and SDGs. As regions that are not well connected to financial markets and in regions that have the resources, motivation, discipline but have no funding harvesting these resources to a mega-machine, the UN, international capital markets, or IFIs.

The technology behind cryptocurrencies can transform the economy; block-chains. On a very basic level, blockchains are swift, flexible, cheap, granular, efficient, have low transaction costs and are 'unhackable'. They reduce uncertainty, facilitate economic activity and link intrinsic value without a custodian. Specifically, blockchain technology allows:

- The lowering of uncertainty by exploring the identity of who is the counter-party: a technology solution of reviews/ratings/kite marks will aid in this endeavor. The cons focus on the technology, which is seen as fragmented and uses large amounts of energy. On the plus side, it is on an open global platform, any individual can be involved from any source, and it is user controlled to facilitate trade.
- Asset tracking, both of data and product; an easy way to avoid tampering. This asset tracking can fit seamlessly into an SSC project funding initiative. The cryptocurrency aid in managing vendors across many supply chains; illustrating a shared reality across many non-trusting entities. Indeed, cryptocurrencies are robust enough to complete complex trades with added transparency.
- If there is reneging on a contract, there to be automated intervention; as the smart contracts are binding and are guaranteed without the use of a third-party enforcer. Bad actors will be collapsed and fall under automatic enforcement.
- Ending of the custodian monopoly leading to the ending of remittance rip-offs, essentially disrupting the domination of third-party organizations and the power of intermediaries - forcing banks and other financial institutions to develop new ways of supplying capital and liquidity. The value of cryptocurrencies is to easily solve the 'leaky bucket' issue; reducing costs, solve inefficiencies and eliminate corruption.

The reach of cryptocurrencies is ideally suited to raise funds for an SSC project or SDGs.

Social Impact Investing

Social Impact Investing is one of many terms identifying an investment approach based on integrating social or environmental values with valuation metrics impeded in the financial tool. Other terms describing an emphasis on socially responsible investments (SRI) include socially-conscious investing and responsible investing. Impact investing is a newer branch of SRI extending into the realm of supporting organizations that provide beneficial social impact. Impact investing could form a component of Corporate social responsibility (CSR), which generally refers to the focus on a corporation's initiatives and practices that addresses the responsibility said corporation takes toward the wellbeing of the environment and social causes directly or indirectly relating to its activities and policies.

A social impact mechanism has traditionally been a debt instrument, such as a social impact bond. An example of which was first launched in the UK in 2010, and since then over 36

SIBs have been implemented, with many more in the pipeline. Worldwide over 90 SIBs have been launched or are under development in countries such as the United States, Canada, Australia, Japan, the Netherlands, Portugal and Israel. In 2014 the social impact investment market was estimated by Forbes to have the potential to achieve USD 3 trillion and found USD 46 billion in sustainable investments currently under management.¹⁷

Social Impact Investments often bring together capital and expertise from public, private and not-for-profit sectors to achieve a social objective and can therefore provide access to substantial institutional and retail investors, socially responsible investors, philanthropic investors, foundations and corporate social responsibility funds.¹⁸

Green Investments

Green Investments, often conflated with socially responsible investing (SRI), are essentially investment activities that focus on companies or projects that have an environmental aspect, the production and discovery of alternative energy sources, the implementation of clean air and water projects, and/or other environmentally conscious business practices. Green investments may fit under the umbrella of SRI but are fundamentally much more specific.

Pure play green investments are those that derive all or most of their revenues and profits from green activities. Green investments can also be made in companies that have other lines of business but are focusing on green-based initiatives or product lines. Dependent upon the project, green investments may be applicable to SSC initiatives and provide access to similar potential funding avenues to SRIs.

Structuring of Smart Cities Projects

Projects can be structured in a number of different ways, usually specified at the project's outset. Moreover, the way in which projects are structured has a significant effect upon the types of finance which are available and appropriate. Each of the Financial Instruments and sources and financing discussed above is particularly suitable to certain project structures. Each potential project structure has typical timeframes, all contain the potential to lead to the funding of projects that will successfully support SSC and SDG focused projects.

In some cases, the local government will initiate a project by outlining and highlighting an SDG or a smart city initiative focus. In these cases, therefore, it makes sense to look for various tools to cover the range of risks inherent in SSC and SDG projects. A list of market participants involved in the various funding mechanisms can be found below.

¹⁷ Sir Ronald Cohen and Matt Bannick. (2014). Forbes Magazine. Is Social Impact Investing The Next Venture Capital

¹⁸ Innovative Finance for Smart Sustainable Cities UNECE 2017
https://www.unece.org/fileadmin/DAM/hlm/sessions/docs2017/Information_doc_12_Innovative_Finance_for_SC.pdf

Mechanism	Risk Profile	SSC/SDGs	Investors
Debt: - SPV - Asset Backed - Syndicated loans - Senior bank loans - bonds - Municipal	- medium - low - medium - low - depending on the bond: Low to medium - Low; Depending on credit worthiness	SSC and SDGs	Banks/Institutional investors/ IFIs
PPP	Medium	SSC and SDGs	Banks/ private investors
Social Impact	Low to Medium	SSC and SDGs	Angel investors/ banks/investment funds
Blended Capital	Low combined with High	SSC	Charities/VE/PE
Green investment	Medium	SDGs	Banks/ Investment Funds/IFIs
CSR	Medium	SDGs	Banks/ Investment Funds
Private Placement	High	SSC and SDGs	VC/PE/ Angel Investor
Social Accounting	Low	SDGs	Banks/ Investment Funds
Crowdfunding	Medium	SSC	Public platforms
Digital Currency	High	SDGs	Public
Grants & Subsidies	Low	SDGs	Charities/ IFIs
Guarantees	Low	SDGs	Charities/ IFIs

“City” Projects

Funding that comes directly from municipal budgets are defined as “city” projects. Basically, municipal bonds are issued as forms of tradable debt. The bond issuer is the borrower, while the bondholder or purchaser is the lender. At the maturity of the bond, bond issuers repay the bondholder the principal value.

