Shaping urbanization for children

A handbook on child-responsive urban planning

unicef **for every child**

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Acknowledgements

Table of contents

Part 1

1 **Shaping urbanization
for children matters
page 11**

Why plan cities for children?

2 **Defining a child-responsive
urban setting
page 37**

What should we plan for children?

3 **Shaping child-responsive urban settings
page 49**

How to plan for children?

Part 2

4 **Localizing children's rights
and urban planning principles
page 67**

Urban spaces

Urban systems

Urban networks

About the handbook

Shaping urbanization for children, a handbook on child-responsive urban planning, presents concepts, evidence and technical strategies to bring children to the foreground of urban planning. By focusing on children, this publication provides guidance on the central role that urban planning should play in achieving the Sustainable Development Goals (SDGs), from a global perspective to a local context, by creating thriving and equitable cities where children live in healthy, safe, inclusive, green and prosperous communities.

Why planning cities for children matters

Analysis of the main urban contexts shows that urbanization does not necessarily induce sustainable urban environments for children. Firstly, the total numbers of slum dwellers have grown to 880 million, despite efforts to upgrade slums. An estimated 300 million of the global population of slum dwellers are children, who suffer from multiple deprivations, live without a voice and have no access to land, housing and services. Secondly, without investment in planning, urban expansion mostly occurs in a fragmented way, with limited centrality, a lack of public space and no compactness in urban form. For children, it means unhealthy and unsafe environments, limited options for walking and playing, limited connectivity to social networks, services and local economy. Thirdly, existing urban areas are responsible for proportionally higher energy consumption

and carbon dioxide (CO2) emissions, thereby putting stress on the environment and the cities themselves. Improved use of urban resource systems necessitates innovation in terms of energy efficiency, and in forging sustainable lifestyles. As children's behaviour is moulded by their ongoing interaction with the urban environment, children's participation in shaping sustainable cities will be a determinant for the future of our cities and for our planet.

Cities are drivers of prosperity, but also of inequity. Although mostly overlooked, inequity has a spatial dimension that makes children vulnerable. Spatial inequity manifests itself in various ways and reveals the importance of land value, land tenure, land use and the planning and management of the spatial characteristics of the built environment. Children and their families, especially the most disadvantaged, are confronted with spatial inequity in multiple ways: the high cost of living and access to urban services; the unequal geo-spatial distribution to urban services; the poor characteristics of the built environment; and the inequitable spatial distribution of land and urban space.

An unsustainable built environment has diminishing returns on service delivery for children, or even worse, makes it impossible. In urban settings, there is a strong correlation between the vulnerability of the most disadvantaged children and the built environment. An unsustainable built

environment constraints children's access to urban services in a physical way, due to unequal distribution, ineffective planning and lack of quality in design and construction. It leads to urban-specific environmental health problems that health support systems cannot address alone and shifts the focus from communicable to non-communicable diseases. The built environment also reveals itself as a threat when children and their caretakers cannot evaluate risks, be prepared or be safe. Finally, the built environment also influences to what extend children's participation is possible, in terms of public space where children can congregate and other infrastructure that allows physical, social and digital connectivity.

The built environment offers realms of opportunity where cities commit to the respect of children's rights and planning for equity. Given the global trend in urbanization, there is significant potential to engage with children in the decisions that affect their physical urban environment, their interaction with urban resource systems and shape their behaviour. The recognition of childhood as a crucial time for children to gain access to the urban setting and enjoy its advantages, is key to define spatial solutions for all ages. Child-responsive urban settings resonate qualities that many scholars have described as conceptual standards for sustainable neighbourhoods and cities: urban scales, proximity, walkability, mixed use, public space, independent mobility and connectivity.

Children's Rights and Urban Planning Principles

By adopting 10 Children's Rights and Urban Planning Principles cities will not only support children's development, but thrive as homes for future generations. All cities should commit to:

Principle 1 Investments – Respect children's rights and invest in child-responsive urban planning that ensures a safe and clean environment for children and involves children's participation in area-based interventions, stakeholder engagement and evidence-based decision-making, securing children's health, safety, citizenship, environmental sustainability and prosperity, from early childhood to adolescent life.

Principle 2 Housing and Land Tenure – Provide affordable and adequate housing and secure land tenure for children and the community, where they feel safe and secure, to live, to sleep, to play and to learn.

Principle 3 Public Amenities – Provide infrastructure for health, educational and social services for children and the community, which they have access to, to thrive and to develop life skills.

Principle 4 Public Spaces – Provide safe and inclusive public and green spaces for children and the community, where they can meet and engage in outdoor activities.

Principle 5 Transportation Systems – Develop active transportation and public transit systems and ensure independent mobility for children and the community, so they have equal and safe access to all services and opportunities in their city.

Principle 6 Integrated Water and Sanitation Management Systems – Develop safely managed water and sanitation services and ensure an Integrated Urban Water Management system for children and the community, so they have adequate and equitable access to safe and affordable water, sanitation and hygiene.

Principle 7 Food Systems – Develop a food system with farms, markets and vendors, so children and the community have permanent access to healthy, affordable and sustainably–produced food and nutrition.

Principle 8 Waste Cycle Systems – Develop a zero waste system and ensure sustainable resource management, so children and the community can thrive in a safe and clean environment.

Principle 9 Energy Networks – Integrate clean energy networks and ensure reliable access to power, so children and the community have access to all urban services day and night.

Principle 10 Data and ICT Networks – Integrate data and ICT networks and ensure digital connectivity for children and the community, to universally accessible, affordable, safe and reliable information and communication.

How to plan child-responsive urban settings

Existing urban planning and policy must be influenced and strengthened in order to make cities child-responsive. By prioritizing children, urban planning will contribute to broader urban programming in three ways:

1. **Planning urban space at various scales.** Area-based urban programmes enable better service delivery for children, as well as a clean and safe built environment.

2. **Engaging children and other local stakeholders.** Process oriented urban development involves children's participation in coalition building and the co-production of child-responsive urban settings.

3. **Using geo-spatial and other urban data platforms.** Evidence-driven and child-centred decision-making considers the spatial component of urban inequity that the most disadvantaged children are exposed to.

Who is the handbook for

The handbook aims to inspire everyone involved in planning, designing, transforming, building and managing the built environment.

Stakeholders from diverse disciplines make important decisions that shape our urban environment. Often in the absence of any form of urban planning or policy, these stakeholders influence the appearance and performance of the urban environment. They each have a role to shape urban settings in a way that is child-responsive: ensuring that children have the urban childhood they deserve, and equipping children to become empowered adults who will lead the cities of the future:

Urban planning professionals use different tools in spatial planning and stakeholder engagement on a daily basis to help shape the built environment in a sustainable way.

City governments are responsible for city development and management decisions, such as resource allocation, land use, oversight and regulation, the coordination of different stakeholders and actual delivery of services.

The private sector, such as developers, investors, contractors, service providers and technology companies build the large majority of infrastructure to accommodate people and the local economy.

Civil society organizations, such as community-based organizations and local non-government organizations, support communities in raising their voices and work with them to define which urban spaces and land use are needed and which services should be provided.

PUBLIC INSTITUTIONS

National Government

Local Government Authorities

Urban planning and development

Transportation and public works

Environment and resilience

Facilities (waste, water)

Economy

Statistics

Services & Infrastructure

Norms & Standards

PRIVATE SECTOR

Corporations and Industries

Local Economy Developers

Local entrepreneurs

Real estate developers and contractors

Urban services providers

In/Formal workers associations

SPECIALISTS

Urban Specialists

Urban Planning Professionals

Architects

Engineers

Landscape architects

Built environment specialists

Urban economy advisors

Legal advisors

Urban geographers

Academics

INTEGRATION

COORDINATION

Representation & Accountability

Basic Urban Services

Market & Financing

Social Corporate Responsibility

CIVIL SOCIETY

Non-governmental Organizations

Community Based Organizations

Neighbourhood associations

Housing associations

Social street workers

Women organizations

Youth organizations

Religious groups

Figure 1: Stakeholders in urban planning

The purpose of the handbook

Convincing stakeholders that shaping cities for children is the best thing to do will benefit not only children, but all current and future citizens. The reader can refer to the handbook for different purposes.

To promote planning better cities for children:

- Inform stakeholders how children's vulnerabilities are related to the built environment;

- Sensitize all stakeholders to the benefits of developing child-responsive urban settings;

- Question why urban settings are not child-responsive and how this can be changed;

- Identify the specific urban places that can be better planned for children;

- Show how urban planning tools can be used to make urban settings child-responsive;

- Inspire with the evidence and promising practices in different urban contexts.

To support the process towards child-responsive cities:

- Empower children to participate in built environment decision-making;

- Build coalitions with all stakeholders that can share concerns, knowledge and resources for change;

- Align agendas of child-responsive urban planning and other urban programme sectors that have common goals in terms of health, safety, citizenship, climate resilience and prosperity;

- Localize change, marking urban places for children's use and preparing first steps of change;

- Lead communities to action, starting with limited resources and evolving incrementally to fundamental change.

To build the evidence for child-responsive cities

- Define the baseline and priorities for change, through a community-led urban situation analysis;

- Set goals and targets for children, selecting indicators that reflect child-responsiveness;

- Use evidence for policy change, documenting child-related data on investments and outcomes.

To influence stakeholders

- Train and educate on children's rights and urban planning in academic curriculums and professional training courses;

- Give policy advice for city leaders to improve urban planning policy for children;

- Build capacity for communities to participate in the whole process of assessing the current situation, defining problems and solutions, co-producing better outcomes for children;

- Develop compacts with the private real estate sector to commit to children's rights and urban planning.

How to use the handbook

The handbook is composed of two major parts:

Part 1

Part 1 builds the case for child-responsive urban planning and argues that every stakeholder has a role to play. Answering a question in each of the three chapters, it can be read separately, without Part 2, as a quick-read, for those who are accountable in the urban planning process, such as city officials, real estate industry leaders and community leaders.

Chapter One: Why plan cities for children? provides a general overview of the opportunities and challenges of urbanization, children's vulnerabilities related to the built environment and how urban planning can support urban programmes for children (see page 11).

Chapter Two: What can be planned for children? defines the core set of Children's Rights and Urban Planning Principles based on a benefits framework and a typology of built environment components (see page 37).

