United Nations ECE/HBP/2017/Inf.12

Economic and Social Council

Distr.: General
31 October 2017

Original: English

Economic Commission for Europe

Committee on Housing and Land Management

Seventy-eighth session
Geneva, 8-10 November 2017
Item 7 (b) of the provisional agenda
Key trends and challenges in sustainable urban development in the ECE Region

Note by the Secretariat

1. In the New Urban Agenda (NUA), Member States committed to adopt a "smart-city approach" (para. 66, NUA), support "effective, innovative and sustainable financing frameworks and instruments" [para. 15 c. (iv), NUA], and, under "Means of Implementation", put in place an "enabling environment and a wide range of means of implementation,…as well as capacity development and mobilization of financial resources, taking into account the commitment of developed and developing countries and tapping into all available traditional and innovative sources at the global, regional, national, subnational and local levels, as well as enhanced international cooperation and partnerships among Governments at all levels, the private sector, civil society, the United Nations system and other actors…" (para. 126, NUA).

2. Member States also invited "international multilateral financial institutions, regional development banks, development finance institutions and cooperation agencies to provide financial support, including through innovative financial mechanisms, to programmes and projects for implementing the New Urban Agenda, particularly in developing countries." (para. 142, NUA).

3. The secretariat has, therefore, supported the preparation of a paper on "Innovative Finance for Smart Sustainable Cities" as an information document for the Ministerial segment of the 78th session of the Committee on Housing and Land Management. The aim is to provide information to policymakers working on sustainable urban development at all levels on the state of the art for innovative finance and possible applications for smart and sustainable city projects. The document also suggests possible actions for national policymakers to put in place an enabling environment for innovative financing mechanisms.

4. The present document will support the discussions for Roundtable II: Sustainable Urban Development Strategies of the Ministerial Segment of the seventy-eighth session of the ECE Committee on Housing and Land Management. This roundtable will discuss trends and patterns in urbanization, integrated urban planning and transition to Smart Sustainable Cities, including financing Smart Sustainable City projects, in the ECE region.

5. Delegates are invited to take note of the document.

Acknowledgements

The author of the paper is Mr. Amitabh Mehta, an independent consultant providing advisory services for resource mobilization through the use of innovative methods, and identifying new and diversified sources of global finance for infrastructure, urban transportation, pharmaceuticals, amongst other sectors.

The paper was reviewed and commented by Ms. Ivonne Higuero, Director of the ECE Division of Forests, Land and Housing, Ms. Gulnara Roll, Head of the Housing and Land Management Unit (ECE Division of Forests, Land and Housing) and Secretary to the ECE Committee on Housing and Land Management, and Ms. Domenica Carreiro, Associate Economic Affairs Officer (ECE Division of Forests, Land and Housing) and Smart Sustainable Cities Coordinator.

Innovative Finance for Smart Sustainable Cities

An overview of current innovative financing mechanisms from across the development sector, which could be used to finance Smart Sustainable City (SSC) Projects

November 2017

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Definitions & Acronyms

ADB	Asian Development Bank, headquartered in the Philippines
AfDB	African Development Bank
AIIB	Asian Infrastructure Investment Bank
BASIS POINTS (Bps)	Unit of measurement of interest rates. 100 bps = 1%
BRT	Bus Rapid Transport system
BOND	A bond is a debt investment
CAPITAL MARKETS	Capital markets are markets for buying and selling equity and debt instruments
CAPITAL STRUCTURE	The overall financing of a company or organisation comes from different sources, collectively called the capital structure. It can include equity, debt, mezzanine, loan borrowings.
CSR	Corporate Social Responsibility: Corporate initiatives to assess and take responsibility for the company's effects on environmental and social wellbeing, in donations or in kind
DEBT	A loan or "IOU" evidenced by a bond. Debt is an amount of money borrowed by one party from another. A bond is a debt instrument, and is less risky than equity
EBRD	European Bank for Reconstruction and Development
EQUITY/ FIRST LOSS	The riskiest part of the capital structure/ borrowing, benefits from dividends and excess returns.
FINANCIAL INSTITUTION (FI)	A generic term for institutions engaged in financial activity, including Banks (Development, Investment, Retail), Funds, Insurance Companies.
FUND/ SUB-FUND	An organisation that is set up for the purposes of collating investments and investing the same. These can take the legal form or General Partnership structures, or corporations. Often, in order to manage risk and invest in different strategies, sub-funds are created under the main Fund.
G20	An international forum for the governments and central bank governors of 20 countries
GAVI	Global Alliance for Vaccines and Immunisation.
GDP	Gross Domestic Product
HNWI	High Net Worth Individuals
IFFIm	A securitisation bond programme set up by the GAVI Alliance and backed by sovereigns.
ITU	International Telecommunications Union
MCPP	Managed Co-Lending Portfolio Program
MIGA	Multilateral Investment Guarantee Agency, part of the World Bank Group
OECD	Organisation for Economic Co-operation and Development
OVER-COLLATERALISATION	When the assets securing a borrowing, such as a bond instrument, exceeds the amount of the borrowing.
POOLED FUNDING	Amalgamating funds from different sources typically to utilise for greater impact
PPP	Public Private Partnership

REVOLVING FUND	A sustainable fund set up for specified purposes with the proviso that repayments to the fund may be used again for these purposes
SDGs	Sustainable Development Goals
SECURITISATION	In simple terms the borrowing using a bond instrument is secured using collateral such as government commitments or assets
SENIOR DEBT	It is the least risky investment in the capital structure.
SIB	Social Impact Bonds
SSC	Smart Sustainable Cities
TDR	Transferable Development Rights (Innovative Financing Instrument)
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNFCC	United Nations Framework Convention on Climate Change
VIABILITY GAP FUND (VGF)	A Fund created for the purpose of "topping-Up" returns, typically to encourage private sector investments.
WEF	World Economic Forum

I. Introduction

The way we live globally is changing. Permanent migration to cities, resulting in over 50% of the world now residing in them, and an accelerated urbanization, has heightened the demand for better infrastructure, services, green spaces, affordable housing, governance, monitoring, inclusive growth – *smarter and sustainable cities.*

Cities, traditionally generating over 80% of a country's GDP, are engines of economic growth and key drivers of competitiveness[1], and thus essential to help achieve the aims of the Sustainable Development Goals (SDGs).

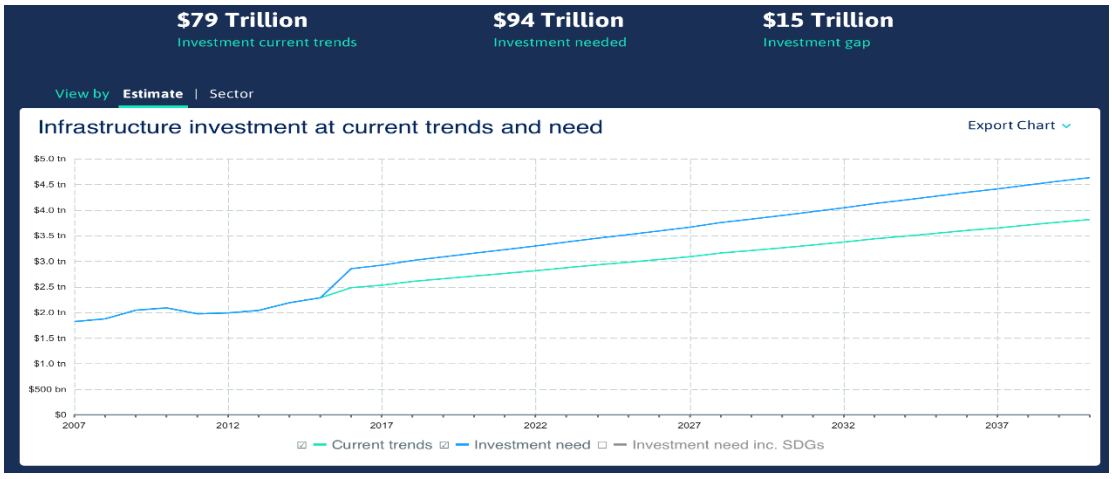
1.1 Smart cities/ Infrastructure gap

The global need for infrastructure investment is increasing. It is expected to reach $94 trillion by 2040[2], with a further $3.5 trillion needed to achieve SDGs for electricity and water alone. The projected annual increase is estimated at USD 4 trillion by 2030.

- Emerging Europe's need estimate - USD 1.3 trillion[3] in new investments in water, sanitation, transport and telecommunications, as per a report on institutional investor needs in emerging markets.
- The Asian Development Bank (ADB) noted that Central Asia will require to spend 7.8% of GDP[4] (USD 565bn) by 2030.

The World Bank[5] states that bridging infrastructure gaps in developing countries is key to reducing extreme poverty. At least 663 million people lack access to safe drinking water while 1.2 billion people live without electricity.