Municipal Debt

Municipal debt instruments are the type of funding which is not only seen as the dominant method of funding city projects, but also is the most traditional and fits seamlessly into municipal budgets. The funding is only possible if there is clear and robust access to well-developed capital markets, and there is no uncertainty in the municipality’s ability to raise revenues through taxes.

The upside of this funding is that, as long as tax revenue is consistent, then this type of funding is easy to establish and use as support for bond issuers. It is relatively cost effective

for the bondholder.

The downside is if taxes are not consistent or robust then servicing debt may become impossible or unwieldy. Looking to issue municipal bonds can also be costly for bond issuer, depending on the credit: the worse the credit the more expensive this type of funding can become. In addition, for the bondholder, if there is no distribution network, then such bonds can become dogs and carry an unsustainable liability on the balance sheet.

Typical finance instruments for “City” Projects

To define the various bonds often used in “City Projects”: a municipal bond is one that is serviced by tax revenues; a green bond is a tax-exempt bond which is issued by federally qualified organizations and/or municipalities for the development of brownfield sites; a revenue bond is a municipal bond supported by the revenue from a specific project, such as a specific SSC project; and a that is issued on behalf of private entities are referred to as private activity bonds, these are tax-exempt bonds issued by or on behalf of a local or state government for the purpose of providing special financing benefits for qualified projects.

One way to deal with some of the risks is to look for other bondholders, such as IFIs and innovative bond issuances. Innovative bonds include green bonds, social impact bonds, revenue bonds, diaspora bonds; the number of bonds continues to grow and innovate.

Alternative bondholders are necessitated for example, if taxes are unreliable or are difficult to procure, then IFIs can be used to support and underpin municipal bonds, especially in developing countries by capital guaranteeing the principle value. The city therefore only needs to service the yield and in case of default, the IFI carries the risk of first loss. Moreover, innovative bond solutions may also be required when, in some areas of the world, issuing a bond may be too expensive given the credit rating of the city or country. Lack of distribution also leads to the need for alternative bondholders. Some bonds, especially junk bonds, require a specify market and liquidity to make the bond palatable to investors. In some cases, this platform and market does not exist, there are no market makers for the bonds.

Corporate Projects

This is an interesting structure, a corporate project or company underwritten by the city. Examples of which include waste recycling, energy generation, and others, depending on the legislation and geography of the city. Most city owned companies are in the field of necessary and essential infrastructure.

City Companies: Debt Instrument

City owned companies in the field of infrastructure are usually projects that deliver essential services. These companies are too big to fail (or too essential to fail), thereby they take on the elements and characteristics of the city they serve. The long length of such projects can be seen as a positive risk as well as a negative one.

The role of project developer and deliverer is usually taken on by a private company, which insulates the company from political change. A robust city owned company is created according to the needs and length of the project, and dedication of delivery is built into the structure of the business plan.

However, the risks of this model include, political; such as political agendas reflected in the project development and delivery. Reliance on capital guarantee from a city also presents risks. This may seem ideal at the start of a project, but if taxes tail off or there is city wide corruption, then there is an increased possibility of the projects not being completed or done at a low quality. There is also a real danger of nationalization of this kind of company structure. In

addition, If projects take too long to deliver, this may have a negative impact on politicians' legacy, creditworthiness, and legislation.

Typical finance instruments for corporate projects

The types and variety of the bonds used to raise funds for city owned businesses which will deliver essential services are quite traditional. The approach, however, benefits from the fact that there are a number of debt instruments that can be deployed much more effectively at a company compared to city level. These include convertible bonds, green bonds, social impact bonds, syndicated loans, etc.

There are no typical instruments available to fully addresses the risk of political interference or a change in political circumstances. However, one way to mitigate some of the risk is to have a capital guarantee in place from one or more IFI. There is some political pressure that IFIs can then impose to pressure cities and regional governments to service loans or bonds. Public market transactions may offer better value-for-money, although it is potentially more difficult to make amendments to terms during the life of the transaction.

Moreover, no financial instrument can deal with the risk of corruption. The credit rating of a bond, or of a city will imbed the probability of corruption into the price of the instrument. This is also the case with the risk of nationalization.

Public Private Partnerships (PPP)

The PPP Knowledge Lab defines a PPP as "a long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management responsibility, and remuneration is linked to performance".¹⁹ By definition there is always a public component to a PPP. The form that this component takes will depend on the country and the project, ranging from financial support, to indirect or contingent support, in kind support (such as provision of land or equipment), or to broader financial mechanisms that can support the country's PPP program or encourage the financial markets to lend into projects.²⁰

Private finance is usually involved in a PPP. When properly prepared, PPP projects can provide significant benefits to the public sector as well as to the project's users.²¹ A public-private partnership ("PPP") is an agreement between a local government and a private sector partner designed to deliver an SSC project and service under a long-term contract. A PPP project development partner bears significant risks and management responsibilities. The public authority makes performance-based payments to the project developer partner for the service (e.g. the "availability fee") or grants the private partner a right to generate revenues from the provision of the service (e.g. the "user fee"). Project finance loans and bonds, defined as financings based on single project assets typically structured as Public Private Partnerships (PPPs), and can be structured either on-balance or off-balance sheet.