Chapter Three: How can cities be better planned for children? reviews urban planning tools and illustrates how cities can be planned to be child-responsive, building on three potential strengths of urban planning: to provide space for children, to include children in the process of change and to develop urban policy that is based on child-specific evidence. By organizing the tools in three steps, planning can begin with a focus on short-term results whilst laying the foundation for incremental change for the longer-term. The stepping stone approach also has a motivational aspect: every city, depending on its capacities and resources, can take a step to become more child-responsive. (see page 49).

Part 1 ends with a checklist Children's Rights and Urban Planning Principles that allows every stakeholder to quickly evaluate what can be done to take up responsibilities and improve the situation of children, respecting capacities and resources. The checklist takes a central place in the handbook, providing the main reference for starting, monitoring and evaluating investments of every stakeholder involved in child-responsive urban planning, in the short-term (easy steps in one year), mid-term (3 years) and long-term (7 years) (see page 62-65).

Part 2

Part 2 provides technical support for urban planning stakeholders in their daily practice: urban planning professionals, civil servants in charge of city development plans and projects that impact the urban environment, and project managers in real estate development and community development managers. They will benefit from this detailed guidance on how to plan, build and manage child-responsive cities, from the building to the city scale, from stakeholder engagement to implementation on the ground, and from assessment to monitoring and evaluation (see page 67).

In technical sections, Part 2 elaborates on the tools for child-responsive urban planning reviewed in Part 1, along a typology of nine urban spaces, urban systems and urban networks. The sections reflect the Children's Rights and Urban Planning Principles and describe the benefits for children, relevant definitions, concepts, promising practice and child-responsive planning approaches for every component of urban settings.

Salim Shekh (13) show's off the comprehensive hand drawn map of the community at the Rishi Aurobindo Colony where they are undertaking a range of tasks headed by Community Mapping Kolkata, India

1 Shaping urbanization for children matters

Why plan cities for children?

- What is the urban challenge?
- Why focus on children?
- Why urban planning matters?

What is the urban challenge?

"

We are living in an urban age – which is in principle great news, because cities hold the prospect of greater opportunity, education and jobs – but the problem of the scale and speed with which the urbanization process is taking place has no precedent in human history… To cope with the current influx into urban areas, every week we would have to build one new city for a population of one million people, with $10,000 per family. And if we don't solve this equation, it is not that people will stop coming to cities – they are going to keep coming – but they will live in awful conditions. These issues require professional quality, not professional charity. We need the best minds trying to work to solve this problem.[1]

Alejandro Aravena,
architect, 2016 Pritzker
Architecture Prize laureate

The unsustainable path of urbanization

In 2015, 54 per cent of the world's population - close to 4 billion people - lived in cities. The population is expected to rise by an additional 1 billion people by 2030, when cities will contain 60 per cent of the world's population.[2] Global demographic growth is an almost purely urban issue, with more people flocking into urban areas, settling on urban borders or along migration routes, and turning un-built land into new urban space. Examining the current conditions of cities and the pattern of urbanization in terms of its scale and pace, the challenges to shape sustainable urbanization are threefold:

1. The unfinished business of slums

The Millennium Development Goal (MDG) Target 7D to achieve a "significant improvement in the lives of at least 100 million slum dwellers by 2020" has been exceeded.[3] However, as urban populations grow, the numbers of slum dwellers rise as well. Today there are an estimated 880 million slum dwellers worldwide compared to 750 million in 1996. An estimated 300 million of them are children. These children suffer from multiple deprivations; their families do not have access to land, housing or basic services. Without land rights and security of tenure, those who live in slums do not have a voice. They simply do not appear on the map.

In cities that shelter slum dwellers, the intra-urban disparity is especially great. Slum dweller populations will continue to grow and many countries are not prepared to address the challenge with affordable housing, basic services and security of land tenure.[4] Sub-Sahara African and Southeast Asian countries, where slum urbanization is accelerating, often have weak or only recently-emerging planning capacities. In other parts of Asia, North Africa, Latin America and the Caribbean, due to planning and regularization efforts, slum populations have stabilized and efforts can focus on addressing existing slum conditions.

2. The scale and pace of forecasted urbanization, without investment planning

Between 2000 and 2030, the built-up area is predicted to triple in developing countries in order to accommodate an urban population that is forecast to double.[5] Low-income countries in particular face rapid urbanization, with weak economic and institutional capacity to invest in urban development. Frequently, the urbanization process unfolds with limited, or a lack of, control, leading to dense slums in city centres, low-density sprawl coupled with conglomerates of cellular private estates. When urbanization happens without urban planning, access to affordable services, housing, collective infrastructure and public space is limited or impossible for population groups.
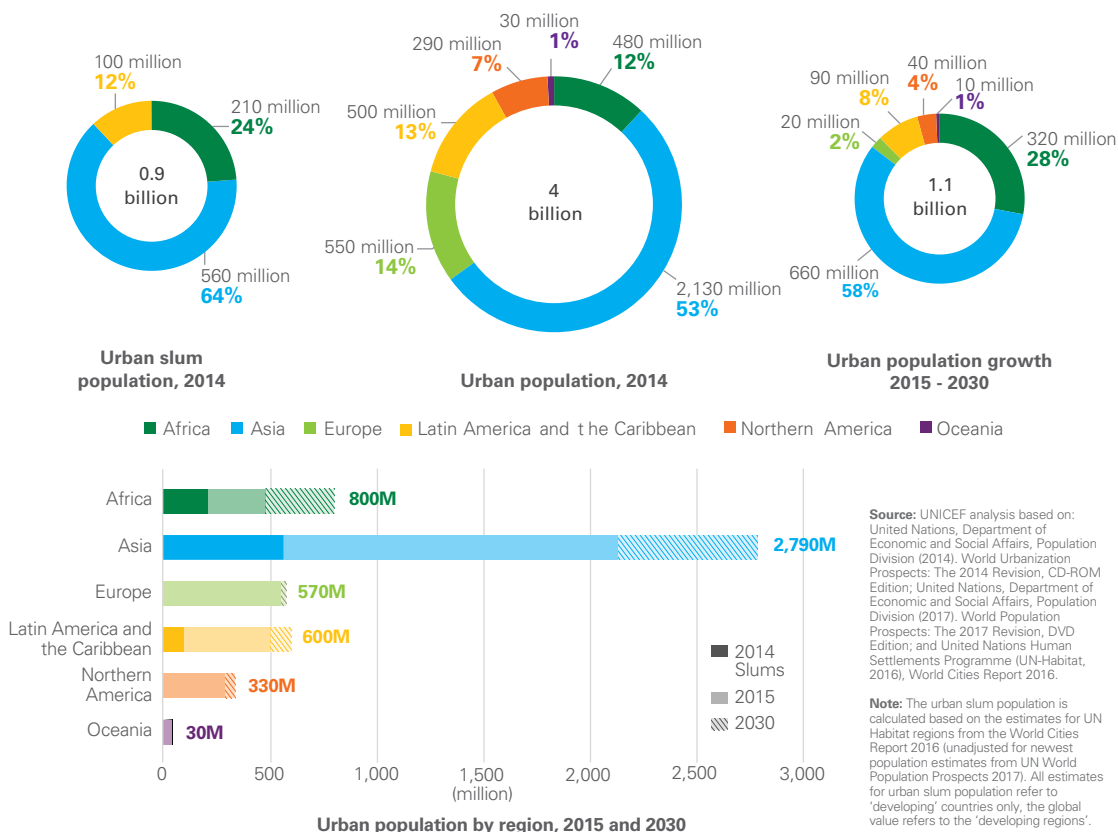
In general, urban expansion can fragment the built environment, limit centrality, cut down on public space and lead to less compactness in urban form. This translates into higher expenditure costs for public infrastructure, less obvious civic engagement, an increase per capita of carbon dioxide (CO_2) emissions and hazardous pollution, and a weaker private investment climate for local economic development. For children, it means unhealthy and unsafe environments, limited options for walking and playing, limited connectivity (social networks and services), uncertainty in public investment for their needs, limited life-skills training and barriers to access local economies.

3. The environmental challenge of cities

Globally, with a population share of just above 50 per cent, urban areas concentrate between 60 and 80 per cent of energy consumption, and approximately 75 per cent of CO_2 emissions.[6] As more people become urban dwellers, there will be more wealth, development standards and consumption patterns, with higher energy and resource consumption despite cities' efforts to decrease their carbon footprint. With rising urban emissions, the population around the world will be more vulnerable to the effects of climate change. Cities themselves will be especially prone to rising sea levels, increasing migration, and water and food stress. Without investment in urban resilience, the effects of climate change will push more urban households into poverty.[7]

The level of carbon emissions is a major concern for cities in the developed world,

and a serious issue for growing cities in middle-income countries, especially in Latin America and Asia. The challenge requires innovation in terms of energy efficiency and forging sustainable lifestyles. Any serious effort to change urban behaviour will bring the subject of children to the centre of the conversation around climate.