In its 2013 report *Infrastructure productivity: How to save $1 trillion a year*, the McKinsey Global Institute found that despite the increased need, infrastructure investment has actually declined as a share of GDP in 11 of the G20 economies since the global financial crisis, projecting a USD 350bn annual gap. That gap rises to over USD 1 trillion if additional investment required to meet the new UN Sustainable Development Goals is included, in line with the World Economic Forum's (WEF) 2012. **Between now and 2030, the world faces a USD 15 trillion shortfall[6].**



Source: GI Hub

[1] World Economic Forum. (2014). *The Competitiveness of Cities*

[2] Global Infrastructure Hub (GI Hub). A G20 Initiative. (2017). *Forecasting infrastructure investment needs and gaps*

[3] Georg Inderst and Fiona Stewart. (2014). *Institutional Investment in Infrastructure in Emerging Markets and Developing Economies*

[4] Biswa Nath Bhattacharyay (2010) ADB Institute. *Financing Asia's Infrastructure: Modes of Development and Integration of Asian Financial Market* Climate change adjusted figures include climate mitigation and climate proofing costs

[5] World Bank. (2016). *Spending More and Better: Essential to Tackling the Infrastructure Gap*

[6] GI HUB

Source: GI HUB

1.2 What is driving this gap?

Various reports from the OECD, UN-Habitat and the World Economic Forum (WEF) attribute several logical drivers.

- Increased urbanisation.
- Stretched public finances following recessions.
- Higher demand for the development of new, and reparation of existing, infrastructure, and competition from other areas such as health and education.
- Ageing population leading to fewer people in the workforce, with a depleted income stream for the government, and increased demand on public spending (e.g. healthcare, social housing).

1.3 The effects of the gap on cities and smart sustainable cities

The World Economic Forum regards cities as one of the twelve pillars of competitiveness defined as "the set of institutions, policies, and factors that determine the level of productivity of a country."

Cities account for over 80% of global gross domestic product (GDP)[7], and funding basic urban infrastructure today accounts for 80% of global investments.[8] Thus the gap becomes very relevant when discussing cities. With increased urbanisation, the effect that a lack of infrastructure in cities can have on its population is compounded, directly affecting a countries ability to meet its SDG commitments. This can happen by not having adequate and equitable access to basic needs, and also through the effect of inadequate infrastructure on business.

According to the McKinsey Global Institute (MGI), the top 100 cities, measured by expected contribution to global GDP growth by 2025, accounted for 38% of global GDP ($21 trillion) in 2007. In 2025, the top 600 cities will have nearly 60% of global GDP and 25% of the world's population. These same 600 cities already have 1.5 billion people who produce well over half of global GDP. This ratio of population to GDP underlines the vital role of cities as the engines of productivity or output per capita and thereby its role in helping lift people out of poverty, a key aim of the SDGs.

With 73% of Europeans living in urban spaces alone, cities can be the repositories of human and capital resources, an attraction for large companies and employment, and innovation (more than 81% of OECD patents are filed by applicants located in urban regions).

Unsurprisingly long-term infrastructure investing ranks high on the G20 agenda and funding the gap has become a priority.

7 World Economic Forum. (2014). The Competitiveness of Cities
8 Marco Kamiya, UN Habitat, Urban Economy and Finance Branch

The leap from cities to smart sustainable cities in practical terms should simply serve to increase the city gap. With the SDGs at their core, achieving commitments requires greater investments. Smart sustainable cities (SSCs) and their components are crucial for sustainable development, and in helping to create an enabling and catalytic environment for their populace. Productivity constraints will affect people – quality of life, equitable access to goods and services, poverty and health, in turn affecting the ability to reach their potential. This in turn will affect the ability of the economies to meet the SDGs, crucial issues of people and the environment, to which we are all equal partners and contributors.

Hence this gap has economic, environmental, social and cultural consequences.

1.4 Smart Sustainable Cities Defined

So what makes a city "smart and sustainable"? With many definitions of smart cities, the generally agreed essence is that smart and sustainable cities must provide its citizens with a better quality of life.

The United Nations Economic Commission for Europe (UNECE)-International Telecommunications Union (ITU) definition of smart sustainable cities: "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, and environmental aspects as well as cultural aspects"[9].

The UNECE perhaps encapsulates it best by focusing of what smart 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

1.5 The Region: Trends and Challenges

The ECE Region is diverse in its level of development, infrastructure and stage of economy. Maintaining vital economic growth while creating sustainable smart and connected cities for all is the biggest urban challenge being faced globally in the region.

In general, the region's population and their needs are changing.

- Demographic ageing: Much of the region, with notable exceptions in Central Asia, faces an ageing population due to fertility, mortality and migration reasons, with potential negative consequences to economic, healthcare, pension systems, budgetary, social structure, and infrastructure in these countries. Increases in younger population heighten the increased need to education and healthcare. See Appendix E.

[9] *Elaborated by the ITU Focus Group on Smart Sustainable Cities (FG-SSC) in 2015 at the 76rh Session - The UNECE–ITU Smart Sustainable Cities Indicators*

- Rapid urban migration: Heightened urbanisation will continue of the next decades as the citizens continue to be drawn to better opportunities in towns and cities.
- Growing infrastructure gap: for urban transport, education, housing, water, utilities, waste management, and employment, and the government's available resources.
- Enabling environment need: Cities need to upgrade and create enabling environments as the repository for human, intellectual and financial resources, the main drivers of development, economic growth and poverty alleviation initiatives, and essential for sustainable growth.
- Social housing pressure: The aging demographics, refugees, transitional economies and recessions have heightened the need for new investments in social housing for the most vulnerable. Further, there is a critical need to maintain, repair, manage and upgrade existing infrastructure as well as increase the supply of affordable and energy efficient housing.
- Increased information and communications technology (ICT) needs: in terms of infrastructure in a globally linked world to support businesses, individuals and governments, including in crucial areas of healthcare and education.
- Climate change and pollution in the race to industrialisation, and a consequence of past decisions, including for economies transitioning from centrally planned to market based, is a major main cause of global concern, with consequences for food security, health, poverty reduction, quality of life and economic growth.

A paradigm shift in infrastructure planning and design to ensure improved quality of life is therefore imperative for the transition to smart and sustainable cities. The effects, of these and other challenges, are being reflected in the level of poverty, inequity and quality of life of the populations not just in the UNECE region, but globally.

1.6 The Region: Economic Scenario and financing sources

The demands on public sector financing are growing, compounded by required investments to achieve SDG commitments, as well as strong political interest in pursuing smart city development across the region. Over 240 cities in the region with populations over 100,000 have made progress towards becoming smart cities[10]. There are, further, a variety of EU and national policies and programmes such as the European Initiative on Smart Cities, CIVITAS, CONCERTO and Intelligent Energy Europe designed to facilitate smart cities transitions (Appendix A lists further initiatives).

Individual countries such as the United Kingdom are also adopting different ways to facilitate the same on a wide scale. The market making approach adopted by the Government of the United Kingdom involves intervention 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 economic scenario is challenging:

- Recessionary environments and low GDP growth.
- Decreasing overseas development aid (ODA) with increased demands from different development and business needs – health, infrastructure, climate change, trade.
- Unemployment and dependence on oil production also affect a vast part of the region. With uncertainty in this sector fairly strong the effect of domestic investments in infrastructure, employment, financial management and resources for budgets remains affected.
- The risks and uncertainty from political (e.g. Brexit), macro economic and fiscal stabilization, and micro-economic material and institutional infrastructure and governance, continues to constrict investments across the region.
- Increased regulation and monitoring by authorities to prevent further shocks to the system, cautious flow of funds and careful investors.

[10] Euractiv. (2017). *How many smart cities are there in Europe*

1.7 The Need and call for innovative financing

"We believe that everyone in the development community should be an honest broker who helps find win-win outcomes – where owners of capital get a reasonable return, and developing countries maximize sustainable investments. There's never been a better time to find those win-win solutions. The trillions of dollars sitting on the side lines, earning little interest, and the investors looking for better opportunities should be mobilized to help us meet the exploding aspirations of people all over the world. "
Jim Yong Kim, World Bank Group President

Having gained an understanding of the financing gap arising from the public sector's inability to meet the growing demands of infrastructure, it is clear that alternative sources of funding must be found.

Innovative financing, as we shall see further in this report, can help catalyse new forms of funding. However, aside from its obvious role in funding the gap, there is a second reason for its attractiveness.

Many would argue that rather than just a funding gap, the problem is more of a "bankable project gap", bankable referring to projects which are attractive to investors. Innovative financing can help close that gap as well, making projects more attractive to investors and thereby creating a sustainable source of financing from the private sector. It is this characteristic of aiding a more efficient resource allocation that has prompted a call to action by various organisations and countries to research this area on financing.

Various international financing organisations (IFIs) and forums, such as the The World Bank, UN Addis Ababa Action Agenda (the Third International Conference on Financing for Development), the Vaduz Declaration[11], and the Sustainable Energy Ministerial Conference in Astana, Kazakhstan have recommended pursuing new innovative financing approaches (including with providers of concessional sources of climate finance, donors, private foundations, and institutional investors).[12]

The President of the EBRD, a long term lender to the private sector, recently issued a declaration expressing an increased focus on leveraging private sector finances, and the ADB released their blended finance concept.

The Leading Group of innovative financing for development, a group consisting of 66 states and numerous international and non-governmental organizations, have focused their actions around the innovative finance theme, at various regional, individual state and global level.

Appendix D lists further declarations made at various levels in support of developing innovative mechanisms for various development aims.

The United Nations 2030 Agenda for Sustainable Development and the 17 Sustainable Development Goals further highlighted that sustainable development with efficient resource allocation, a cornerstone of innovative financing, will be needed to find integrated and inclusive solutions, taking into account people, the environment, and vulnerable sections of society.