Availability Fee

An availability fee is a performance-based payment to the project developers.²² This is similar to a "license fee," which allows cities to pay a license to a private sector company to supply essential services. In developing countries, these types of PPP are often found in waste

¹⁹ <https://pppknowledgelab.org/>

²⁰ <http://ppp.worldbank.org/public-private-partnership/financing/government-support-subsidies>

²¹ <http://www.eib.org/epec/index>

²² http://wftp3.itu.int/pub/epub_shared/TSB/ITUT-Tech-Report-Specs/2016/en/flipviewerexpress.html - page 14. For further discussions please refer to chapter 1.

recycling and water treatment. Moreover, in developing countries, there may be many further opportunities for other industries to be serviced via a licensing fee. Advantages to having an “availability fee,” or performance-based payment, include that the delivery of the service is done by a project developer, and the city therefore has fixed costs related to that delivery.

There are some downsides to availability fees, for example sustainability. Most companies wish to secure a fee that is long term and stable - which could put the city or local government at a financial disadvantage, especially if the fee is pegged to an international currency such as Pound Sterling, US dollars or Euro or if market conditions change.

Typical finance instruments

The World Bank is clear on how PPPs should be financed and funded.²³ In general, a PPP is a combination of local and regional government and the private sector. Ergo, local or regional government may choose to fund a portion or all of the capital investment in an SSC project themselves and seek a private sector partner to supply expertise and efficiency. This is a typical example of a so-called Design-Build-Operate project; the project developer or originator is paid a lump sum for completed stages of construction and will then receive an operating fee to cover the operation and maintenance of the project. Another typical example is where local and regional governments out-source civil works for an appropriate SSC project through standard procurement and then look for a private operator to operate and maintain the facilities or provide the service.

Even in cases where local/regional governments prefer financing raised by the private sector, increasingly local/regional governments recognize that there are some aspects of a project or project risks which may be easier or more sensible for the government to carry. Tax revenue, debt, or guarantee generate the best type of support for these aspects. Project funding through both on and off-balance sheet methods is discussed below.

On-balance Sheet

One viable avenue of financing and funding for PPPs is on-balance sheet. The project developer or originator may accept the need to finance some of the capital investment for the project and decide to fund the project through capital markets. This on-balance sheet funding involves finance for the project based on the balance sheet of the private operator rather than the project itself. The form, depending on the type and size of the project can be via Tier 1 capital (debt) or Tier 2 capital (equity). For lower value projects or projects with a quick timescale, this is typically the mechanism, as the cost of the financing is not significant enough to warrant a project financing mechanism. This is used frequently when the project developer is so large, with a healthy balance sheet, that it chooses to provide funds to the projects under its own balance sheet.

Benefits of corporate finance is that the cost of funding will be carried by the project developers; all based on the credit worthiness of the developer. Generally, costs are lower than the cost of funding of project finance. It also has the benefit of being less complicated than project finance. One area of note is the opportunity cost attached to corporate financing; the company will only be able to raise a limited amount of finance against its debt to equity ratio. Most notably the more the developer invests in one project the less liquidity it will have available to fund or invest in other projects.

The final potential project finance arrangement for PPPs and the one most common - and often most efficient – is “project financing”, also known as “limited recourse” or “non-recourse” financing. Normally, project financing is seen as limited recourse lending to a specially created

²³ <https://ppp.worldbank.org/ppp/financing/mechanisms>

project vehicle (special purpose vehicle or “SPV”). The specifically formed SPV has the right to carry out the construction, operation and management of the project. Typically, a SPV is used for a new build or extensive refurbishment situations. The SPV has no other business. The SPV is dependent on the revenue streams from the contractual arrangements, and/or from tariffs from end users which will only commence once construction has been completed and the project is in operation, or from capital guarantees given by local/regional governments. It is therefore a risky enterprise; before offering the financing agreement to the project developers, the lenders will vet the projects “bankability”. Therefore, extensive due diligence on the potential viability of the project should be carried out and a detailed review made of whether the project risk allocation protects the project company sufficiently.

Other typical finance instruments used for PPP and “availability fees” are varied. Each of the instruments should ideally measure impacts on SSC initiatives or SDG implementation effectively and price risk accordingly depending on the instrument.

Off-balance Sheet

Off-balance sheet funding is another project financing instrument. Some project financing allows the developer to keep project liabilities and financing off-balance-sheet. In these cases, project debt is held in a sufficiently minority subsidiary and is not consolidated onto the balance sheet of the respective project developers, thereby, reducing the impact of the project on the cost of the developer’s existing debt, contagion between projects, and on the developers’ debt capacity. This allows the developers to leverage their financial capacity for other investments. It is axiomatic that any off-balance sheet funding of any project structure must consider all applicable law and accountancy rules.

Keeping debt off-balance sheet does not reduce actual liabilities for the developers and may merely disguise liabilities, reducing the effectiveness of developers’ debt monitoring mechanisms. Therefore, the use of off-balance-sheet debt should be considered carefully for SSC projects at the local level, and protective mechanisms should be implemented.

When the SPV is not ring-fenced, then another traditional financing model explored is one of non-recourse financing. Recourse financing gives lenders full recourse to the assets or cash flow of the developer for repayment of the loan in the case of default by the SPV. In principle, if the project or SPV fails to provide the lenders with the repayments required, the lenders will then have recourse to the assets and revenue of the developers, with no limitation. The lenders are not held to the same contractual agreements as the developers, therefore there may be a negative impact on agreed services and obligations. There are ways to guard against contagion, but this method still leaves the local/regional governments at risk of being forced to provide diminished services and operation.