Figure 2: Data on the urban challenges by region

Urban slum population, 2014

Urban population, 2014

Urban population growth 2015 - 2030

■ Africa ■ Asia ■ Europe ■ Latin America and the Caribbean ■ Northern America ■ Oceania

Urban population by region, 2015 and 2030

Africa 800M
Asia 2,790M
Europe 570M
Latin America and the Caribbean 600M
Northern America 330M
Oceania 30M

■ 2014 Slums
■ 2015
▨ 2030

Cities are drivers of prosperity and inequity

People have moved to cities throughout the ages, and the basic fundamental reasons do not change: to access services and jobs, to have freedom in thinking and doing; to seek institutional support and comfort in a

safe and healthy urban environment. There is consistency in the way people migrate to cities: find an affordable place to live on arrival, seek employment, work hard and save money, build a future and climb the social ladder. Local Government Authorities (LGAs) and public institutions share responsibility for this process

in various degrees – they facilitate, or sometimes impede, the accommodation of newcomers.[8]

On average, urban dwellers enjoy the urban advantage in different dimensions: access to and support of services; economic opportunities; social structures; governance mechanisms;

and the dynamic urban environment. Yet, considering the history of urbanization and urban development, these aspirations can have two sides, a phenomenon often referred to as **the urban paradox**. For example, considering the economic dimension, cities are the most important generators of wealth and employment

Figure 3: The urban paradox in four dimensions

The Urban Paradox	Prosperity opportunities	Inequity vulnerabilities
Services and economy		
Access to basic services	Services for all, proximity, affordability	Market driven supply, inaccessibility, unaffordability
Economy	Diversified local economy and employment, competition and innovation, social support	Mono-economy, gap labour market, unsafe livelihoods, no recognition of informal employment
Social structures		
Community	Shared values, distribution of welfare, diversity	Disrupted kin networks, exclusion of communities, discrimination of groups
Individuals	Free social and cultural choices, empowerment, participation	Protection risks, crime, abuse, isolation
Governance mechanisms		
Accountability	Civic trust, local governance, community representation	Lack of local accountability, corruption, representation
Decision making	Evidence based, consensus based	Poor urban data, absence of concertation
Planning	Risk informed, risk prepared, resilient communities and infrastructure	Absence of information, unprepared and unadapted infrastructure, vulnerable communities
Urban environment		
Build space	Planned environment, safe and accessible public spaces and services, shared land value	Unplanned environment, unsafe and inaccessible services, absence of land rights and value systems
Resource systems	Sustainable, equitable and reliable distribution and access of resources, carbon neutrality	Unsustainable and unreliable access to resources, high GHG emissions
Environment	Clean and safe environment, value of green, climate adaptation and mitigation	Specific environmental threads, pollution, land degradation, climate change

and the role of cities in the global economy is only rising. With 54 per cent of the world's population, cities account for more than 80 per cent of global Gross Domestic Product. Between 2006 and 2012, the 750 largest cities in the world created 87.7 million private sector jobs, or 58 per cent of all new private sector jobs created in their respective 129 countries.[9] However, paradoxically, cities often have a high concentration of unemployed people who are unable to meet expensive basic services and live in shelters in polluted or insecure environments.

The urban paradox encapsulates how urbanization creates opportunities, but also brings challenges that make inhabitants vulnerable. In some cases, cities have sharper disparities than those common in rural areas or, proportionally, service nets may cover less urban poor than rural poor.[10] Although there is a lack of consistent data on intra-urban disparities globally, there is inequity in most urban wealth distributions, where groups within city borders

or just outside the city in peri-urban areas are excluded from the benefits a city offers. These marginalized inhabitants, often referred to as the urban poor, might have a higher income than the rural poor, but also might be further behind the urban rich in terms of equity. They form isolated communities in inner-city slums or on the outskirts of growing cities, without access to services and with limited access to the formal labour market.

Prosperous cities invest in social, institutional and spatial structures to ensure that prosperity, reflected by the four dimensions of aspirations, can be achieved by all citizens (See Figure 3 'The urban paradox in four dimensions'). Cities fail when they do not address equity. Without strong institutions, effective health and social networks, fair wealth distribution and a safe and clean environment for living and working, population's distrust in institutions grows, disparities increase, violence increases and new economic investments do not occur.

Urbanization is a phenomenon that can be planned, financed and managed to respond to its citizens' aspirations. When they succeed, cities are prosperous for all. When they fail, prosperity is reduced to an exclusive part of the population.

The spatial component of inequity

There is no universally accepted definition of urban inequity, but it is clear that 'inequity' is a relevant term to use in addressing the disadvantaged urban dwellers who suffer neglect of one or more of the four dimensions in Figure 3.

Urban inequity is also manifested spatially in three ways, illustrated in the following maps representing different cities, based on open data platforms. Although situated in the Global North, the mapping analysis shows the geographical location of various forms of intra-urban disparities.[11]

Definitions

A glossary of definitions can be found on page 184.

Cities/urban settings – These terms are interchangeable. The term 'city' and 'urban setting' are not well-defined geographical or administrative entities but have a more conceptual meaning, referring to a localized environment with a dominant presence of built space and where a variety and intensity of people's activities take place. Generally, 'Urban setting' refers more to a static built

environment; a 'city' has a more dynamic context where stakeholders interact permanently with each other, relying on social, economic and institutional mechanisms.

Urban area – Each country has its own definition of 'urban area' based on administrative, demographic, economic and physical criteria. It tends to refer to an area with a defined boundary, often overlooking urban settings beyond the realm of the urban area ('peri-urban areas').

Built environment – The physical and functional characteristics of an urban setting, including buildings, infrastructure and open space.

Urban space – A place of shared identity and collective use.

Urban system – Cities can be described as a geography of urban resource systems that have three constituent elements: supply chains, environments where people interact with the system and consumer behavior.

1. **Unequal access to urban services (citywide)** – Especially in poor neighbourhoods, urban infrastructure and resource management mechanisms are absent, unaffordable, incomplete or weak in performance. Limited access to resources include: green space, sustainable transportation, water and sanitation services, municipal waste management, clean energy, healthy food, and Information and Communication and Technology (ICT) networks.

2. **Deficiently built environments (neighbourhoods)** – Poverty is concentrated in areas and neighbourhoods that are economically, physically, socially and environmentally vulnerable. The poor characteristics of the built environment, the social insecurity and the environmental vulnerability disclose the socio-economic status of a neighbourhood and its community.

3. **Unequal spatial distribution of land use and urban space (the living environment)** – Spaces and built environment programmes do not prioritize the needs of the urban poor or vulnerable groups such as large families, youth without parental support, children with disabilities, women and elderly. When space and programmes are not designed with or for the poor and vulnerable, there is more likely to be a lack of adequate housing, space to walk and bike in the streets and public space for children.

Analysis of spatial inequity reveals the importance of land value and tenure. Following the basic economic rule of supply and demand, the high cost of urban living means that the poor have little purchasing power (housing,
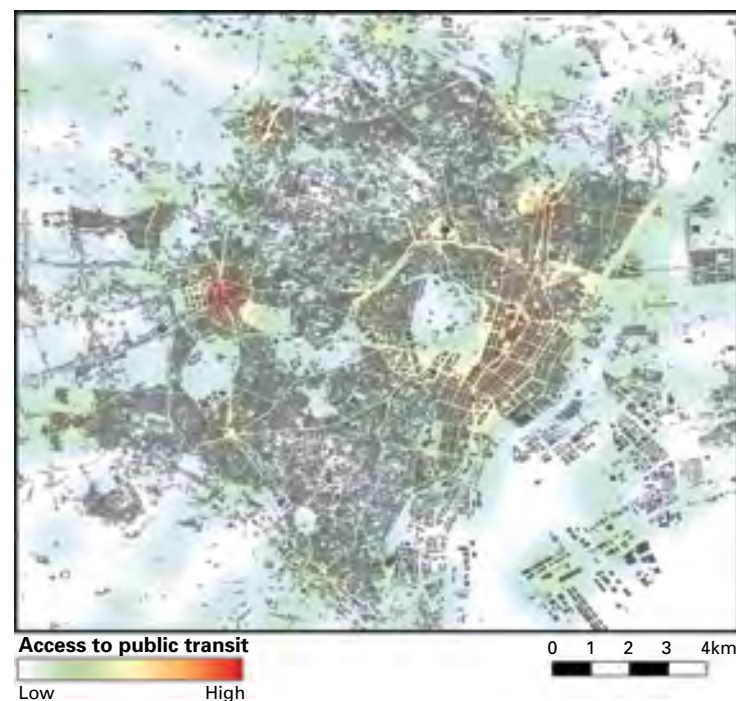

Access to public transit

Low   High

0   1   2   3   4km

Figure 4: Heatmap visualising unequal access to public transit, Tokyo, Japan

This heatmap highlight areas of central Tokyo according to accessibility to public transit. The visualisation considers both distance from rail transit stations and concentration of stations. Thus, residents living in red areas have a wide range of transit options close to their homes, while those in green or white areas have fewer choices and have to put in more effort to reach them.
Data source: OpenStreetMap

transportation, food). They are forced to live far below decent living standards and to reside in informal settlements that distances them from public institutions and services that are often reluctant to recognise the informal economy and the livelihoods that disadvantaged citizens are dependent upon. Public service administrations and the private sector are reluctant to establish service delivery and support systems to integrate informal economy and livelihoods of the most disadvantaged citizens into wealth redistribution systems. The urban poor are unable to exert their rights or to participate in decision-making processes. Also, authorities often overlook the significant impact

of environmental risks on the most vulnerable people: faecal contamination, air pollution, noise pollution, road accidents and disaster risks.

Due to the high value of urban land, the physical boundaries of the built environment and the unequal distribution of land can immobilize communities over generations, even when a poor neighbourhood is located centrally within a city. Policies that address urban inequity must include spatial inequities. Urban poverty analysis should cover the cost of the local living standards, in order to be able to determine where the most disadvantaged live and what support is needed for this population to access urban services.

Building condition
■ Good condition
■ In need of repair or uninhabitable
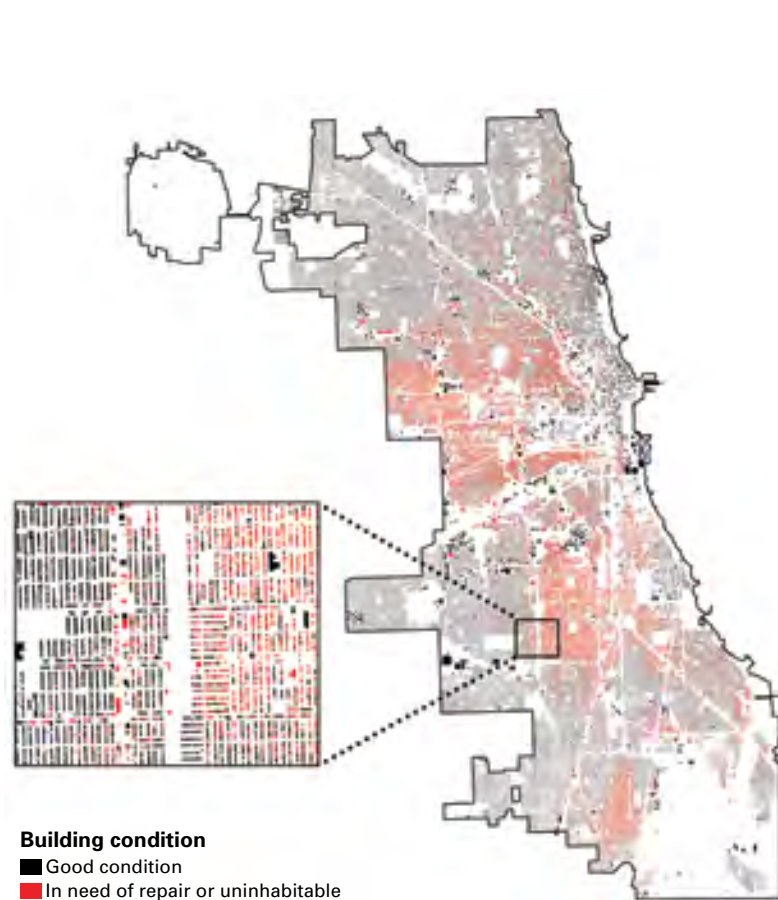
Figure 5: Mapping building conditions to locate areas of poverty, Chicago, United States of America