The welfare of people being at the heart of inclusive action, reports such as the *Habitat III Regional Report on Housing and Urban Development for the UNECE region: Towards a City-focused, People-centred, and Integrated Approach to the New Urban Agenda* and the *Geneva UN Charter on Sustainable Housing* further provide guiding principles in tackling the issues and challenges that were identified in the region, highlighting the need to build capacity and address the lack of financing also through innovative means.

[11] The result of the Smart Sustainable Cities Financing forum Liechtenstein, UNECE, 8-9 November 2016 https://www.unece.org/index.php?id=43853

[12] World Bank Chairman's Statement. (2016)

1.8 Objectives of the Report

Whilst the previous few years have elicited much interest in the innovative financing sector and much has been written about the topic, it continues to be perceived as complex.

As a guide to the subject, and to initiate informed dialogue for policymakers and other stakeholders, the UNECE has commissioned this background paper, which seeks to:

a. Define Innovative Finance.
b. Introduce major current innovative financing mechanisms relevant for Smart Sustainable Cities.
c. Present regional and global case studies of innovative financing of infrastructure and Smart Sustainable City relevant projects.
d. Highlight areas where policy intervention is needed to facilitate innovative financing.

II. Innovative Financing and *Bankability* Conceptualised

The decision of how to finance smart sustainable cities and sustainable urban development will require an understanding of the various possibilities available to the decision makers, including the innovative finance option. The inclusion of this option will depend on the applicability of the different types of mechanisms for the project in question. As innovative finance is by nature tailored and flexible, an understanding of its strategies, mechanisms and involved stakeholders, can be a useful tool in gauging that applicability for those involved in the project financing decision.

The following pages will guide the reader in that journey. It will first introduce the concept in terms of its elements and characteristics to offer a clear understanding of what constitutes innovative finance. The various major types of innovative instruments and sources of finance that are relevant for smart sustainable cities and sustainable urban development projects will then be given, thereby allowing the reader to move from a conceptual to theoretical understanding. Relevant case studies from the region and beyond will then help bring a practical element by demonstrating how these have been used in similar situations to the ones being considered. The combination of practical examples and theoretical understanding should then allow decision makers to identify potential mechanisms and sources for their projects to evaluate further.

2.1 Definition

Innovative financing is best defined in terms of using different mechanisms to make projects more *bankable* in terms of risk and rewards, thereby attracting a wider range of financing sources and becoming potentially more scalable.

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.

- 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.

2.2 The Need for Smart (Innovative) Financing

There are push and pull factors that are heightening the need for innovative financing.

- Increased investment gap as noted earlier in the text: With growing public sector needs, from infrastructure, environment, education, housing, health and beyond, government budgets are often not adequate to finance

the entire demand. Unfinanced needs, particularly leading to inadequate infrastructure, can hamper economic growth and impeding inclusive and sustainable development. Thus, private sector funds need to be leveraged, with a greater emphasis on attracting investments and financing from alternative diverse sources of funding, and utilisation of innovative financing mechanisms, using innovative financing as a tool.

Countries	Current Investment (in USD bn)	Investment Need (in USD bn)	GAP (USD bn)
Azerbaijan	92	100	8
Croatia	63	74	11
Kazakhstan	208	292	84
Poland	551	642	91
Romania	226	237	11
Russia	1,100	1,800	700
Turkey	569	975	406
UK	1,700	1,848	148
USA	8,500	12,000	3,500
Source: GI HUB	Global Infrastructure Outlook		

- Sustainability: There is a call from investors and donors for sustainable funds.
- The current state of traditional financing
  - *Expensive/Limited:* commercial financing for higher risk projects combined with greater regulation, risk controls and especially in uncertain political, and foreign exchange markets. Financial institutions are either unable or unwilling to lend in an effort to stabilize or to "sure-up" existing portfolio for further shocks.
  - *Short loan period*: from commercial and development finance institutions for SSC projects.[13]
  - *Debt ceiling approached*: by governments (sovereigns) and states, provinces, cities or towns (sub-sovereigns) cautious to borrow from development institutions and capital markets so as not to pressure international ratings. International lenders are unable to sustain the increasing needs.
  - *More project-based lending by development banks:* traditionally development banks lend to governments, the borrowing being thus backed by a sovereign guarantee. The governments utilise these for financing their projects. However, there is currently a growing trend by development banks to increase lending directly for projects to the private sector and sub-sovereigns.
  - Transitional economies continue to try and develop deeper capital markets (create predictable capital-market funding at scale, allow investors diverse avenues to deploy long-term savings, and assist the capital markets in efficiently allocating resources) and the private sector though not at a level to be able to compensate for earlier public sector spending on housing, land development and infrastructure, combined with higher needs.
  - *Change in investor trends:* informed investments, shorter horizons.

- High construction risk in typical smart city projects: Upfront costs are usually about 3 to 5 % in well-developed policy environments, while they may be 10 to 12 % in pioneering projects. This affects bankability and innovative finance can bridge the gap to making these project bankable.
- Private and Public nature of smart city projects: With the majority of projects having elements of public goods combined with private sector knowledge and inputs, an effective and innovative partnership approach makes logical sense. Innovative finance can leverage these crucial partnerships.

[13] Biswa Nath Bhattacharyay (2010) ADB Institute. *Financing Asia's Infrastructure*

- There are returns available to make investments in the smart cities sector attractive.

2.3 Innovative Mechanisms: Elements

The mechanisms could be characterised with some or a mixture of the following elements:

- New investors & sources: sources of funding that have been unused, under-utilised, unavailable or unwilling. They could include capital markets, development and specialist financing institutions, institutional investors' bases, or pools such as CSR, and income streams (tolls, user charges).
- New Instruments and Structures to address risk-return and attract capital, minimising project risks thereby increasing bankability.
- Funding for risk reduction and for assets – Innovative mechanisms can act to reduce the risk of projects at a particular stage (early stage) to a level where other investors/ lenders find it of an acceptable risk. In essence, funding the gap between the non-bankable part or stage of the project and the bankable one.
- Leverage existing traditional financing: mechanisms that can leverage concessional sources of financing, both public sector and multilaterals and facilitate flows of funds.

2.4 Innovative Mechanism: Characteristics

- *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 minimise wastage, maximise knowledge share to reduce project risks and increase efficiency;
- *Appropriateness:* in terms of knowledge, relevance and fit-for-use.

III. Current innovative financing mechanisms

At present there are there are several forms of innovative mechanisms being utilized and developed in the various sectors that constitute smart cities.

3.1 Multilateral/ Development Bank Lending

Development Banks may be viewed by many as more traditional lenders for government borrowers and not providers of innovative finance. However, their recent activities and shift in focus are in line with the concept of bankability and in catalysing new forms of finance for smart cities.

Global, regional, and local development banks such as the World Bank, Erupoean Investment Bank (EIB), Asian Development Bank (ADB), Asian Infrastructure Investment Bank (AIIB) and the EBRD have recently been increasing their activity in the SSCs space.

The EIB for instance, launched the catalytic Smart Cities & Sustainable Development financing programme in 2014 in Belgium, the first of its type in Europe, as a joint financing facility with Belfius Banque, and has supported 62 "Smart" projects totalling around EUR 400m via this programme. Whilst the programme supported city projects mainly, its success has led to a further programme of Eur 400m (Smart Cities, Climate Action & Circular Economy) launched in December 2016 aimed at smart inclusive and sustainable projects mounted by local authorities, inter-municipal utilities and social sector (education and healthcare) non-profit organisations. The new programme showcases the applicability of such innovative financing for not just cities, but also regions.

The involvement of such development financing institutions and their programmes can increase bankability through various paths.

- Change in style of funding
    - *Project based* as opposed to only government lending: A move to project finance, based on financial models, projection, finance and economic fundamentals has meant an alignment with project financing techniques used by generic investors and commercial and investment banks. This alignment can help tap these "new investors" as well as impose a new framework and governance to previously badly structured projects. A realignment to longer term funding is also driving the process.
    - *Private sector lending:* Multilateral institutions, with exceptions such as the EBRD, have traditionally only dissipated a small percentage of their total resources (5-10% on average) to non-sovereign borrowers. While investments are typically limited, they are seen as catalysts for private investments, to leverage a larger amount of funds from commercial sources[14] and create SDG linked development impacts. A declaration by institutions such as the AIIB[15] to increase private sector lending to 40% of their portfolio not only introduces an increased source of funding, but one with multiples of leveraging capability.
    - *Lending* at the sub-national level is allowing regional arbitrage and funding.
    - Funding the risk and not the asset: through PPPs, enabling innovative instruments, leveraging private sector, focus on areas and parts of the project life cycle which are high risk, in order to de-risk and increase bankability.
    - Sustainable funding mechanisms: Indirect and direct intervention has led to several mechanisms (GFCF, TDRs, VGF below), which will be introduced in this section later. Creation of Funds and Instruments designed to address the riskiest period of the life cycle.
- Smart City Initiatives: Designed to meet SDG aims of their member countries. **World Bank**, the Global Platform for Sustainable **Cities** (GPSC) is a forum for knowledge sharing and partnership to achieve urban sustainability, The Asian Development Bank **(ADB)** GrEEEn city and liveable cities initiative, **EU**'s Elena and JESSICA platforms and the Inter-American Development's The Road toward Smart Cities. There is often linked funding from the agencies. The UNECEs triple offering - United for Smart Sustainable Cities (U4SSC) initiative (ICT focused), the Smart City Profiles product and United Smart Cities Project – for instance, are all aimed at

[14] Asian Development Bank, PSOD

[15] Mr Pang Yee Ean, D.G. for Structured Lending, AIIB

assisting members in achieving their SDG commitments. Assistance is provided in identifying smart city areas that need work, creating strategy based on impactful use of resources, suggesting policy enhancements that could facilitate the process and giving guidance for SSC innovative financing. Of direct relevance to this report is that they thus support bankability of such projects and assist in attracting private sector financing.