Project financing, by contrast is “limited” or “non-recourse” to the developers. In the case of ‘non-recourse financing,’ the project developer constructs a limited liability special purpose project vehicle for a specific project, and so the lenders' recourse will be limited primarily or entirely to the project assets (including completion and performance guarantees and bonds) in the case of default of the project developer. A key element to explore in any non-recourse financing is; whether there will be circumstances in which the lenders do have recourse to part or all of the developers' assets. In most cases, types of breach of covenant or representation giving rise to lenders’ access to assets would typically be a deliberate breach on the part of the developer. Applicable law may also restrict the extent to which developer liability can be limited.²⁴

²⁴ For example, liability for personal injury or death is typically cannot be limited.

Concessions

While local and regional government authorities may not be raising finance themselves, they may be awarding concessions and/or contracts to private sector sponsors, project developers and originators. The project developers may utilize an SPV to raise finance based on the contractual cash-flows from the public-sector authority or from users who are engaged with the concession. This model is also known as a build, operate and transfer project, distinguished from a Design-Build-Operate model in which the public entity retains ownership of the project and there is no ownership transfer. It is important to note that the cost of funding will usually have an impact on the amounts payable by the local authority or the end users under the proposed concessions and/or contracts, so competitive financing terms are encouraged

User Fee

A user fee is a levied on the provisions of the service by the private contractor.

Typical finance instruments

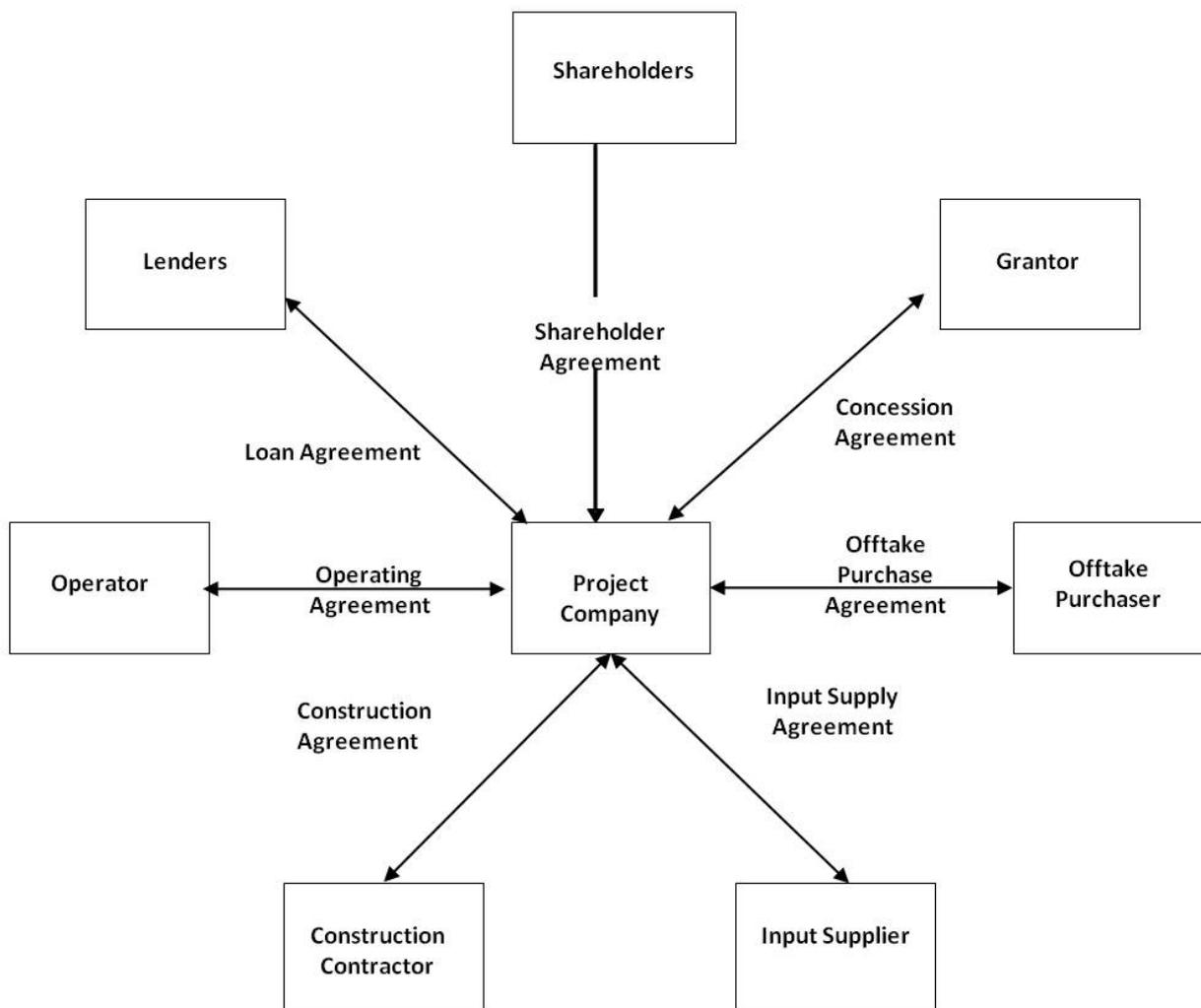
A simplified, typical project finance structure for a build, operate and transfer (BOT) project is shown below. The key elements of the structure are:²⁵

- SPV project company with no previous business or record;
- Sole activity of project company is to carry out the project – it then subcontracts most aspects through construction contract and operations contract;
- For new build projects, there is no revenue stream during the construction phase and so debt service will only be possible once the project is on line during the operations phase (parties therefore take significant risks during the construction phase);
- Sole revenue stream likely to be under an off-take or power purchase agreement (PPA);
- There is limited or no recourse to the sponsors of the project (shareholders of project company are generally only liable up to the extent of their shareholdings);
- Project remains off-balance-sheet for the sponsors and for the host government.