This map colours each individual building in Chicago according to its condition; black is good condition, red poor. Seen from a distance, the visualisation shows strong spatial trends. There is a particular concentration of poor quality buildings on the South and West sides of the city, both of which are also areas of relatively high poverty.
Data source: City of Chicago Data Portal (data.cityofchicago.org)

Sidewalk as a percentage of total street space

Low   High

□ Street
■ Sidewalk
▨ Building
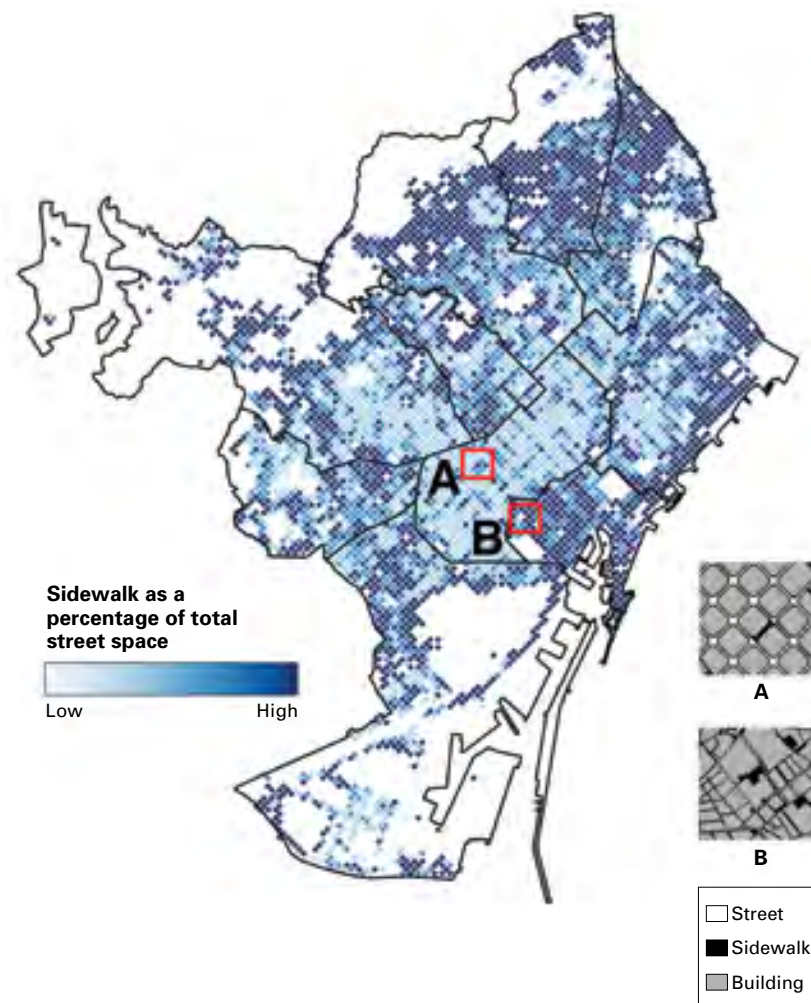
Figure 6: Mapping streets and public space to highlight low pedestrian space proportion, Barcelona, Spain

Top: This tessellated map of Barcelona is coloured according to the proportion of sidewalk area to total street area in each block. Black lines indicate the districts of the city. Bottom: These two maps show a section of a neighbourhood with a low sidewalk to street proportion (A, L'Eixample neighbourhood), and a neighbourhood with a high proportion (B, El Raval neighbourhood). Comparing the two provides a clearer image of the way space is distributed between pedestrians and cars due to concrete planning choices.
Data source: Institut Cartogràfic i Geològic de Catalunya (www.icgc.cat)

Figure 7: From Millennium Development Goals (2000) to Sustainable Development Goals (2015)

Millenium Development Goals

Sustainable Development Goals

International development in an urbanizing world

Before 2015, international development programmes focused on national objectives, the eradication of extreme poverty in rural areas, and service delivery to the most disadvantaged people. The Millennium Development Goals in 2000, defined the environment as a biological and natural system to be protected and treated as a distinct issue, separate from human development issues. Any concern about the living environment of people focused on the eradication of slums and on access to water and sanitation, without specific reference to cities.

However, today's international development framework accounts for the importance of cities and investment in urban development and local capacities. Sustainable environments have become a keystone of programmes to ensure that the most disadvantaged can access basic services and that all inhabitants benefit.

Two major frameworks set the standard for sustainable and inclusive urbanization:[12]

• The 2030 Agenda for Sustainable Development **(2015)**, especially the Sustainable Development Goal (SDG) 11 on

sustainable cities and communities: "Make cities and human settlements inclusive, safe, resilient and sustainable". SDG 11 makes the city central to sustainable development and resonates well with the importance of planning the built environment for communities to be safe and inclusive with equitable access to services. In addition, the indicator framework for the SDGs recognizes the importance of urban development, and requires that national indicators are disaggregated between urban and rural areas. The SDGs emphasize that sustainable development requires local capacities and decentralization.[13]

- The New Urban Agenda **(2016)** describes a shared vision amongst urban stakeholders, national governments and international development agencies on the required considerations to take into account to make cities sustainable for all, in terms of universal access to services, space and infrastructure. It builds on the moral and legal imperatives of human rights, such as the right to adequate housing, water and sanitation, health, education and work.[14]

These frameworks are newly established and the processes to implement them are just emerging. Implementation mechanisms, roles and commitments are still in the making. In many countries, Local Government Authorities (LGAs) have limited capacity and are not fully accountable in planning and financing. Many countries are only now taking the first steps toward a national urban policy. Institutional arrangements in developing cities often lead to confusing roles and responsibilities; service providers have poor capacity and there is a lack of integrated planning.

The 2030 Agenda for Sustainable Development and the New Urban Agenda are an opportunity to strengthen the expertise of cities in urban planning, and to shape urbanization to account for the most disadvantaged citizens, in particular for children.

Children play outside their home covered by plastic, Chandmari Juggi, Vijaynagar, Ghaziabad, India

Why focus on children?

If we can build a successful city for children, we will have a successful city for all people.

Enrique Peñalosa,
Mayor of Bogotá, Columbia (1998- 2001, 2016-present), specialist on urban and transportation policy

Children have rights

According to numerous international treaties, a child is a person below 18 years of age. Children have the same human rights as adults, but they often need special care and protection that differs from adults. Children depend on adults and adult decision-making. In 1989, world leaders convened and, agreeing that children need a special convention, established the Convention on the Rights of the Child.[15] The Convention sets out the rights that must be realized for children to develop their full potential, free from hunger and want, neglect and abuse. It is the first legally binding international instrument to incorporate the full range of human rights – including civil, cultural, economic, political and social rights.

Children's rights are fundamental for children, but the Convention refers to the family as the fundamental group in society, and the natural environment as fundamental to the growth and well-being of its members, particularly children. (As children do not necessarily live with their mother or father, the group in society includes the caretaker of the child.

The articles of the Convention are grouped into guiding principles with three categories of child rights:

- **Survival and development rights** that give children access to health and education resources necessary for the survival and full development of the child. These rights allow children to survive and thrive;

- **Protection rights** that ensure protection from all forms of abuse, neglect, exploitation and cruelty. These rights ensure that children are safe and feel safe;

- **Participation rights** that entitle freedom of expression and participation in decision-making. These rights support children in taking an active role in society.

Figure 8: Children's Rights

Children's Rights

Survival and Development Rights

Protection Rights

Participation Rights

Children and urbanization: two perspectives on the future

Children make up one third of the global population but there is significant difference in population composition throughout the regions of the world. In developing countries, 60 per cent of natural growth in cities is still driven by children.[17] In sub-Saharan Africa, for example, a country's population will tend to have a higher proportion of children. A boost in economic productivity, a phenomenon known as the *demographic dividend*, occurs when investments are made to optimize the window of opportunity provided when there is a higher population in the workforce relative to the number of dependents.[18]

As urbanization grows, increasing amounts of land are transformed in to urban space. Especially in sub-Saharan Africa and parts of Asia, urbanization rates are high and must be coupled with better efforts in urban expansion planning and slum upgrading. Based on the concept of the demographic dividend, however, this rising urbanization phenomenon could be called the *urban dividend*: urbanization as a window of opportunity to improve people's well-being when planning is properly undertaken.

As urban settings become the context where most children grow up, and the urban environment is a determining factor in their development, shaping urbanization for children is essential. If urban settings are planned in a way to address children's needs, they will support not only children's development but thrive as homes for future generations.

What do children think of their cities?

At the United Nations Conference on Housing and Urban Development (Habitat III), UNICEF presented 'Your Voice in Habitat', the results of a virtual survey of 35,000 children and adolescents from 65 countries. Children were asked for their opinions of their cities and of the challenges in their daily lives. The survey confirmed that children are aware of the importance of the built environment, and they need more than just playgrounds to flourish:

Access to services – Thirty per cent of children stated that they did not have full access to health, protection and education services in their city;

Safety and protection – Twenty five per cent of children did not feel safe in his or her city. One in every two children stated that their main safety concern was crime. Over 40 per cent of the children stated that they felt unsafe on public transportation and walking beyond their neighbourhood. One out of four children did not feel safe in the parks. One of every two children witness child labour or begging in their city;

Social inclusion – Fifty per cent of children claimed that there are children who suffer from discrimination. Only 26 per cent of the children said that their voices are heard by the authorities;

Environment and resilience – Forty per cent children stated that their city is not concerned with promoting a healthy environment, controlling toxic gas emissions, garbage recycling or saving energy. More than 50 per cent said that their city is not prepared to face a natural disaster;

The children expressed their list of priorities as well: access to hospitals (80 per cent), access to schools (70 per cent), better security (65 per cent) and living closer to family and friends (55 per cent).[16]

Without proper planning for children, urban settings become dysfunctional and fragmented built environments.