- Increased Oversight: Their involvement in funding SSC projects can increase the bankability of the project as it brings in a level of governance, oversight and due diligence that gives comfort to other financiers.

- De-Risking: Their activity in promoting smart cities, and capacity building can also prove useful in making newer investors more comfortable with the risks involved.

3.2 Funds

Whist Funds have been commonplace in the private sector, the multilateral environment, and organisations, their activities have been traditionally either focused on financial returns (Investment Funds), or on philanthropic pursuits (Global Alliance for Vaccines and Immunisation – *GAVI* – whose mission is to improve access to new and underused vaccines for children living in the world's poorest countries). However, innovation in the use of Fund vehicles is allowing the public sector the opportunity to leverage the private sector, encourage sustainable financing options, and connect with retail and institutional investors.

3.2.1 Revolving Funds: From Grants to Investment/ Loan Model

- The Fund, seed financed by the government, either invests in, or gives a loan to, smart city projects.
- Leveraging/ borrowing is possible from commercial banks, development banks and the private sector, and is underlying cash flow dependant.
- Can also raise capital from bond issuances to institutional and retail investors, including city residents who are benefiting from the projects.
- Sustainable: The money is repaid by projects-loan principal and interest. Investment value can even increase if underlying projects are successful thereby growing the amount repaid. These revolving monies can fund further investments.
- Flexible and de-risking: Allows collation of projects, diversification of risks, the leveraging of investors interested in specific types of SSC Projects, capacity building.
- e.g *Philippines Water Revolving Fund (PWRF)*[16] to expand access to safe water and wastewater treatment facilities. Mobilized $234m of loans for water supply and sanitation projects, 60% from private banks and developers.

3.2.2 Infrastructure & Investment Funds

- Allows access to institutional investors: pension funds, endowment funds, insurance companies, commercial banks, mutual funds and hedge funds sovereign wealth funds
- Estimated global unlisted AUM of USD 373bn[17], many in SSC related infrastructure projects, and tend to be long term.
- High knowledge and capacity; fund the riskiest part of projects (Equity) allowing for increased bankability and attractiveness to leverage senior investors/ lenders.
- Can also raise capital from local investors, connecting with city residents who are benefiting from the projects and hence useful as SSC funding source.
- New market global players. E.g. China's $11 billion fund for Central, Eastern Europe, Central Asia[18] for projects relevant to SSCs.

[16] https://www.dai.com/our-work/projects/philippines-water-revolving-fund-support-program-pwrf
[17] Prequin. (2017). *Global Infrastructure Report.*
[18] Reuters . (2017). *China launches $11 billion fund for Central, Eastern Europe*

3.2.3 Specific SSC Funds

Over the past few years, a large number of Funds have been set up in the region to support smart city projects, regardless of whether they are labelled as such or not.

- These can be classified as direct funding vehicles for projects, or Funds to finance capacity building and pilot projects. (see Appendix A)
- Examples include the US Department of Housing and Urban Development's Community Development Block Grant Program is one and Property Assessed Clean Energy Financing in Maryland.
- The Government of India has recently launched a Rs1.45 lakh crore Fund to finance their 100 smart cities initiative.

3.3 Capital Markets & Bonds

The global capital markets continue to be the single largest source of funding for projects globally. With varied structures designed to maximize tax and other investor specifics, an inherent governance structure aligned with the innovative finance elements the sector will likely be of great interest for SSC financing.
One the earliest examples of funding city projects were through the domestic municipal (*muni*) bond market in the US. The problems of that market has meant newer bonds with a greater focus on the underlying projects and not the sub-sovereign guarantee, self-sustainability and higher bankability.

With projects often able to produce returns commiserate with risks, SSC projects have many of the required characteristics for the capital markets investors, including socially aware investors.

- Tested to access capital market investors, private investors, specific and general investor bases, both on the international and domestic spheres. Widely used in emerging and developed countries alike for infrastructure projects.
- Flexible in terms of tenure, taxation and subsidy incentives, conditions to attract new investors. Can be used to finance new SSC projects or for upgrading existing infrastructure as required in the Region.
- Allows for leveraging from commercial financial institutions and project linked.
- Restrictive in terms of capital markets availability though private deals possible.

3.3.1 Securitised Bonds

- Secured by project financial flows, and thus often to the user of the project. Aligned with the SSC projects, with lower risk for attracting investors.
- De-risks government risk and allows for leveraging commercial banks and IFI's.
- Flexibility in timing for governments by leveraging future budgets using cheaper funding.
- E.g International Financing Facility for Immunisation (IFFIm)

3.3.2 Social Impact Bonds: Performance linked

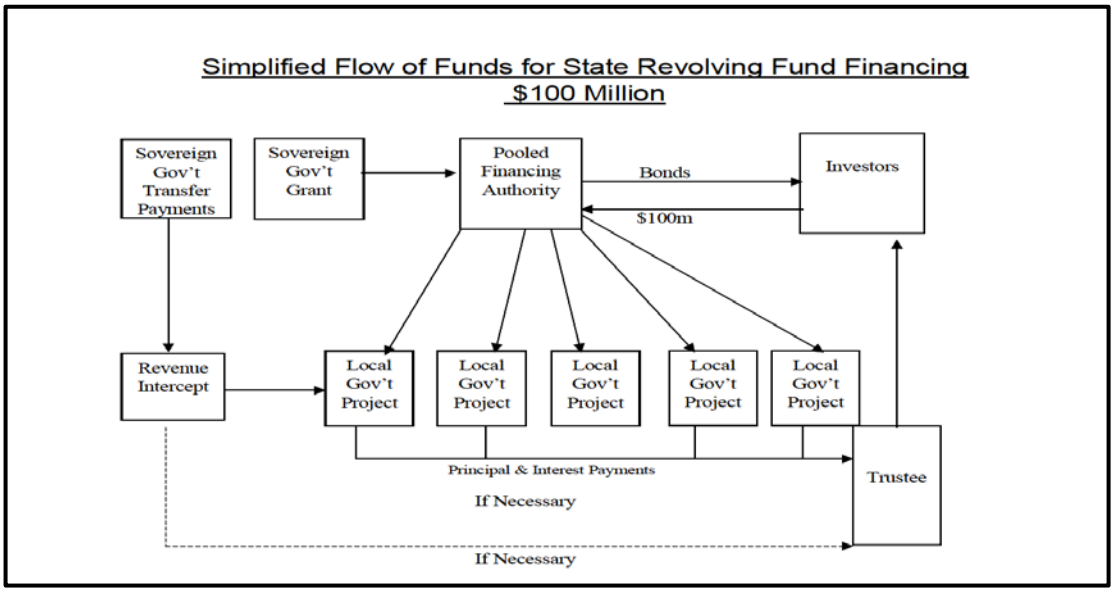
- The social impact investment market is estimated by Forbes to have the potential to achieve USD 3 trillion[19], with an ability to make a considerable dent in the investment GAP.
- The report found $46 billion in sustainable investments under management.
- Allows the government to pay for only for successful projects, with investors in the bond taking the risk of non-performance.
- Can provide access to substantial institutional and retail investors socially responsible investors, philanthropic investors, foundations, corporate social responsibility funds.

3.3.3 Local Government Funding Vehicles (LGFAs) and Pooled Funding

Many cities, communities and their associated entities in emerging countries are too small to enter directly into the capital markets. A pooled vehicle or public funding agencies can allow access and efficiencies.

[19] Sir Ronald Cohen and Matt Bannick. (2014). Forbes Magazine. *Is Social Impact Investing The Next Venture Capital?*

- The model of a national funding agency bringing together local authorities/ cities to pool their borrowing needs in the bond market has already proved successful in various Northern European countries. UK, France and NZ
- Investors are attracted to investments, which are diverse and lower risk. Additionally, capital markets typically look at larger investments.
- These vehicles allow the pooling of SSC projects to meet those investor needs. This is especially interesting for smaller cities, or fewer projects.
- Underpinned by guarantees and over project cash flows.
- Agence France Lokale: USD 1.25bn raised in 2 2015-2016 for city projects.



Source: USAID Pooled Funding

3.3.4 Green Bonds[20]

- Fast growing sector, aimed at provision of funding for projects that can mitigate consequences of climate change and are "green" in nature. These are thus aligned with the SSC aims and include:
    - Clean energy
    - Sustainable transport and urban development
    - Green land use and forest management
    - Building climate resilience
    - Strengthening climate change adaption and mitigation policies, governance, and institutions.
- *$694bn of climate-aligned bonds outstanding,* Approximately 3,590 bonds from 780 issuers across SSC themes: Transport, Energy, Buildings & Industry, Water, Waste & Pollution and Agriculture & Forestry, Includes $118bn of labelled green bonds.