Illustration 1: Project Finance Structure²⁶

²⁵ <http://ppp.worldbank.org/public-private-partnership/financing/project-finance-concepts>

²⁶ <http://devinit.org/wp-content/uploads/2016/07/The-role-of-blended-finance-in-the-2030-Agenda-Discussion-paper-July-2016.pdf>



As shown in illustration 1, the arrangements are complex due to the number of contracts. The relationship between the different parties require careful provisions in the separate agreements.

Other Approaches (non-taxative)

Taxes can be used to aid and support project funding if effectively constructed. However, the following mechanisms do not rely upon taxes to generate revenue to fund projects.

Performance Contracting (Energy Supply Companies – ESCOs)

Performance contracting is based on increased energy efficiency in buildings leading to a cost saving and thus adding to budgetary savings, as well as contributing to climate protection and energy supply. More than 20 percent of economically realizable energy savings remain untapped. In each city this potentially large market could be realized using energy services such as Energy Performance Contracting (EPC). An effective EPC project, an Energy Service Company (ESCO) provides capacity building and addresses performance risks to ensure that adequate elements are implemented. Without the achieved stipulated energy savings, the level of funding is not achieved; investment is refinanced through the savings achieved.

Loans Secured Through Energy Savings.

The platform EUROCONTRACT aims promote the implementation of EPC projects in Europe. The platform provides project development standards and pilot projects. Part of the

service is to provide capacity building and information on EPC to market participants. The practice of Energy Performance Contracting has further developed to include linkages with other instruments such as Facility Management and has expanded its scope to include comprehensive refurbishing measures.²⁷

SMART PPPs

SMART PPPs are transactions in which a public-sector entity works with the private sector through concession contracts of various types, or service contracts in which a significant portion of financing is provided by the SSC focused project developers or projects. SMART PPPs are flexible institutional arrangements based on the introduction of technical innovations. These co-operations may start small, may legally be joint ventures and are real partnerships. Financing may initially be in form of “equity-type” contributions by the partners, through seed capital, venture capital etc.

This type of PPP focuses exclusively on projects supporting the Smart City Concept. There are four key considerations that should be taken into account early in the financing and planning process for funding of a SMART PPP. Effective assessment and impact measurement of these listed considerations should smooth the path to efficient and competitive financing, while balancing the interests of the relevant parties, local governments and project developers. Understanding between parties, as well as effusive assessment is vital to realize the full potential of competitive private sector financing. The four considerations are:

1. Available bespoke financing choices for SSC projects: SSC projects may be financed in a variety of ways using debt market instruments. These include: bank loans, debt private placement, and the institutional investors markets. Each market has a variety of features, and these carry different risks for any SSC project. There is no optimal market for financing SSC projects while ensuring the fulfillment of all the project’s requirements; the relative merits and priority weighting of financing options are due to a variety of influential factors. These include; a) flexibility to accommodate changes to circumstances over the life of the project, b) changes to market conditions, c) risk of profit of funders, d) confidentiality, and e) cost effectiveness, value for money, and the economies of the financial mechanism. For example, a bank loan or a private placement offers flexibility of drawdown schedules, confidentiality and a simple financing terms. Another example is a debt private placement or public markets transaction, this offers a longer timeframe than a bank loan with lower refinancing risk, which could improve the overall economics, and expands the investor base.
2. Projects’ creditworthiness: Investment grade rating for an SSC project funding aids in expanding the investor base. Capital guarantees and/or credit enhancement – partial or full – can be used to upgrade projects’ credit rating. Projects should strike a balance between using guarantees and credit enhancement to improve the quality of SSC projects that are already investment grade. An enhancement can also deter potential bond investors who prefer the additional yield of an un-enhanced debt product. Indeed, credit enhancement is also useful for large scale projects where liquidity may be an issue, and to possibly lower the cost of financing for the project, thereby enhancing value-for-money.
3. Usage guarantees: Bankability of projects are enhanced if the usage or demand risks are either short-term in nature, or alternatively, quantifiable, well-proven and appropriately assessed and measured. If a local government is unwilling to retain some level of usage risk, for example on a new toll road – financing a specific SSC project is likely to be more

²⁷ <https://ec.europa.eu/energy/intelligent/projects/en/projects/eurocontract>

challenge. A balanced risk sharing mechanism will encourage investors who may be willing to accept proactive risk sharing between a minimum or maximum level of usage but are unlikely to be prepared to take all of the risk.

4. Any likely/potential changes in legislation and regulations: To prevent negative effects of changes in legislation or regulation actors should: a) ensure transparency and consistency with regards to tariff-setting, monitoring regulatory controls and/or relevant legislative changes post-financial close of a transaction, b) review regulators' and public sector authorities' past practice of tariffs, and c) ensure appropriate compensation cases of regulatory or contractual changes; this could help to assuage investors' concerns over certain regulatory and legal risks associated with the underlying revenues of the project.²⁸

Blending

Traditionally, blended finance is seen as a mix of fixed income and equity in a fund, maximizing returns and reducing risk. Meanwhile another way of looking at capital blending is to use a combination of high-risk financing; such as venture capital or private equity, with grant, subsidies or guarantees. As grants have a negative 100% return, pairing it with funds that demand a high rate of return brings down the returns, such that more risk-averse investors would be interested in investing.