To reap both dividends – the demographic dividend and the urban dividend – is a great opportunity to shape a better future. But it requires investing in children and urbanization today. It is therefore a priority to understand children's vulnerabilities in urban settings, to build on the principles of children's rights, and to offer children an urban childhood that fosters a better life in existing urban settings and those of the future.

Children's vulnerabilities in the built environment

The urban paradox reminds us that cities are not always beneficial for all. Marginalized and vulnerable groups often tolerate services designed for the wealthy, have no form of citizenship or right of access to the city's benefits. Children are often placed in the most disadvantaged positions, as the built environments of a city are constructed by adults for their own use, to respond to their daily needs. The benefits of urban life bypass children, and the negative aspects can impact them hard.

Figure 9: Taxonomy of children's vulnerabilities related to the built environment

Built Environment

lack of space
imbalanced land use

outdated definition
urban services

poor ventilation

lack of legal
recognition

unsafe shelter and
infrastructure

infrastructure not
designed for
children

heat islands

ambient air
pollution

poor home practice
and equipment

unaffordable
(demand, supply,
market)

**Environmental Health
Constraints**

**Protection
Constraints**

unhealthy food
choice

violence hotspots
in public spaces

low-quality and
deficient
infrastructure

physical
inactivity

unsafe roads

indoor air
pollution

weak connectivity

increased exposure
to disasters

unevenly
distributed
(neighbourhoods)

weak children's
independent mobility

weak accountability
structures

**Participation
Constraints**

exclusion in public
space

physical
inaccessibility

not distributable
(density,
informality)

deficient standards
for urban realities

not accessible
service
(physical barriers)

To best support children and the fulfilment of their rights, it is important to build a taxonomy that precisely categorizes children's vulnerabilities that are: 1) specifically prominent in urban settings, 2) related to the built environment and 3) mostly affect children and their caretakers.

In Figure 9, children's vulnerabilities in urban settings are divided into four categories. The first category is the correlation between the built environment and the unavailability of urban services. This presents what the term 'unavailability' means beyond the gap between supply and demand (which is not an exclusive urban matter). On the contrary, the gaps in supply and demand are, in theory, smaller in urban areas. Where gaps between supply and demand exist, however, it is often due to the characteristics of the built environment. The issues listed under 'unavailability of urban services' are further categorized into three categories of concern: health, protection and participation.

Many children who dwell in slum areas face all of these vulnerabilities. They are exposed to multiple health and safety risks without a voice or legal status. Vulnerabilities such as 'ambient air pollution', 'physical inactivity and stress' and 'unsafe roads and transportation options' are more general concerns in cities. Not all vulnerabilities are exclusively child-related, such as the risk of exposure to pollution, but children and especially infants are most damaged by them. Other concerns affect caretakers more directly than their children, indirectly affecting the quality of a child's life.

Remarkably, there is no single solution for any one of the individual concerns.

General constraints on children's access to urban services

The reason that services are absent, inaccessible or unaffordable is often due to ineffective coverage, unequal distribution and poor quality of infrastructure. Concerning the daily needs of children and their caretakers, it is best to broaden the definition of 'access to basic services':

- Playgrounds or other safe places for play are not currently defined as a basic service, despite the evidence that play is key for children's development and the right to play is a basic child right.

- Services are available, but the infrastructure is dysfunctional and dangerous for safe use by children: the service infrastructure is neither planned or designed for children, for example, the water and sanitation infrastructure, such as pump systems or communal toilets, are not designed or planned for children; the transportation infrastructure lacks streets with safe pedestrian crossings; transport vehicles do not consider children's needs such as unsafe minibuses, or inaccessibility of buses for caretakers with strollers and persons with disabilities.

- Services are available, but without guarantee of safety and health: low-quality and deficient infrastructure for water, sanitation and waste management. Such poor infrastructure leads to higher mortality and morbidity rates of children who suffer from diarrhoeal diseases and rotavirus, or who have been exposed to malaria.[19]

- The density of urban environments requires that the deficient standards of service delivery for urban realities are adjusted. For example, the United Nations classifies pit latrines under 'improved sanitation', but they have less value and minimal effectiveness in densely populated slums, where the proportion of people sharing facilities is larger than in rural areas.

- Services within proximity are still not accessible to disadvantaged children, due to physical barriers and inequitable distribution of transportation options.

- The density of the population and the built environment increases the risk of infectious diseases such as tuberculosis, pneumonia and dengue fever. It is more difficult to contain epidemics such as Ebola and Zika, or to set up rigorous health programmes such as immunization programmes in dense, informal settlements.

- The services are unevenly distributed within cities with disparities between neighbourhoods. Disparities are sustained because neighbourhoods that are officially informal settlements are not recognised by the authorities. Although the existence and location of informal settlements might be well-known, formal distribution of services and development support that

have a necessary physical infrastructure component, is often not allowed.

- The definition of basic services does not correspond with the daily urban patterns of children and their families. In urban settings, housing, child-care, transportation, food and energy are a major part of household spending.

Basic services are accessible, but not affordable for the most disadvantaged, due to a lack of affordable housing, the high price of healthy food, the cost of privatized education, health access, or limited water and sanitation supply. If supply doesn't meet demand, and public financing is modest, basic urban services become unaffordable.

A boy stands along railroad tracks, as other people, obscured by dust, smoke and debris, pass by in Kibera, a slum area of Nairobi, the capital of Kenya

Environmental health constraints

The built environment and its patterns of use can lead to urban-specific environmental health problems that health support systems cannot address alone. Non-communicable diseases such as pneumonia, cancer and obesity, for example, require structural solutions on a larger scale, including interventions in the physical urban environment.

- Pollution is directly linked with pneumonia and other respiratory diseases that account for almost 1 in 10 under-five deaths, making air pollution a leading threat to children's health.[20] The effects of indoor air pollution kill more children globally than outdoor air pollution. Burning solid fuels for household cooking, heating and lighting is a major cause of household or indoor air pollution, in unventilated, indoor living environments.

- In public spaces and other common spaces for play, such as streets, air pollution can concentrate as a result of fossil-fuel based transport. Children, by nature, closer to the ground and thus to sources of exhaust, are more susceptible to the pollutants.

- Rates of obesity, asthma and heart disease are rising across the globe, especially among adolescents in urban settings mainly due to a lack of physical activity. The lack of safe space, places to walk and occasions to play outdoors are the main reasons for children's physical inactivity.[21]

- High housing densities with small units, where large families share just one or two rooms, can lead to levels of stress that affect the brain development of young children.

- Higher concentrations of people, factories and vehicles, and the waste each generates, lead to health risks in urban areas. Without protection, children in urban areas face a range of environmental health risks, such as exposure to high levels of faecal pathogens from humans and animals, industrial chemicals and waste, dust, dangerous machinery and excessive heat. Specific groups, such as waste-pickers, suffer from hygiene- and pollution-related diseases.

- Climate change is compounding drought conditions in certain regions. Cities with a high density of population that face unreliable food provision (space and infrastructure for production, processing, and distribution) face a higher risk for food stress, severe under-nutrition and poor access to unhealthy food.

- An urban environment generates the 'heat island effect' in regions with a hot and dry climate. When urban settings do not invest in green infrastructure, the threat of water scarcity grows, and children, pregnant women and other susceptible people are more vulnerable to heat stroke, severe de-hydration and premature death.

Constraints on protection systems for children, to be safe and risk-informed

Protection systems focus on addressing people's vulnerabilities, but often overlook how

School children run across a highway while returning home after school in Mumbai, Maharashtra, India

the built environment itself can be a threat or a determinant factor when children and their caretakers cannot evaluate risks, be prepared or safe. Natural disasters such as earthquakes and tsunamis, as well as those triggered by climate change, such as flash floods, coastal floods and mud slides, tend to hit urban areas where the most disadvantaged live in poor and unsafe conditions. As terrorism, war and conflict are played out more often in urban settings,

human-related disasters tend to impact poor communities more:

- Due to a lack of legal recognition and land regulations in slums, children and their families live without protection against eviction, which often results from orchestrated violence (fires, bulldozing etc.).

- Without legal recognition, slum inhabitants

do not invest in their shelter, which partially explains the unsafe shelters and collective infrastructure built without stability, without fire safety and without evacuation possibilities.

- The poor infrastructural quality of housing, schools and other amenities leads to unsafe indoor practice and equipment such as unhealthy cooking practices, low quality and dangerous power supply and deficient light and ventilation which in turn heightens the risk of accidents such as falls, burns, electrocution and suffocation.[22]

- A lack of public space, over-utilized space and poor street lighting are factors that reduce social interaction in outdoor areas, increasing the risk of harassment, abuse and violence against children. Girls and young women are especially vulnerable. Services such as communal toilets, where they exist, are typically located some distance from the dwellings and tend to be in unsafe areas with a high risk of insecurity, particularly at night.

- Child-care is a basic urban service; to access work, caretakers must be able to leave children safely guarded. Without child-care and safe spaces, children are not properly cared for and risk encountering a dangerous situation without supervision or protection.

- Unsafe roads, a lack of space for active transportation and public transport and weak safety regulations explain the high rates of road injuries and fatalities among adolescents and young adults, particularly those in low- and middle-income countries.[23]

Jessica, 13, stands with her mother outside their home overlooking the city of Niterói in Rio de Janeiro State, Brazil. While the nation boasts the world's eighth largest economy, it also has one of the highest income gaps between rich and poor.

- A lack of measures that reduce risk, such as risk assessments, adequate infrastructure, enforcement of building codes, risk awareness and preparedness, increase children's vulnerabilities. The most vulnerable children who cannot access basic services are more at risk of illness, exploitation and long-term development loss. Children do not have the physical strength (thus prone to accidents such as drowning), cognitive maturity (greater

risks such as disorientation) and socio-emotional strength (prone to trauma) to handle or recover from disasters in a resilient way.

Constraints on children's participation, to be recognized and be heard

Participation requires governance mechanisms and accountabilities. But participation also requires that public space is accessible and safe, where children and their caretaker can congregate, interact and engage in decision-making.

- In urban areas that lack public and green spaces, children and their community do not have the quantity and quality space to play, congregate and socialize. This limits the time and space that children have to interact and build civic engagement.