3.3.5 Smart City Bond Programmes

- Building on the success on the Muni market, first examples of a specific SSC Bond programmes are appearing.
- Linked to the "smart cities mission" of the Government of India, the city of Pune raised USD 32m through the first tranche of a five-year bond programme to raise USD 360m listed on the Bombay Stock Exchange in June 2017.

[20] **Climate Bonds Initiative. (2016).** ***Bonds and Climate Change. The state of the market in 2016***

- With a top rating of AA+, the first tranche of the bonds was oversubscribed six times. The proceeds will be used for several SSC projects, including a water-metering project, with debt servicing from user charges and property tax[21].
- E.g. Global Green Growth Institute, the Green for Growth Fund.

3.4 Instruments & Incentives

Innovations to meet specific investor needs and to enhance or differentiate existing financing methods are proving critical in catalysing new sources of funding.

3.4.1 Viability Gap Funding (VGF) and Minimum Revenue Guarantee incentives

- Government incentive scheme developed in India to make projects in priority industries (SSC, Infrastructure) bankable by supplementing returns.
- It can help attract further private funding, by mitigating the risk linked to investment returns and making projects bankable.
- Makes entry into the industry financially interesting for private sector players and private sources of funding, whilst minimizing government spending.
- A tool for catalysing the cheapest private sector funding.

3.4.2 Transferable Development Rights (TDRs), Payment recognition certificates

- Originates from land management initiatives in the USA with many variations.
- Adapted as a financing mechanism in India to facilitate the speedy acquisition of land for developing infrastructure such as city road development, satellite towns, and metro rail.
- Substitutes cash payments by certificates that allow the holder of those certificates to sell or transfer the same.
- In member states where development rights can be difficult to attain, these instruments can be very popular in raising finances.
- Allows the government to benefit from the increase in land value from SSC Projects, by sharing in the increased value along with the public that will benefit via taxation.
- E.g. CEPAC bonds in Brasil raised over USD 800m for redeveloping 2 small cities and a Bus Rapid Transport (BRT) Project in Pimpri India, financed around 60% of the land acquisition using TDRs.

3.4.3 Credit Enhancement Initiatives

- Enhancing the creditworthiness of projects will result in increased bankability.
- Insurance products, taxation and subsidy schemes and interest enhancement measures can all help in credit enhancement.
- EU-EIB Project Bond Initiative: provides credit enhancement for project bonds issued by companies undertaking eligible infrastructure projects. As a result, the bonds achieve a level of credit quality, potentially in the single-A rating category allowing them to access a wider range of investors.
- Development Banks also offer insurance instruments (MIGA, ADB).
- IFC-World Bank has launched the MCPP Infrastructure Initiative – an innovative program that aims to raise $5 billion from global institutional investors to modernize infrastructure in emerging markets over the next five years, opening up a new stream of capital flows to improve power, water, transportation, and telecommunications systems in developing countries.

[21] Business Standard. *First bonds soon under Smart Cities scheme*

3.4.4 Campaign Financing and crowd-funding

- A further instrument to leverage the public benefitting from the SSC projects by connecting with them and making them stakeholders in the development of their city. This extends to corporate as well as individuals, including diaspora and non-resident populace.
- It can be structured in the form of investments such as *mini-bonds,* or be philanthropic in its nature.
- The reconstruction of the Royal Castle in Warsaw via fundraising efforts involving Poles living in the country and abroad is an exemplary example of a philanthropic campaign.

3.4.5 Tax, Subsidy Initiatives and user charges

- The nature of many SSC projects is of high upfront costs and lead times to beginning operations.
- Initiatives designed to provide relief to private sector operators and construction companies can unlock financing from their financing partners.
- Tax breaks and subsidies, alongside monetizing the resulting increase in property values around SSC project zones through various schemes (e.g., [22]tax increment financing, special assessments, land value tax, betterment tax) can be useful in increasing the bankability as well as unlocking in-build finances.

3.5 Public Private Partnerships (PPP)

- Describes a range of possible relationships among public and private entities in the context of infrastructure[23] and SSC projects.
- Public partners are government entities; private partners local or international businesses or investors with technical or financial expertise relevant to the project.
- Government contribution can be financial and/or in-kind, Private sector could include technical knowledge, financing, management.
- Following the path recommended by the SDGs about partnerships for sustained development, and can help leverage financing from the private sector and their established relationships.
- The ADB attributes motivation for PPPs as threefold.
    - To attract private capital investment (often to either supplement public resources or release them for other public needs).
    - To increase efficiency and use available resources more effectively.
    - To reform sectors through a reallocation of roles, incentives, and accountability.
- The UNECE PPP Forum in HK highlighted that PPPs could help policymakers to prioritize projects that are most likely to drive growth and ensure the sustainability of the infrastructure projects.
- The concept of ***People First PPPs*** was launched by the UNECE in an effort to prioritise SDGs commitments in partnerships.
    - As SSCs encapsulate the SDGs, efforts to build a financial model in PPPs that capture the same, should create aligned synergies.
    - Flows of capital should be to projects, which address the issues of accessibility, equity, efficiency, effectiveness, sustainability and replicability.
    - Recommend developing international standards for People First PPPs to promote scalability and maximum impact.
    - Recommend how to make 'People first' projects 'bankable'[24] by the provision of clear SDG criteria and mobilising social impact investors.
    - E.g. Philippines and Bangladesh projects where lease contract allowed expensive dialysis equipment to be used in hospital care centre where the risk was taken over by the private sector.

[22] Dr. Julie Kim, Senior Fellow, New Cities Foundation. (2016). *Handbook on Urban Infrastructure Finance*

[23] *Asian Development Bank. (2016). PPP Handbook*

[24] UNECE International PPP Forum. (2017). *Implementing the United Nations 2030 Agenda through effective, People-first Public-Private Partnerships*

3.6 Brownfield Recycling

- Specific funding mechanism originating from Australia.
- Using current public assets to leverage finances for new development either via leasing them or outright sales.
- Post the Global Financial Crisis, Australia has almost been alone in championing the cause of the large scale recycling of government assets and services to meet the infrastructure funding GAP of US 15trillion.
- In Victoria, a unique $1 billion social housing Public Private Partnership (PPP), backed by brownfield recycling.

3.7 Blended Mechanisms

- Risks in SSC projects change over their life cycle, with the highest risks at the early stages.
- Proposes a mixture of concessional and non-concessional instruments (including many of them seen in this section) to achieve a lower average cost of funding
- Matches private or commercial finance sources with project risks they are best suited for.[25]
- There is a move away from a single source of funding for the life of the project, to one that focuses on catalysing cheaper funding as the risk changes.
- E.g. Proposed Green Fund Catalysing Facility

IV. Case Studies

In order to equip the reader with some practical examples of the mechanisms presented above, several case studies are presented below. These should allow governments, the private sector, and civil society to benefit from sharing in the experiences of other countries to understand how they could be relevant in their region.

Project	4.1 City of Bucharest - Water and Sanitation up-grading and services
Year	2000
Location	Bucharest, ROMANIA
Thematic Areas	Water & Sanitation Infrastructure, Operations & Management, Equitable access to clean drinking water and sanitation
Objective/ To address	•Water loss from old infrastructure • Inadequate metering system resulted in low revenues for the municipality. • Investments in sewerage, water storage and quality improvements required to meet EU standards. • Low tariffs resulting in insufficient funds to invest in necessary improvements.
Structure	A joint venture PPP established to manage all water and sanitation services in metropolitan Bucharest under a 25- year concession contract by the government. The private operator, Veolia (Apa Nova Bucuresti), took 80% of the shares of the concession company, while the municipality retained 20%. Apa Nova would be responsible for managing water and sanitation services and for all capital investments.
Link	http://ppp.worldbank.org/public-private-partnership/ppi-project-summary-romania-bucharest-concession-agreement-water-and-sanitation-services
Financing Instrument	PPP, Concessions, Private Sector Funding $258.8 million

[25] Anouj Mehta, Principal Financial Management Specialist, Asian Development Bank

Project	4.2 City of Astana - Affordable Housing and Smart City Initiatives
Year	2012
Location	Astana, KAZAKHSTAN
Thematic Areas	Housing: New Stock, Social Housing, Urban Regeneration, Quality of life improvement
Objective/ To address	• New investments in social housing and destruction of dangerous dilapidated housing - Improvement programme. • Existing building demolished, existing tenants housed in alternative accommodation and new social and saleable housing built on the existing land, with additional floors •Land of demolished houses for the construction of parks, squares, sports grounds for people living in these areas
Structure	The Elorda Damu company was established to implement the pilot project by the Astana administration. The company allocated loan funds from the national budget at the initial stage of the project. In accordance with the terms of the pilot project, the company constructs apartments and gives 30% of them to the Astana administration for the resettlement of the residents of people from dilapidated houses. The company sells 70% of the apartments. Proceeds from the sale funds the company to again invest in construction. In such a manner, the company continues to build houses at the expense of its own capital sustainably.
Link	http://elorda-damu.kz/index.php/en/about-company
Financing Instrument	PPP, Sustainable finance, Brownfield finance, Proceeds of the sale of additional housing stock, USD 144m investment