Traditionally, blended financing is a type of equity mutual fund that includes a mix of value and growth stocks. There is another type of blended financing, one that mixes charitable investment (grants) and high-risk funding.

Blending and Venture philanthropy²⁹

A number of definitions of blended finance have been used in recent years, making it a catch-all term for a number of different instruments and activities. Some of these definitions are broad in nature, implying that any arrangement where a project is funded with a mix of financial modalities is an example of blended finance. Some refer to a mix of official grants or other concessional inputs with non-concessional finance from public sources (public-public partnerships). And some definitions go further to include private or philanthropic actors, for example public-private or philanthropic/public-private partnerships. However, the real goal behind the use of blended finance in development stems from its perceived potential to mobilize significant additional capital from, for example, the private sector to fill some of the funding gaps associated with the adoption of the SDGs and SSC.

Therefore, concentration on types of finance that utilize resources from existing development actors, donors or charities to leverage or 'crowd in' additional financial contributions. There are also lessons from public-public arrangements that may be useful to apply to more innovative arrangements, which may be used increasingly for SSC projects. To determine what is, and is not, being monitored and measured – and in turn assess potential impacts – a clear definition of blended finance is required; blended finance refers to a combination of resources, either from official public sources (governments and/or IFIs) or philanthropic actors with capital from other sources (either official public or private actors). When applied in the international development context the term also connotes that: a) there is an element of additionality – some or all of the extra flows would not have materialized without the public-sector input, b) the project or intervention funded through a blending mechanism has positive

²⁸ See further www.afme.eu.

²⁹ Also known as philanthro-capitalism.

developmental impact – it produces social, economic or environmental benefits in a developing country. ‘Public sector’ is broadly defined to encompass government agencies and IFIs owned, funded or controlled by them. These IFIs may be bilateral (i.e. created by the government of a single country) or multilateral (such as regional development banks or members of the World Bank group). The public-sector input may be in the form of capital flows – in the form of grants, loans or equity investments. It may also be in a form that mitigates the risk to private investors without there necessarily being any actual financial flow from the public sector – for example, guarantees – or in the form of in-kind contributions – such as technical assistance/capacity building. The public-sector inputs are then combined with the additional non-concessional/private capital through platforms and other collaborative arrangements, such as PPPs and blending facilities, in order to be deployed to a specific project.

Venture philanthropy applies most of the same principles of venture capital funding to invest in start-up, growth or risk-taking social ventures. It is not explicitly interested in profit but rather in making investments which promote some sort of social good. Venture philanthropy ventures generally focuses on building capital and scale. It is an umbrella term that can be used to refer shorthand to many different kinds of philanthropic investing, but notably, it is distinct from impact investing, which places more emphasis on turning a profit while nevertheless investing in ventures that address social concerns.

Venture philanthropy is characterized by a high degree of investor oversight and engagement, in addition to financing plans which are tailored very specifically to a company or organization's capacity-building needs. Oftentimes major donors will sit on the boards of organizations they support, and they generally have intimate involvement in operational or managerial aspects of the business. They will also provide non-financial support, like offering executive advice, marketing the initiatives using their own platforms and measuring performance. Strategically, most of these practices are drawn from successful venture capital initiatives but judge the efficacy of the organization on standards like overall social impact which depart from usual standards of a successful venture capital investment.

This kind of investment takes many forms include private foundations owned or supported by high-net-worth individuals, family offices, government, diaspora or university grants designed to support philanthropic endeavors, philanthropic investing arms of major investing institutions, or charities which encourage large or institutional donations. In the United States, most investment is grant-based. This usually results in selective, carefully-chosen multi-year grants, the high competition for which is said to encourage innovation.

Beyond Blending

Calls for an expanded role for blended finance in developing countries are growing. While a significant scaling-up of these instruments in the development context offers the opportunity to mobilize large amounts of capital, it also clearly presents a number of risks and issues. Decisions will need to be taken on how and when to deploy blended finance instruments alongside, or in place of, other forms of development finance. In order to understand how to maximize the potential of blended finance, while minimizing the associated risks and ensuring the most appropriate use of all forms of development finance, we need to address key issues, issues are roughly divided into two categories: technical/economic (to be addressed through data and other empirical evidence, including case studies) and quality/effectiveness (which will build on the empirical research, and require consultation and qualitative/policy analysis).

Appendix 1 – Communicating a specific project with investors and donors

Effective communication regarding specific projects, leading to investment and support, is imperative if the SDGs are to be addressed at the city level. Indeed, the vision to help cities enhance the quality of life and living, of their inhabitants, creating liable, green, innovative, affordable and efficient cities. Communication goes both ways; one way is to communicate which SSC project opportunities, parameters and outcomes are available. In another, what service expertise is available and what is the value proposition each actor brings in aiding in and developing successful specific SSC projects. In principle, communicating specific projects with investors and donors is two-way, and includes a number of other actors to support successful implementation of SSC projects.