- With insecurity in public spaces such as the threat of street violence, traffic accidents or occupation by a dominant group, children are forced to stay inside and are more disconnected from participating in their community and urban life in general.

- The absence of educational centres (schools, libraries) and employment opportunities in impoverished neighbourhoods creates are underlying cause of crime. The lack of infrastructure and opportunities reflects a lack of investment and interest from authorities, generating among children and youth a distrust of public institutions.[24]

- When a built environment is poorly designed, spaces are physically inaccessible for children with disabilities and caretakers with strollers.

- Transportation planning and road safety policies that are vehicle-oriented make streets unsafe for pedestrians, and make daily trajectories a risky adventure for children. Children lose independent mobility and depend on caretakers for escort. They're more likely to stay home, miss school and ultimately become disconnected from urban life.

- Capacities of LGAs and coordination mechanisms between various public institutions are often weak or incomplete in urban areas. Even if strong accountability mechanisms exist and if there is local investment in children's participation, there is mostly no tradition of participation around decision-making for the built environment.

The ecology of urban childhoods

When a space is planned and created to respect children's needs, by default, the space will respect everyone in society. The built environment offers realms of opportunity where cities can commit to respect children's rights. Conversely, when a built environment is dysfunctional for children, it affects everyone's quality of life.
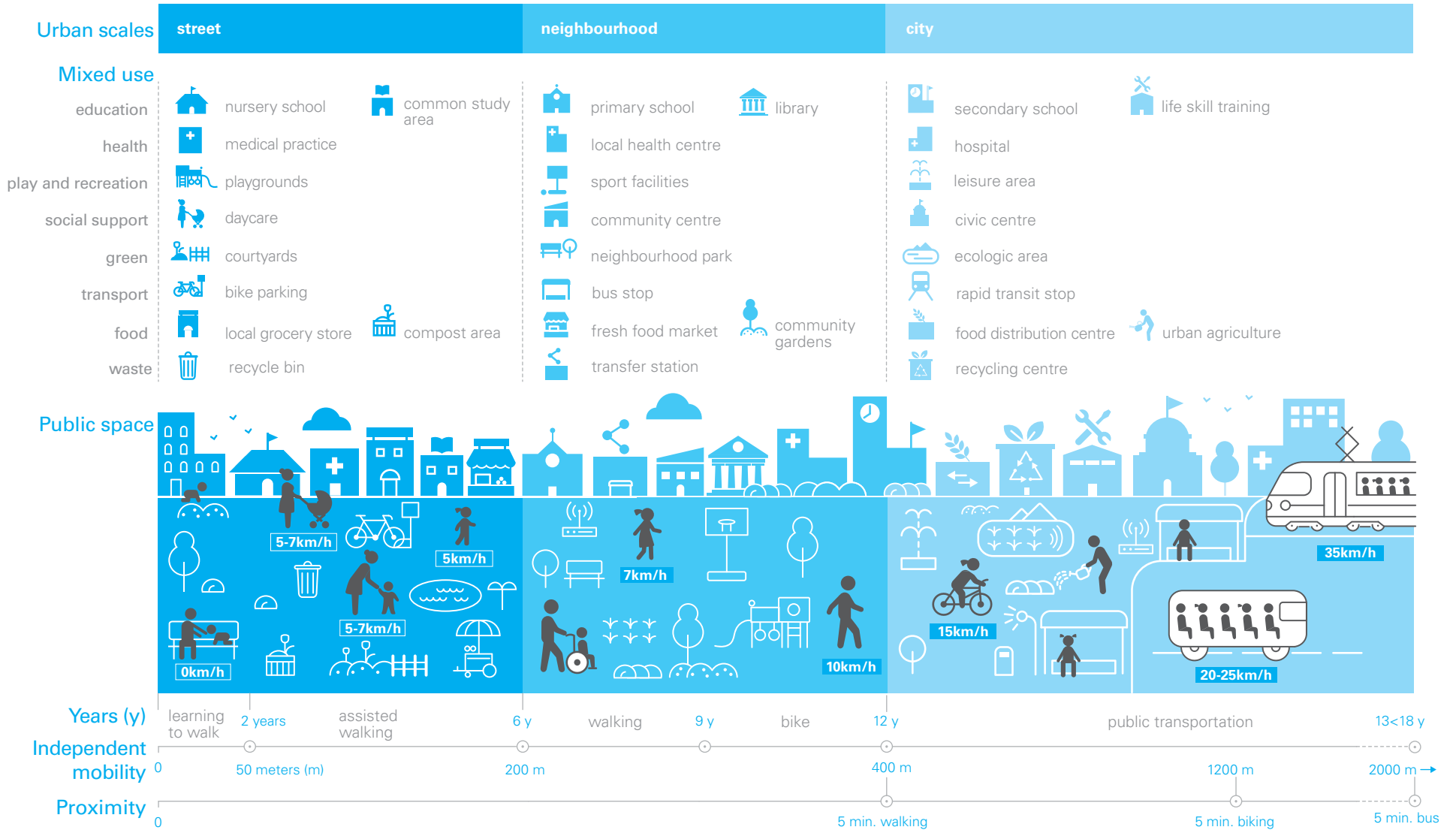
Children can teach us basic common sense. Their daily interaction in and with urban life, and their practical use of urban space, represents all vulnerable groups in a community including persons with disabilities and the elderly.

Space and scale of urban childhoods

The recognition of childhood as a crucial time for children to gain access to the urban setting and enjoy its advantages, is key to defining spatial solutions for all ages. Looking at specific needs of children and their caretakers for every age helps to determine both generic and specific solutions for babies, toddlers, young children, adolescents and youth. Sustainable urban childhoods resonate qualities that many scholars have described as conceptual standards for sustainable neighbourhoods and cities:[25]

- **Urban scale** – A child grows up along the spatial scales of the home, the street, the neighbourhood and the city. The scales reflect the social ecological model that children's development specialists use to build strategies to ensure children's rights. The access to appropriate urban services needs to be adjusted accordingly to a childs age, needs and the daily patterns of its caretaker. In both dense and low-dense urban settings, there is a growing lack of the human scale of the neighbourhood.

- **Proximity and walkability** – Children don't drive themselves and thus are more likely to walk. The proximity of public amenities is key to deliver basic services; children and caretakers should be able to access them by walking, biking or public transport. Walkability in cities has decreased enormously due to car-oriented transportation policies and street design.

Figure 10: Space and scale of urban childhoods

Urban scales	**street**		**neighbourhood**		**city**	

Mixed use

	street		neighbourhood		city	
education	nursery school	common study area	primary school	library	secondary school	life skill training
health	medical practice		local health centre		hospital	
play and recreation	playgrounds		sport facilities		leisure area	
social support	daycare		community centre		civic centre	
green	courtyards		neighbourhood park		ecologic area	
transport	bike parking		bus stop		rapid transit stop	
food	local grocery store	compost area	fresh food market	community gardens	food distribution centre	urban agriculture
waste	recycle bin		transfer station		recycling centre	

Public space

5-7km/h · 5km/h · 0km/h · 5-7km/h · 7km/h · 10km/h · 15km/h · 35km/h · 20-25km/h

Years (y)	learning to walk	2 years	assisted walking	6 y	walking	9 y	bike	12 y	public transportation	13<18 y

Independent mobility

0   50 meters (m)   200 m   400 m   1200 m   2000 m →

Proximity

0   5 min. walking   5 min. biking   5 min. bus

- **Public space** – An outdoor environment should be designed and programmed to ensure children's access and use as a place for play, but also as a space to meet and valorize social, economic and cultural activities.

- **Mixed use** – The infrastructure for basic services for children such as health, education and protection, should be integrated and balanced when planning urban environments. For children to thrive, urban services also require space and need to be integrated into outdoor spaces or in buildings. For example, there must be space to collect and recycle waste in order for streets to stay clean; space to buy and cultivate food to assure healthy food and nutrition; space for local economy interactions for a more robust access to the job market. When urban childhoods are restricted to dormitories, poorly serviced or segregated neighbourhoods and slums, no one is better off.

- **Independent mobility** – Children's freedom to move and autonomy depends on their options to walk, bike and use public transport. This is a matter of allocating financial resources and designing policy and environments to assure safe access. By respecting the needs of children with disabilities, pregnant women and small children in strollers will make an urban setting safe and accessible for all members of the community.

Children's participation and citizenship

Children's capacity to participate in decision-making processes has been recognized as valuable, especially when adults and institutions enable child participation in a meaningful way.[26] Child participation is a key factor for honouring children's rights, and has been valorised for over 20 years in the 'child-friendly cities' movement.[27] However, thus far, children's voices have had little influence on urban planning.

With the urbanization of the world, there is potential to engage with children in the decisions that affect their physical urban environment, their needs, the play spaces and meeting spaces and streets they frequent on a daily basis with their families. When children contribute to decisions, their insights can lead to more sustainable built environments. In turn, children are empowered as stakeholders who participate in community building. Children's empowerment and sense of civic trust comes from children's experience in the participation processes. To avoid distrust and disillusion, the participation processes can be guided by the following considerations:

- Children's interest in participating will be determined by the **relevance** to their daily lives;

Figure 11: Children's participation and citizenship

| Urban scales	house courtyard	street / block	neighbourhood		city
Childhood phase	baby	toddler	young children		youth
Levels of participation	consultation	collaborative participation	child-led participation		civic engagement & trust
Coalition	parent / caretaker	+	heath worker / teacher	+	friends / social worker	+	youth leader	+	community
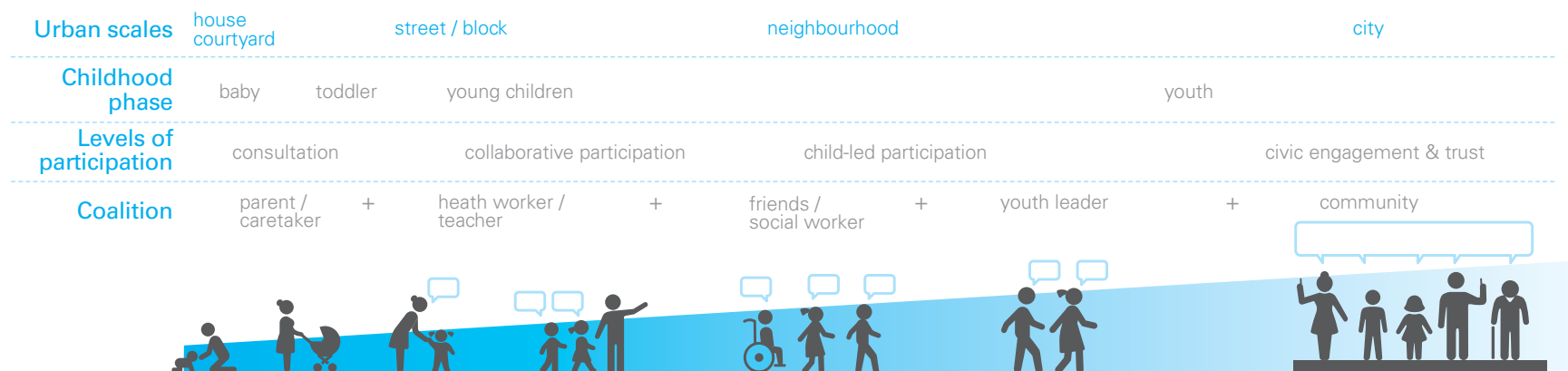
- A child's **role** in participation will depend on his age and level of development;