Project	4.3 City of Sao Paolo - Metro Line 4
Year	2011
Location	Sao Paolo, Brasil
Thematic Areas	Quality and long-term sustainability of urban transport, Employment, Equitable Access, Quality of Life, Poverty Reduction, Health, Education, SDGs
Objective/ To address	• UN's MDGs and later SDGs (In recent years, São Paulo's peripheral areas have attracted new residents, but they have struggled to generate stable employment growth—resulting in unequal wealth distribution and lack of access to job opportunities). • The urban poor faced high fares, an overly crowded commute at peak hours, and long and inconvenient journeys. • Line 4 is a tremendous advancement in the accessibility of jobs, health, and education centers for residents from the low-income communities on São Paulo's periphery
Structure	PPP under a turnkey contract and an operating concession to help create the enabling environment to attract private sector investment.
Link	http://projects.worldbank.org/P051696/sao-paulo-metro-line-4-project?lang=en
Financing Instrument	PPP, WB loan of US$304m, US$304m from the Japan Bank for International Cooperation (JBIC) and US$922 million from the São Paulo State Government for the civil works. US$246 million private sector investors, concession and user fees

Project	4.4 Municipal Finance Company (MUFIS) Housing Initiative, USAID municipal infrastructure finance program
Year	1994
Location	CZECH REPUBLIC
Thematic Areas	New Housing Stock, Quality of life, Municipal infrastructure, Urbanisation
Objective/ To address	Lack of new housing stock in municipalities and towns in transition period and rapid urbanisation
Structure	A joint stock company with shares owned by the Ministry of Finance and the Czech and Moravian Guaranty and Development Bank, each with 49%. The remaining 2% is held by the Association of Czech municipalities and the Union of Towns and Communities. • MUFIS borrowed $44 million from U.S. capital market investors backed by U.S. Government guarantees, and on-lent these funds to participating commercial banks In turn, municipalities borrowed funds from the banks for periods between 7-15 years to finance housing-related infrastructure projects
Link	http://www.mufis.org
Financing Instrument	Pooled Revolving Fund, Capital Markets, Insurance and Guarantee Incentives.

Project	4.5 REgeneration MOdel for accelerating the smart URBAN transformation (Remourban Projects) – Nottingham
Year	2017/ 2018
Location	NOTTINGHAM, U.K.
Thematic Areas	Energy efficient homes, energy efficient transportation, reduced carbon footprint, Integrating sustainability into the regeneration of towns and cities. Nottingham is one of the "lighthouse cities"(providing examples for other cities) alongside Valladolid, Spain and Eskisehir, Turkey who have similar initiatives.
Objective/ To address	A holistic approach for a sustainable urban regeneration model, supporting organizational, human and economic decision-making processes towards large-scale renovation and city transformation – aligned with SDG commitments. City's ambitious target of achieving a reduction of 26% in carbon emissions by 2020 when compared with the levels in 2005
Structure	• 3 neighbourhoods housing associations (social, leaseholder and owner occupier) across Sneinton council will receive energy upgrades to their buildings. • 10 houses will receive whole-house" solutions which reduces net energy usage to zero through energy efficiency and energy generations technology. • Introduction of electric buses (Optare)
Link	http://www.remourban.eu
Financing Instrument	• Housing Project: Energiesprong – innovative financing methodology used. This method finances the upgrades using a combination of user fees (The household pays an 'Energy plan', and the landlord receives an on-going income to fund similar works to more homes), and by aggregating planned routine & maintenance and major repairs cost over a 30 year period. • Electric Bus Project: Combination of financing from government fund (Green Bus Fund), with costs counteracted by savings on fuel, maintenance and repairs. • EU Funded project

Project	4.6 Green Finance Catalysing Facility (GFCF) - Proposed
Location	ASIAN DEVELOPMENT BANK
Year	2017
Thematic Areas	Green Finance, Catalysing private sector, blended finance, smart cities
Objective/ To address	Conceptualise a new instrument with wide applicability as an innovative financing vehicle addressing bankability.
Structure	Conceptualized taking into account considerations to create a national/ regional green finance vehicles which will: • Directly catalyse a pool of bankable green infrastructure projects in a specific country, through • Assisting projects in creating both financially bankable as well as environmentally sustainable models, with time bound green targets, by utilizing, • Concessional sovereign and development finance to mitigate risks, linked to, • Clear conditionalities for both, achieving green indicators and crowding in a blend of private sector finance at the project level, as well as, • Accessing private sector finance at the pooled GFCF vehicle level itself, while, Strengthening the country's green growth policies and leveraging structures, allowing a gradual reduction on national level fiscal burdens from external debt.
Link	https://www.adb.org/publications/green-finance-catalyzing-facility
Financing Instrument	Blended mechanism, Funds, Blended Mechanisms, Bonds, Incentives

Project	4.7 Green Municipal Fund (GMF)
Location	CANADA
Year	2000
Thematic Areas	Sustainable community development to improve air, water, and soil, and reduce greenhouse gas emissions, land development, green infrastructure
Objective/ To address	To promote active partnerships in green projects.
Structure	•Fund - Seed funded (USD 500m) by the Government • Lends Capital, finances feasibility studies and creates partnerships for projects for cities. E.g. low ecological footprint sports centres, land redevelopment.
Link	https://fcm.ca/home/programs/green-municipal-fund.htm
Financing Instrument	Green Fund, Leverages public and private-sector funding

V. Policies for Facilitating Innovative Finance

Aside from regulation and governance changes, policies facilitating enabling environments for financing SSCs must be initiated for investors and projects to work together in collaborative partnerships.

5.1. Clear and impactful overall development strategy

As a prelude, it is essential that cities and federal governments create a clear and impactful development strategy aligned with SDG commitments, and as part of their National Determined Contributions (NDCs) under the UNFCCC, aimed at:

- Improving the resilience and competitiveness of financial service institutions
- Identifying the policy needs to facilitate the flow of financial resources from diverse sources
- Contributing towards national commitments on improving the quality of life of its citizens

5.2. Financial Sector Specific Policies

Actions will be country dependant and could include the following policies:

- Developing a sustainable capital markets strategy: The capital markets have suffered several shocks over the past decade, which has impacted investors and the flow of investments. Regulators and governments must ensure that necessary laws and regulations are put into place to deepen these markets in terms of instruments, listing capabilities and sustainable supporting institutions. Measures that could help, for instance, to diversify capital and investments sources, expose the market to globally accepted practices. E.g. develop a liquid government debt securities market; promote the development of a broad investor base for the supply of capital through pension funds and insurance companies; build cornerstone institutions such as credit enhancement agencies to be a catalyst for rapid development of priority sectors; and offer tax incentives for promoting the development of priority assets like infrastructure and sustainable smart cities while removing tax policies that hamper development in such priority areas.

- Strengthening key financial institutions: Innovative financing touches various institutions from local and international development banks, commercial banks and specialised Fund vehicles. The creation of short and long term bond markets, with enabling infrastructure in terms of professional institutions to manage and support sophisticated instruments, would help build resilience and confidence.

- Aligning financial regulation with sustainability and building financial sector capacities. The mistakes of the past have highlighted the need to upgrade not just infrastructure and ICT networks, but also the experience and understanding of human capital to absorb new techniques and ideas. Capacity building in terms of knowledge sharing globally will be key.

- Facilitating international financial flows: Policy designed to facilitate these processes will be important in attracting financing for bankable projects.

- Incorporate policies for performance-based approaches[26] for revenue sharing into delivery models for smart city systems. This way, both the public procurer of services and private-sector investors share the spoils from efficiency gains, advertising-generated income, and value-added smart city analytics.

- Promoting People First PPP is the umbrella instrument under which a variety of SSC projects can be developed and be SDG compliant. The UNECE suggested approaches to standardize and facilitate their evolvement includes:

    - Legislation to implement PPPs and develop dedicated Human Resources (HR).
    - Capacity building internally and PPP cells for guidance for interested parties.
    - Partnership with organisations such as UNEP and UNECE to develop standardized approaches using SDGs as a basis.
    - Development of pilot projects that are scalable.
    - Development of clear concession agreements to promote de-risking.

- Establishing enabling environments to:
    - Support instruments such as Transferable Development Rights (TDRs), fiscal incentives, and qualified infrastructure bonds.
    - Seed fund incentive schemes such as the Viability Gap Fund (VGF).
    - Tax and subsidy incentives that are “fit for use” and their governance and treatment. Transparency and sustainability, for instance, are key in not just proving the benefits of the incentives, but also to curb issues of misuse and corruption. Thus incentives should be subject to legislative process, consolidated under the tax law, and their fiscal costs and benefits reviewed annually. Further, rules rather than discretion should guide the granting of such incentives.

[26] Steve Hamilton, Ximon Zhu. (2017). Deloitte. *Funding and financing smart cities*

- Mobilising alternative sources of funding such as CSR. India's mandatory law on CSR has mobilized large volumes on an on-going sustainable basis, though it remains unutilised due to lack of government direction as to its uses.

- Encourage active regional, federal, state, and local collaboration in order to benefit from best practices, shared experiences, comparable project know-how.

VI. CONCLUSION

In summary, increasing bankability to fund the SSC Gap in line with the SDGs and the People First scenario requires several actions at the decision-maker level:

A clear and definitive strategy must be built and communicated: Policy-makers at the city, municipal, regional and national levels must at first ascertain their SSC status, 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 Profiles 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. Shared forums directed at specific projects could help build understanding and confidence.