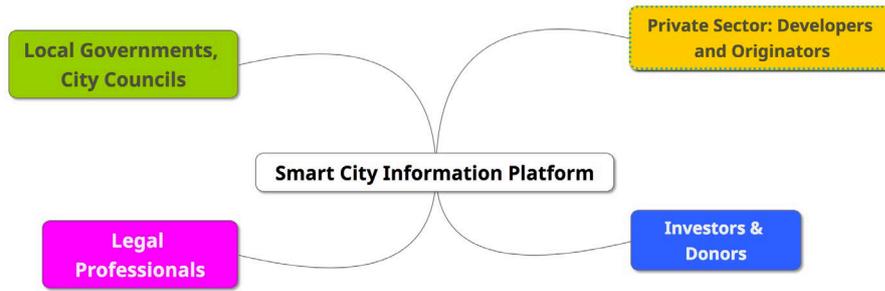
The goal of this chapter is to give guidance to city leaders who are focused on steps making their city smarter and more sustainable. There are many ways to communicate projects, the need for projects and the expected outcomes of the projects. One element outlined here is a recommended Smart City Information Platform, a type of clearing house for information to ensure that the projects needs are clear and investors, private sectors and other actors understand the need for the projects, the connection to the SDGs and other international commitments and the expected outcomes.

The unique factor of a smart city is stakeholder engagement. The input of the citizens, as a stakeholder and the expectation of the outcomes will dictate the success of a project. Local governments and city councils are the nexus for effectively communicating specific projects. Not only they are key in garnering input of their citizens and constituents but encourage the flow of information to the other actors needed to implement and bring to a successful conclusion a project which delivers one or more SDG at the city level.

Implementation of a project can be on a stand-alone basis or part of a group of projects, which requires different type of funding from both the public as well as the private sectors. The communication of specific projects to the various actors, depends on their need, outcomes, value propositions and timing.

SSC project communication involves the broadest possible local participation. Therefore, several levels of local decision-making should be involved, including municipalities, local government, federal government departments, the investment and financial services communities, the private sector, civic groups, civil society organizations, NGOs, academia and special interest groups. This initial effort is an important aspect of ensuring buy-in and continued support for projects; contributing to conversion of hard project SDG outputs into soft outcomes which are the real objectives.

As mentioned above, a suggestion for ensuring a good communication among all relevant stakeholders is the establishment of a Smart City Information Platform, by which communication can be delivered consistently and robustly, by supporting both transparency and timing for specific projects. The Smart City Information Platform is a central matchmaking initiative, for specific SSC projects. It provides a unique platform; bringing together and matching international organisations, financial institutions, local governments, legal experts and high-level decisions makers to projects; working together toward one goal to implement the SDGs at the city level.



The system should highlight and deliver personalization or adaptation to the SDG target. This means, in order for the different stakeholders to get engaged the message needs to get across to each of them. For the same project, the point of view is different per each stakeholder, so the content of the communication as well as the language needs to be tailored to each of them to ensure understanding of the project and its impact to the specific interests of the stakeholder in question. For instance, for cities (local government or city councils) will be key to understand the specific impact the project will have in the municipal budget, both in terms of investment, recurrent costs and the potential savings the project can entail. Also, the impact in the city itself, and the environment, such as reduction of GHG emissions, improvement of traffic conditions or efficiency in the provision of city services that entails economic savings and saves time for city employees. In the case of citizens, there is a need for communication that can arrive to citizens of all ages and backgrounds and conveys the impact the project has in their lives and quality of life. For investors, the message will need to focus on estimated returns and the risks of the project.

In addition, communication to citizens, data and Key Performance Indicators (KPIs) are key for projects to have impact in a specific area. Communication for each of the various actors needs a dedicated and bespoke communication for specific projects. Successful communication relies on the elements above but also two high-level key elements: timing and transparency.

Timing

The Smart City Information Platform will streamline and support communication to facilitate investment and project timelines. The Smart City Information Platform is a central repository of clear project, smart sustainable city and SDG based information; an intermediary between potential investors/ donors, technical providers, projects developers and originators, legal experts, and governments to identify scalable, bankable and city transformational projects. In principle, to synchronize and match projects with SDG focus to developers and funders.

1. Local government or city councils dictate the priorities of the cities focus and push the SDG and smart sustainable cities agenda. The timing of local communication is determined by the electoral schedule and political will, forged by the direct input of citizens. Ideally, the specific SSC project communication from local government or city councils need to be on an ongoing basis. Local government or city councils will need to take the lead and communicate all general parameters, including legal, for specific projects; communicating clearly expected SSC outcomes. Effective communication timing will aid local government to work effectively with the private sector to bridge the gap to go from billions to trillions to address SSC.

2. Investors, in most cases, invest on a rolling basis from a robust and vetted project pipeline. The investment process followed by most investment professionals is fairly straight forward, the key is to seamlessly fit SSC project communications into the investment process without adding restrictions, undo uncertainty, or hurdles. From project introduction to investment, it can take up to 8 months, shorter for angel investors and family offices, longer for institutional investors.
3. The timeline for donors differ from investors, as for some donors funding request and grant making decisions happen on an annual or biannual roster. There are family offices and donors that seek a robust pipeline of projects, ergo, mirror the investor timeline and are nimbler in their grant making process. Communicating to donors should be proactive, via the continuous updating of the Smart City Information Platform, making it the place for city specific SSC project ideas and possibilities.
4. Project developers will both develop a pipeline of projects within their core businesses and adapt projects to address those SSC needs outlined by the local government or city councils. Developers will source the projects, taking from the local government or city councils which projects would be appropriate for which SSC.
5. Legal experts are mostly instructed by their clients, either investors or project developers. Hence, depending on the client requirements the legal field is less dictated by the timing of communications. On the pro bono side, some legal firms continuously seek appropriate and high- profile activities to offer legal expertise, communication from the local government or city councils on specific SDG target for their city may be one way to tap into high quality legal capacity whilst saving resources.