- Children's participation is best when it's with the community and **with coalitions** of constituents who have similar concerns and who support children to speak up;

- There are various ways for children to participate – as consultants, as collaborators and as leaders – when **objectives and expectations** are established from the beginning.[28]

Urban systems and children's behaviour

Every city has the potential to be 'a school of life' for children and for adults. Outdoors, in the streets and other public spaces, children experience their first notions of independence, they encounter stimulating environments to develop cognitive and social skills, and have opportunities to make decisions based on reasoning and experience. As they do at home and in school, children absorb everything-gathering what they are told, what they hear and see, what they're taught and exposed to in the urban setting.

Children's relationships to urban settings are not only about planning issues such as access to services or proximity of public space. There are a range of entry points for children to interact with urban resource systems such as transportation, nature, water and sanitation, food, energy and data. These urban systems function within the larger scale of the city

Figure 12: Urban systems and children's behaviour
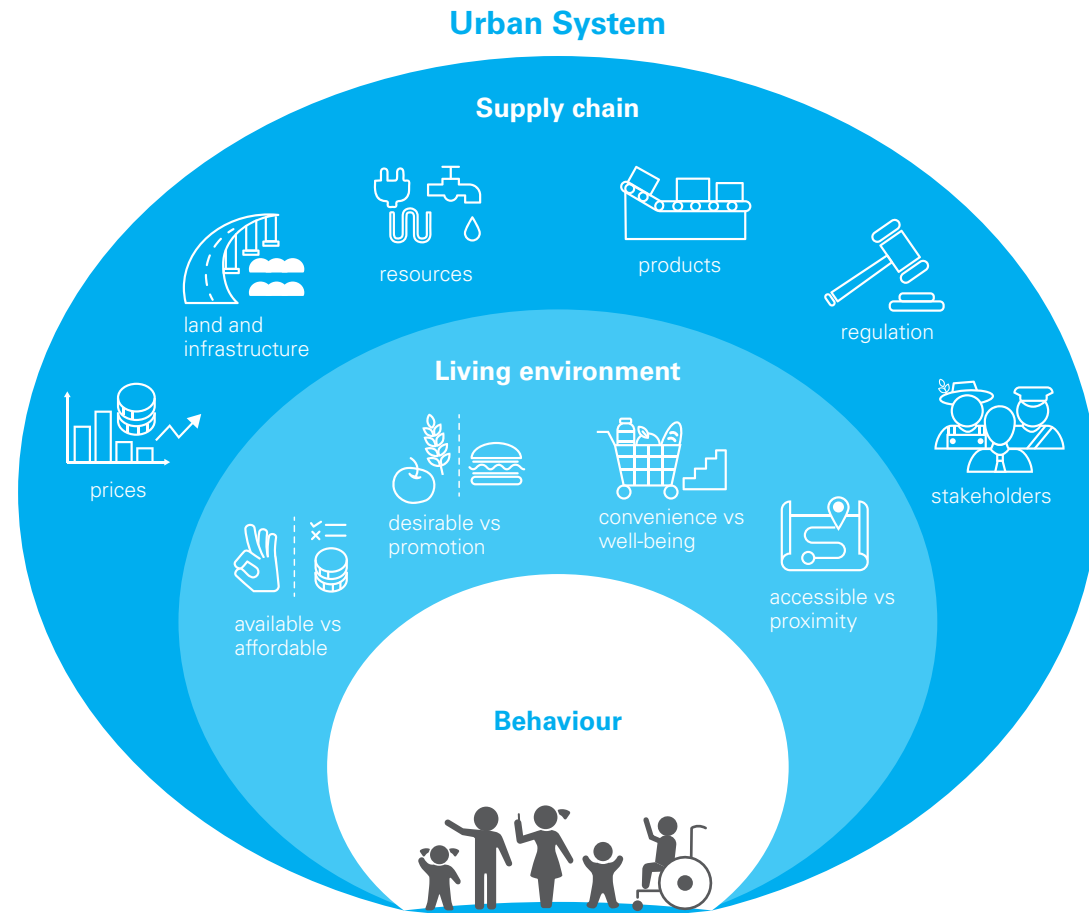
and city-region, spread out in the urban-rural continuum, and have direct influence on a child's behaviour throughout childhood.

Three components of urban systems[29] are important to consider in policy planning, including

education, to ensure children's ideal development, as well as the sustainable use of resources:

- **Supply chain:** The activities and infrastructure that ensure resources are transported from production to

consumption including treatment, processing, distribution and marketing. Land use and infrastructure are key to ensure efficient and reliable supply, minimize loss and to protect the natural environment.

• **Urban environment:** The physical, economic, political and socio-cultural context in which individuals as consumers access or consume resources. The environment consists of multiple physical entry points (infrastructure) and other determinants of personal choice such as income, education and values. The public and private sector influence the personal environment with policies and with marketing strategies.

• **Consumer behaviour:** The decisions made by consumers, both for the household and the individual, on what resource to access and consume. Consumer behaviour is fundamentally shaped by the personal environment.

Children's playground in Ust-Kamenogorsk, Kazakhstan, one of the first cities to join UNICEF Child Friendly City initiative

How children's participation helped their cities become sustainable [30] [31]

Many cities have developed more equitable and livable environments with children's participation. The following stories show how supporting children's rights enriches future cities.

Cities in The Netherlands are the most bike- and pedestrian-friendly in the world. But this was not always the case. In the 1960s and 1970s, lethal road accidents were five times higher than today, and in many, children were the victims. In 1971, Amsterdam was scandalized when it was revealed that over 400 children had died in traffic accidents that year.

In response, the campaign "Stop de Kindermoord" (Stop the Child Murder) was launched, arguing that a child's death in traffic is not an accident but a murder that can be prevented. The campaign captured the public attention across the country and pushed for radical change in road culture and transportation policy. Casualties fell quickly, and the Dutch concept of 'woonerf' or "living street" was born, establishing neighbourhoods that prioritize shared space, traffic calming and slower speed limits.

In 1971 in Curitiba, Brazil, the power of children's

participation allowed the central street, Rua Quinze, to become a pedestrian space. When the newly appointed mayor and architect, Jamie Lerner, turned the street into a pedestrian area, upset motorists organized a demonstration by gathering in their automobiles on the main street. With the cooperation of the city's teachers and a modest donation of newsprint and paint, the mayor assembled hundreds of children in the street that day to meet the protestors. The children peacefully made their voice clear. Today, the city is known as Brazil's 'green capital'.

Why urban planning matters

“

We know more about healthy environments for gorillas, Siberian tigers and pandas than we know about a good urban environment for homo sapiens.

Jan Gehl,
Danish architect and urban designer who improves the quality of urban life by re-orienting city design to people

Three urbanization issues require response for better planning, financing and governance for children, in accordance with the 17 goals of the 2030 Agenda for Sustainable Development:

- Equity as a priority for sustainable urban development;

- Local capacities to deliver global goals;

- Integration of the built environment in development programmes.

Urban planning can respond in three unique aspects:

- **The data and evidence aspect:** urban planning uses and produces geographic information system (GIS)-based urban data that is able to support equity-based decision-making in urban development, by mapping vulnerable communities to prioritize where and to what degree interventions should take place;

- **The process aspect:** stakeholders in urban planning engage and strengthen capacities on the local level to determine the collective value of the built environment, to envision change with children and to implement decisions with children and their community;

- **The spatial aspect:** urban planning ensures urban programmes translate into area-based strategies that comply with universal design and standards on various scales, to ensure

urban development provides sustainable urban livelihoods for the most disadvantaged.

These aspects make urban planning a fundamental part of urban programming for children, from situation analysis, programme design, implementation components to monitoring and evaluation of the outcomes for children.

The Brundtland Report posited three pillars of sustainability that are the basis for urban sustainable development and considerations in urban planning, known as the "3 E's": [32]

Figure 13: Pillars of sustainability
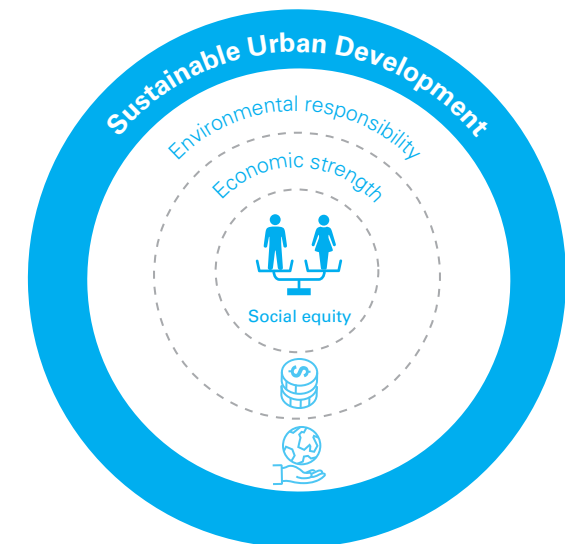
- **Environmental responsibility** to sustain eco-systems and make minimal use of natural resources;

- **Economic strength** to sustain economic development that creates labour and which is innovative.

- **Social equity** to sustain inclusive communities that are fair for everyone.

However, urban planning only matters if it adapts its practice. The following chapters highlight what urban planning should do better in the first place (step 1), in order to be able to effectively support urban programmes for children (step 2).