Evaluation of financial instruments must be carried out. Use feasibility studies to identify relevant financing instruments and sources of sustainable finance, drawing wherever possible on existing examples. A handful of Evaluation Studies[27] focused on financial instruments have already been carried out under the JESSICA Contribution Agreement between DGREGIO and the EIB which could prove useful. This report, alongside the case studies presented and referenced 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 prioritised.

Blended Finance 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.

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.

[27] European Commission. (2013). Smart Cities Stakeholder Platform. *Financing Models for smart cities and Using EU Funding Mechanisms for smart cities*

APPENDIX A: SSC Linked Funding Initiatives [28]

Existing funding opportunities – Overview

Large Company · Towns/Cities/Regions · ? WHO ARE YOU · SME · Civil Society

Grants

INFRASTRUCTURES AND URBAN DEVELOPMENT

	JPI URBAN EUROPE - ERA-NET SMART CITIES AND COMMUNITIES (ENSCC)	EUREKA'S SMART CITY	CONNECTING EUROPE FACILITY (CEF)	LIFE
Total budget	26 M € (2015-2018)	NA	Ca 33 B €	3.4 B €
Amount available per project (estimate)	1-2 M€	NA	Variable	• €500,000-€1.5 M: Beneficiaries: 1-5 (Traditional proj.) • €8 M - €15 M: Beneficiaries: 2-10 (Integrated proj.)
Beneficiaries				
Broad allocation criteria	• Smart integrated urban energy and transport tools and systems • Smart utilisation of big data • Smart governance	• Smart integrated urban energy and transport tools and systems • Smart utilisation of big data • Smart governance	Enhanced citizen access to transport, energy and telecom	• Energy performance • Land-use and planning • Climate change mitigation
Managing authority	Governing Board: AT, CY, DK, DE, FI, FR, IE, IT, MT, NL, NO, ES, SE, and TR	Eureka Network	EC	EC
Type of funding	Grant	Grant	Grant. 100% IA & CSA, 70% RIA	Grant/Financial instruments
Website	jpi-urbaneurope.eu	www.eureka-smart-cities.org/	ec.europa.eu/inea/en/connecting-europe-facility	ec.europa.eu/environment/life/

COOPERATION AND CAPACITY BUILDING

	EUROPEAN REGIONAL DEVELOPMENT FUND (ERDF)	COHESION FUND	EUROPEAN SOCIAL FUND (ESF)	EUROPEAN AGRICULTURAL FUND FOR RURAL DEVELOPMENT (EAFRD)	EUROPEAN MARITIME AND FISHERIES FUND (EMFF)	COMMUNITY-LED LOCAL DEVELOPMENT (CLLD)
Total budget	183.3 B €	63.4 B €	83.2 B €	Ca. 100 B €	6.4 B €	NA
Amount available per project (estimate)	Variable	Variable	Variable	Variable	Variable	Min. of 3 M€ for the full funding period (7 years)
Beneficiaries						
Broad allocation criteria	Various. 5% must support Urban Development	• Infrastructure projects under the CEF • Environmental sustainability	• Labour (Qual. Sust. Mob) • Social inclusiveness • Poverty alleviation • Education • Institutional capacity	• Sust. farming / forest mng/ resource eff • Low carbon economy • Poverty, social inclusion	• Sustainable fishing • Community led development	• Building cross-sectorial expertise
Managing authority	National/Regional authorities + EC	National/Regional authorities + EC	National-regional authorities + EC	National /Regional authorities +EC	National /Regional authorities +EC	National/Regional authorities
Type of funding	Grant /financial instrument	Grant /financial instrument	Grant/ financial instrument	Grant	Grant	Grant
Website	ec.europa.eu/regional_policy/en/funding/erdf/	ec.europa.eu/regional_policy/en/funding/cohesion-fund/	ec.europa.eu/esf/	ec.europa.eu/agriculture/rural-development-2014-2020/index_en.htm	ec.europa.eu/fisheries/cfp/emff/index_en.htm	enrd.ec.europa.eu/en/themes/clld

RESEARCH, INNOVATION AND COMPETITIVENESS

	H2020	JU Fuel Cells & Hydrogen	JU ECSEL	PUBLIC PROCUREMENT	COSME
Total budget	>70 B €	1.33 B €	132.27 B €	NA	2.3 B €
Amount available per project (estimate)	Variable	Variable	Variable	Variable	Variable
Beneficiaries				Variable	
Broad allocation criteria	• ICT • Key Enabling Technologies • Clean and efficient energy • Transport • Inclusive, innovative and reflective societies • Other RDI actions	Fuel cells and hydrogen for transport and energy applications	Innovative electronic components and systems	• Pre-commercial procurement • Public procurement of innovative solutions in construction, lighting and transport	• SMEs access to finance • Improving business conditions in specific sectors. • Access to markets • Supporting entrepreneurs
Managing authority	EC	Association of stakeholders + EC	Association of stakeholders + EC	Contracting authorities	EC
Type of funding	Grant. 100% IA & CSA, 70% RIA	Grant 100% IA & CSA, 70% RIA	Grant	Procurement	Grant
Website	ec.europa.eu/research/participants/portal/desktop/en/home.html	www.fch.europa.eu	www.ecsel-ju.eu	www.innovation-procurement.org	ec.europa.eu/easme/en/cosme

Loans and equity

	EFSI	INNOVFIN	JESSICA	JEREMIE	ELENA
Total budget	16 B € (EU Budget) + 5 B € (EIB)	24 B €	NA	NA	NA
Amount available per project (estimate)	Variable: no restriction on the size of the projects eligible.	Variable: e.g. INNOVFIN LP 25 – 300 M€/ MGF 7.5-25 M€/ MCG max 400 M€	Variable	Variable	Variable
Beneficiaries					Local and regional authorities
Broad allocation criteria	Various: infrastructure, energy efficiency, support for SMEs and midcaps, etc.	Entire value chain of research and innovation	Urban regeneration and development	Improved access for high-potential SMEs	Energy efficiency and renewables projects
Managing authority	EIB	EIB	EIB	EIB	EIB
Type of funding	Loan, Guarantee, Capital market instrument, Credit enhancement, Equity, equity-type	Debt and equity financing	Equity, loan and/or guarantee	Equity, loan and/or guarantee	Grant, up to 90% of eligible costs
Website	www.eib.org/about/invest-eu/index.htm?lang=en	www.eib.org/products/blending/innovfin/	www.eib.org/products/blending/jessica/	www.elf.org/what_we_do/resources/jeremie/index.htm	www.eib.org/products/advising/elena/index.htm

* Budgets for 2014-2020 period

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Disclaimer: this document is still at the draft stage. Information will be updated and a definitive version is planned as soon as post-2016 commitments have been clarified.

[28] Source EU-SMARTCITIES.EU

APPENDIX B: Important, Older Innovative Financing Mechanisms[29]

Table 1. Some important innovative financing mechanisms (proposed schemes in italics)

INITIATIVE	PURPOSE	HOW DOES IT WORK?	REVENUES	IS IT ODA?
NEW AGENCIES				
GAVI Alliance (2000)	Public-private partnership for immunisations	Pooled funds distributed, based on proposals from poorer developing countries.	About USD 300m. a year. USD 3.7b. approved for 2000-15, as of 2009.	Yes, but only for official contributions.
The Global Fund (2002)	Public-private partnership to fight AIDS, TB and Malaria	Pooled funds distributed, based on proposals from poorer developing countries.	About USD 3.2b. a year. Total of USD 14 b. raised by 2009.	Yes, but only for official contributions.
NEW MECHANISMS				
(a) New revenue raising				
Air-ticket levy (2006)	Fund a purchase facility (UNITAID) for AIDS, TB and malaria treatments.	13 countries apply a domestic tax (2009), UNITAID funds are channelled through existing institutions, esp. Clinton Foundation.	USD 251m. a year.	Yes, when funds collected are paid to UNITAID or other international agencies.
Auctioning/sales of emission permits (2009)	Provide funds for climate mitigation and adaptation	Under EU regulations, EU Allowances (EUA) for carbon dioxide emissions are sold to emitters.	Germany's 2009 budget allocates EUR 225m. in EUA sales to development.	Yes, when proceeds spent on development.
Currency Transaction Levy	*Increase the funds allocated to finance development*	*Governments apply a tax on foreign exchange transactions.*	*Levying 0.005% on major currencies would yield USD 33b. a year.*	*Yes, when funds collected are spent on development assistance.*
(b) Bonds (front-loading)				
International Finance Facility for Immunization (IFFim, 2006)	Fund GAVI campaigns	Bonds are sold in the international capital markets against legally binding long-term ODA commitments from 8 donor countries.	USD 2.4b. raised by 2009; aim is to raise a total of USD 4b.	Yes, for government payments to meet bond interest and principal.
(c) Voluntary contributions				
Global Digital Solidarity Fund (2003)	Promote an inclusive information society	Public or private bodies voluntarily contribute 1% of digital procurement contracts.	Since 2003, more than EUR 30m. allocated to 300 grantees.	Yes, but only for official contributions.
(PRODUCT) RED (2006)	Provide additional funding to Global Fund's activities in sub-Saharan Africa	Product RED trademark licensed to global companies that pledge a share of profits from sales of RED Products to Global Fund programs.	USD 134.5m. transferred to Global Fund to date.	No, only private funds are involved.
Airline ticket voluntary solidarity contribution	*Provide additional resources to fund UNITAID activities*	*Individuals or corporations elect to contribute to development when booking flights.*	*USD 2 per ticket contribution might raise up USD 980m. a year.*	*No, only private funds are involved.*
(d) Guarantees (incentives)				
Advance Market Commitment (AMC, 2007)	Provide incentive to develop new vaccines	Donors commit to buy a successful vaccine from vaccine makers at a negotiated price, which covers development costs.	USD 1.5b. pledged by 5 donors and Bill & Melinda Gates Foundation for AMC for pneumococcal disease.	Yes, but only when donor governments pay for vaccines.
Index-based weather insurance	*Reduce the vulnerability of the rural poor to extreme weather events*	*IFAD-WFP partnership provides farmers with weather-indexed insurance.*	*Weather insurance schemes already piloted in Ethiopia, Malawi, Nicaragua, Honduras and India.*	*Yes, but only for official contributions to insurance premia.*