Transparency

The Smart City Information Platform is key for investors, donors, and project developers, ensuring transparency of communication for specific SSC projects, should be seen as a clearing house for information on a specific project. Local government or city councils must take ownership in highlighting ongoing projects and projects that will be required to address specific SDG city goals in the coming 2 - 5 years. Communicating projects to investors, donors, legal experts and project developers is a curious mix of pushing the information forward and pursuing maximum transparency.

One of the main elements to communicating a project is making project outcomes, which SDG will be impacted by the project and how, available for investors and donors, alike. Constantly updating the Smart City Information Platform matchmaking projects for the appropriate actor via the platform. This will be the backbone and measure of the success of SSC projects.

1. Transparency of specific SSC projects will depend entirely on the political will and annual strategy of a local governments or city councils. Each local government or city council will be responsible for determining which of the SDGs will be the focus of political and project attention for the next year [two-year?]. In addition, they are responsible for communicating to the other actors the need of their constituents.
2. Investors need absolute clarity and transparency on the parameters of potential project investments to gauge and measure uncertainty inherent in the project. This goes further than documentation, it also allows identification of potential co-investors may be

available for each type of project. Communicating with investors and donors regarding specific projects is a question of standardising information requests. All parties must have transparent and complete information on all of the projects to reduce risk and uncertainty. Communicating a project with investors, no matter how well planned and clear the investment memorandum is, the exit strategy and potential risks must always be effectively communicated. One opens the door to the investment and one keeps the door open.

3. Donors rely on the opportunity to offer only grants or seek to invest with an institutional investor to reduce risk; identifying blended capital opportunities. Co-investors and syndicate partners, as a matchmaking search via the marketplace would be an easy way for donors to find like-minded co-granters, co-investors or grantees.
4. Project developers and originators, depend on transparent parameters as dictated by local government or city councils. The clearer the outcomes the easier is it to develop appropriate projects to address the SDG requirement.
5. Legal experts can also use the transparency of the Smart City Information Platform to communicate expertise on a specify type of SSC project or knowledge particular to an SDG target outcome.

Summary

The main elements of communication is transparency and timing, important for all of the project players:

- Local government or city councils: sharing of knowledge from other local government or city councils, gathering and addressing input from their citizens, as well as a clear understanding of project development for different SDGs.
- Investors; avenues for exit strategies and exchange with co-investors. Sight of pipeline of potential projects for the investment committee.
- Donors: Understanding which SDGs are in focus in which geography. Ideal for international donors, in spreading risk and impact, as well as family offices, which has interest in a specific geographical area.
- Project Developers: to flow into market development and project proposals.
- Legal Experts: knowledge sharing and expertise for specific tip of SSC project or SDG area.

Appendix 2 – SSC Project Presentation Assessment Guidelines

Assessment of SSC projects should focus on indicators of:

- **Sustainability:** To use funds that replenish themselves and potentially also increase whilst being used;
- **Predictability:** aligned with the timeliness of their use, with a given level of confidence of their supply;
- **Transparency:** of use of the funds and their efficiency. Includes governance, monitoring and performance measures;

- **Partnerships:** are encouraged to minimize wastage, maximize knowledge share to reduce project risks and increase efficiency;
- **Appropriateness:** in terms of knowledge, relevance and fit-for-use.

Presentations should include reference to investment characteristics, with a focus on expected results; but also a consideration of projects' planned impact on SDGs at the primary, secondary and tertiary levels. For example, an investment in effective and low carbon mobility within a city will have a *primary* impact on the current level of mobility within a city. A *secondary* impact would be to support the overall sustainability of the city. The *tertiary* impact would be the ability for low income people to travel more efficiency around the city and thus increasing the ability to find jobs. This would affect, therefore, SDG9 and SDG7 in the first instance, followed by SDG11 and lastly SDG8.

What a smart sustainable city is depends on the "lens" or viewpoint from which one looks at a city (see introduction). Schemes for presentation and submission must therefore address all of the 3 dimensions, or 4 pillars in their various forms.

A project is considered *bankable* if diverse lenders are willing to finance it at a financially viable level, that is, projects that are likely to generate a sufficient return to justify the risk taken (Table 4).

The financing decision by lenders and investors is a combination of risk and return. The higher the risk, the less attractive the investment, the more expensive the private capital, with elusive investors.

- Risk perception is a mix of numerous factors, including financial, social, reputational and especially revenue models, legislative and regulatory frameworks, and implementation practicalities.
- In general, the lower or more mitigated the risks, with returns aligned with it, the more bankable the project and the higher chance of attracting innovative financing funds.

Table 4: Specific requirements for Investment and SSC

Investment Requirements	SSC SDG Specific requirements
<ul style="list-style-type: none"> - Return on Investment - Timing - Size/ Amount - Capital Mix - Investor profile - Phase of Project - Type of Investment - Fact Sheet: Assessment of Management Team - Term Sheet - IP Agreement - Shareholder agreement - Milestones 	<ul style="list-style-type: none"> - Primary impacts: such as how the project plans to address a specific SDG and support a Smart Sustainable City. And any targets under that goal - Secondary: these impacts place special focus on the beyond the original impact of the projects, such as jobs, capacity building etc. - Tertiary: These, although in some cases hard to verify and measure, look to additional impacts on other SDGs and funnels into the Smart Sustainable City process.