[29] Source: Elisabeth Sandor, Simon Scott and Julia Benn. (2009). OECD. *Innovative financing to fund development: progress and prospects.*

APPENDIX C: Further Case Study Examples[30]

Country/ Region	Project	Financing
Europe (candidate countries: Albania, Armenia, Azerbaijan, Belarus, Bosnia, Georgia,FYR Macedonia, Moldova, Montenegro, Serbia, Turkey, Ukraine)	Green Logistics Program	GEF Project Grant: $15 million GEF Agency Fees: $1.4 million Cofinancing: $155.3 million, of which: EBRD loan: $49.2 million EBRD in-kind: $2.5 million EBRD bilateral donor grants: $0.8 million EBRD private sector loans: $102.8 million Total: $172 million
India	Grid-Connected Rooftop Solar Program	GEF Project Grant: $21.9 million GEF Project Management Cost: $1 million GEF Agency Fees: $2.1 million Cofinancing: $777 million, of which: State Bank of India Grant: $2 million World Bank Loan: $500 million Clean Technology Fund Loan: $125 million Private Developers and Aggregators Equity: $150 million Total: $802 million
Georgia	Construction of 1,900 new high quality, energy-efficient (EE) apartments in Tbilisi,	GGF syndicated loan: $11.5 million ICF syndicated loan: $11.5 million Total: $23 million
Ukraine	Contribution to improved energy efficiency by industrial and commercial companies, municipalities, municipal sector enterprises and Energy Service Companies by facilitating sustainable financial intermediation for the financing of energy efficiency investments	World Bank financial intermediary loan: $200 million Total: $200 million
Thailand	Support scale-up of Energy Efficiency (EE)/Renewable Energy (RE)/Energy Service Company (ESCO) projects in Thailand's large corporate, small and medium enterprise, commercial, residential and municipal sectors, build-up of capacity of local banking and leasing sectors to finance	IFC Global Environment Facility loan: $28.5 million IFC advisory services grant: $1 million Implementation and supervision budget: $0.5 million IFC private sector loans: $70 million Total: $100 million
Mexico	Urban Transport Transformation Project	World Bank Clean Technology Fund loan: $200 million World Bank concessional loan: $150 million Cofinancing: $2,344 million of which: FONADIN loans: $767.5 million Local government grants: $737.5 million Private sector investment: $839 million Total: $2,694 million

[30] Source: Anouj Mehta et al. (2017). ADB Publication. *Catalyzing Green Finance*

Peoples Republic of China	Increase in clean bus transport services and support of expansion of a low-cost, flexible mode of public transport, benefitting millions of low-income commuters, improving air quality, and reducing greenhouse gas emissions	ADB ordinary capital resources nonsovereign loan: $275 million Commercial cofinancing loans: $100–200 million Total: $375-475 million
	Increased production of renewable energy from technically efficient and environmentally sustainable waste-to-energy (WTE) power plants in small and medium sized cities and improved urban solid-waste management	ADB ordinary capital loan: $100 million ADB local currency complementary loan: up to $100 million ADB Technical Assistance Special Fund grant: $0.5 million Cofinancing: $253.5 million, of which Commercial loan: up to $178 million BSAM guarantee: $75.5 million Total: $454 million
Canada	Transformation of 3.2 ha former industrial pier into urban riverfront park with connections to regional trail and greenway networks	FCM Green Municipal Fund concessional loan: $1.5 million BC Building Canada Infrastructure Program grant: $15.5 million Local government investment: $7.7 million Total: $25 million

APPENDIX D: Further Declarations In Support of Innovative Finance

1. International Conference on Financing for Development, Monterrey, March 2002: The international community recognised "...the value of exploring innovative sources of finance provided that those sources do not unduly burden developing countries". Countries agreed "...to study, in the appropriate forums, the results of the analysis requested from the Secretary-General on possible innovative sources of finance".

2. Geneva, January 2004: The Presidents of Brazil, Chile and France, with the support of the United Nations Secretary-General, launched an initiative to fight hunger and poverty and called on the international community to create new sources of financing for development.

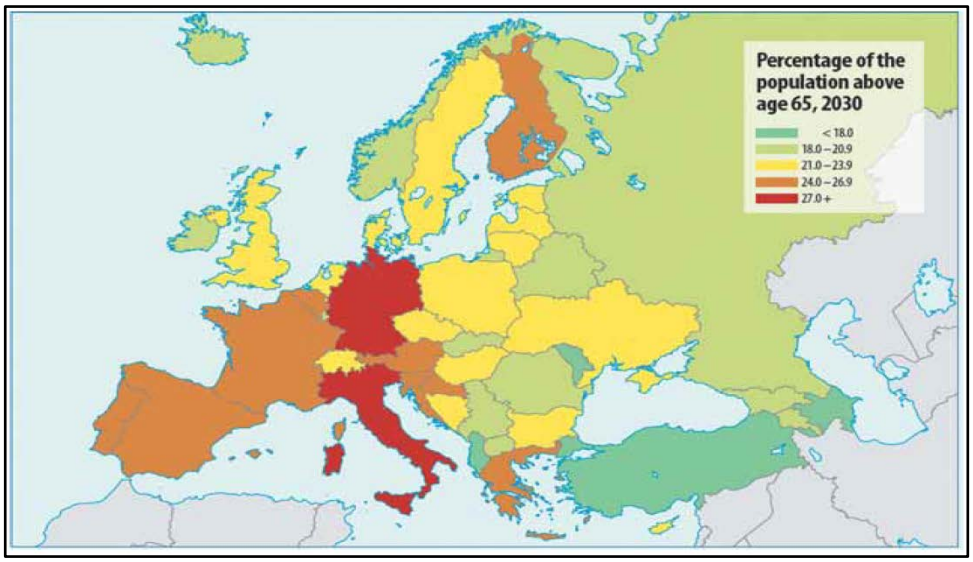
3. Meeting of heads of state and government at the United Nations, September 2004: A technical report on "Solidarity levies to fund development presented options for innovative financing mechanisms, with immediate possibilities for piloting in the area of health and AIDS.

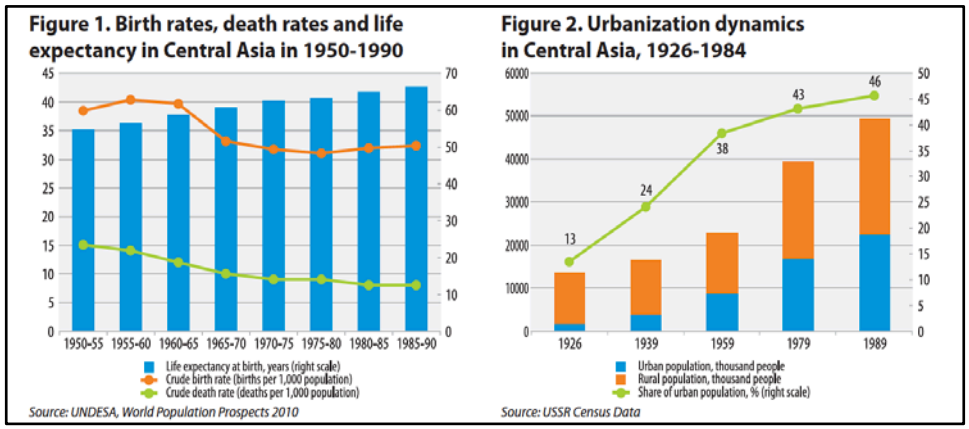
4. World Summit, 2005: Heads of state and government welcomed the international efforts to identify "innovative and additional sources of financing for development on a public, private, domestic or external basis to increase and supplement traditional sources of financing".

5. New York, September 2005: 79 countries endorsed the Declaration on Innovative Sources of Financing for Development, co-sponsored by Algeria, Brazil, Chile, France, Germany and Spain. A Leading Group on Solidarity Levies (later renamed the Pilot Group on Innovative Financing for Development) was created to develop advocacy and technical work.

6. International Conference on Financing for Development, 2008: The Doha Declaration called for scaling up the use of innovative financing for development.

APPENDIX E: Aging Population Data[31]





[31] Source: UNFPA; UNDESA World Population Prospects 2010, USSR Consensus Data

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