Urban planning for equity

As highlighted in the New Urban Agenda, economic productivity and environmental strength cannot be achieved without the population's equal access to core services.[33] Only when equity is put forward as a main concern and when everyone has access to basic services will cities thrive as places of economic strength and contribute to the environmental agenda.

Urban planning has focused on economic development and environmental concerns with top-down planning that supports authorities and developers and investment in infrastructure and technical functions. Urban planning has begun to shift tactics for better equilibrium in its focus on the three pillars: social equity; people-centred decisions; and the impact of

Figure 14: The relevance of urban planning in urban programmes

Child-centred	STEP 1	Urban planning	STEP 2	Urban programming for children
spatial equity	>	evidence based	>	sustainable urban development
local stakeholder engagement	>	process based	>	urban governance and implementation
human centred design	>	area based	>	urban environments for people

the build environment on children. Evidence shows that urban planning that focuses on equity can have concrete outcomes for the most disadvantaged, such as shown in the development of multiple Bus Rapid Transit initiatives in Latin-America.[34]

When inequity is mapped out spatially, urban planning can be part of human rights-based sustainable development by connecting the infrastructural and spatial characteristics of the built environment with the vulnerability profile of disadvantaged children and their community:

- Analyse built environment conditions and patterns that reflect characteristics of poverty, deprivation and exclusion of communities;

- Produce and disaggregate geo-spatial data that locates vulnerable communities and supports decision-making, working with various forms of data (household surveys, administrative data, qualitative data, satellite imagery, etc.)

- Understand the correlation between the built environment and the vulnerability of the disadvantaged, in particular the children;

- Measure the impact of better planning of the built environment and the provision of space and infrastructure for children by using child-specific indicators on the built environment;

- Formulate recommendations for urban development policies that focus on equity and children, based on the available child-specific evidence.

Figure 15: Planning for equity
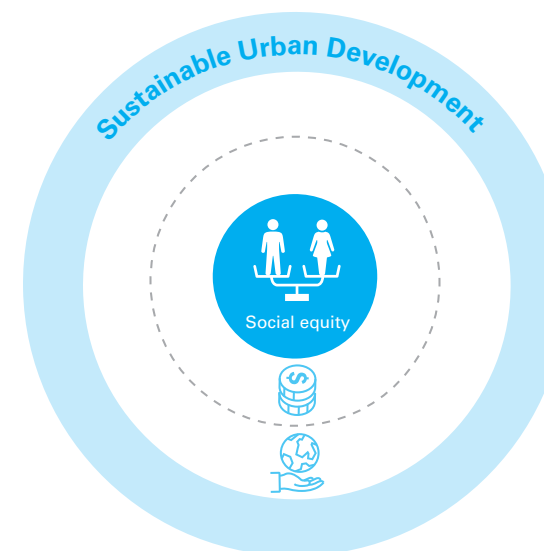
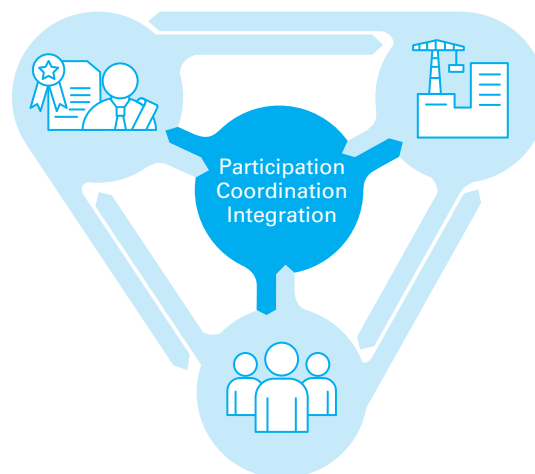## Urban planning engages local stakeholders

As highlighted in the 2030 Agenda for Sustainable Development, local implementation and the strengthening of local capacities and accountabilities are key to planning, financing and governance.

By examining the influence of the built environment on the daily patterns of households and economies on a local level, urban planning can strengthen local communities as well as stakeholder collaboration to determine the responsibilities and capacities of public authorities, the private sector and the community.

Urban planning has often been presented as a legal and technical matter, with complex land use plans and regulatory frameworks managed by national and subnational governments, which are static and only adaptable through long and costly procedures. In such a scenario, large, private economic sectors – an exclusive partner privileged to create and implement policies – tend to influence urban planning.

But urban planning has evolved into a more process-oriented practice, developing local and demand-driven urban transformation. This includes the ability to coalesce local stakeholders around a shared vision, create a meaningful participatory process, implement plans and urban policy reforms, enable the city's access to capital and resources and enforce regulations in a manner that is transparent, accountable and responsive to residents.6By

Figure 16: Urban planning initiates local stakeholder engagement

emphasising the built environment as a common good in the process of urban transformation, urban planning can promote its capacity to inspire stakeholder engagement, coupling community engagement, institutional capacity and corporate social responsibility with tangible outcomes in the built environment:

- Integrate children's participation as a basic principle in urban development processes, from vision to implementation, so children and their community can identify with their built environment and be connected with all local stakeholders;

- Support community-led urban planning that enables local-level solutions in terms of provision of land and infrastructure and increases resilience with short-chain

solutions in terms of urban resource systems (transportation, water, food, waste, energy and data);

- Couple technical and social innovation to improve coordination amongst stakeholders, to optimize the use of their resources and to foster new partnerships, from assessment to co-production.

Urban planning for people

Urban planning deals first and foremost with the built environment, determining the use of land, defining the urban form of buildings and infrastructures in various scales, and the spatial organization of resource systems. Urban planning helps cities accommodate growth and adaptation in a sustainable way: to upgrade the existing built environment to a more sustainable one (hardware) and to manage related risks and needs of communities in order to make them more resilient (software).

International development policy, however, often ignores the built environment as a factor in sustainable development. As local implementation is highlighted, many development programmes remain 'spatially blind'. When many interests are superimposed on the same urban space, conflicts arise that often lead to spatial inequity, and thereby marginalising the disadvantaged. Urban planning has started to step away from a purely system-design approach to embrace human-centred designs that create space for people, not space as infrastructure to merely support urban systems.

By emphasising how a lack of child-centred space manifests health, safety and inclusion vulnerabilities of children in cities, urban planning can be an integrative component of human rights-based urban development. Human-centred design and spatial planning ensure that urban development cycles include everyone, including children, in issues of planning, design and construction:

○ Integrate universal design principles in urban planning to ensure that the built environment is healthy, usable and accessible, without having to adapt or specialize design at a later stage;

○ Assess norms and standards on buildings and infrastructure from the standpoint of children, including the most vulnerable, by recognizing their physical capacities and challenges, depth of cognitive understanding and their socio-emotional interaction;

Figure 17: Planning space for people first

○ Reserve land for public use and establish access to affordable housing, urban services and transportation, so cities can be supportive and accessible to the most disadvantaged and ensure people's health and well-being.[35]

Investing in urban planning, investing in children

The challenges of urbanization and the need for equity-based, process-oriented and people-centred urban planning requires investments in the profession, in terms of capacity building and training. This in turn requires that existing practices in urban planning need to be strengthened and outdated regulations or standards have to be enhanced. More importantly, the scale and complexity of urbanization requires significantly more training for urban planners, since the discipline does not exist in many countries. As stated in the UNESCO Global Education Monitoring Report (2016), more planning schools are needed, in particular in lower income countries.[36] In India for example, there are only 3,000 registered urban planners, or 1 planner for every 100,000 residents. Of 550 planning schools that are documented worldwide, there are only 69 in sub-Saharan Africa, of which 39 are based in Nigeria.

These numbers highlight the need for increased investment in education on urban sustainability, to promote the city as a learning institution from an early age in elementary schools, and to train a new generation of urban planners to plan cities for and with children.

Children in
Chiapas, Mexico

2 Defining a child-responsive urban setting

What should we plan for children?

- Child-responsiveness, benefits and programme areas
- Child-responsive urban settings
- Children's Rights and Urban Planning Principles

What should we plan for children?

Child-responsiveness, benefits and programme areas

Focusing on benefits for children

To plan urban settings in a child-responsive manner begins with the understanding of how an urban setting can enhance the experience of childhood and how urban development can prioritize children's development. For urban planners and child development experts to understand, and thus be equipped to advocate for child-responsive urban planning, the concept must be defined with an urban planning perspective and with a child rights' perspective.

Child development experts consider the Convention on the Rights of the Child the cornerstone of children's rights, and are guided by the Convention's three categories of child rights: the right to survival and development; the right to protection; and the right to participation. Urban planners refer to the three pillars of sustainability: environmental responsibility, economic strength and social equity. Merging these core components used by child development experts and urban planners, a child-responsive urban setting can be defined by a framework with *five benefits*:

Health – Child-responsive urban settings are clean and sustain children's behaviours to grow healthy and strong;

Safety – Child-responsive urban settings are safe and sustain children by being risk informed.

Citizenship – Child-responsive urban settings are inclusive of all society and empower children to participate in decision-making to encourage civic trust, engagement and connectivity;

Environment – Child-responsive urban settings are environmentally sustainable; they foster children to protect the environment and become ambassadors for a safe and green planet;

Prosperity – Child-responsive urban settings ensure a decent standard of living with access to education and affordable urban services; they support children's life skills and access to job markets.

Each of these benefits reflect the mutual interaction between a child and the built environment: a child as a receiver of a service and required support, but also as a participant who learns to takes action. These benefits, and guidance on how to achieve them, help cities to make children's rights and children's needs a central tenet of their work.

Influencing urban development initiatives

Today, global initiatives for urban development and policies exist with outreach to city networks and stakeholders, but they do not always encompass the child-response perspective. The benefits' framework for child-responsive urban settings (see Figure 18) can guide the scope of initiatives, definition and implementation strategies to ensure they result in the development of child-responsive urban settings:

- **Initiatives for healthy cities and communities** call for the integration of public health issues in urban planning and broader local policies. The benefit framework for child-responsive urban settings is a means to highlight challenges and solutions from a child's perspective, especially for young children and vulnerable groups such as the elderly.[1] Traditionally, assuring access to health services was a main incentive for urban planning, and today with burgeoning slums and environmental health issues, history repeats itself. Designing for health, while building on medical research and behavioural science, has emerged as an important practice in architectural and urban design.

- **Initiatives for safe and resilient cities and communities** integrate safety, security and risk-preparedness in urban planning and in

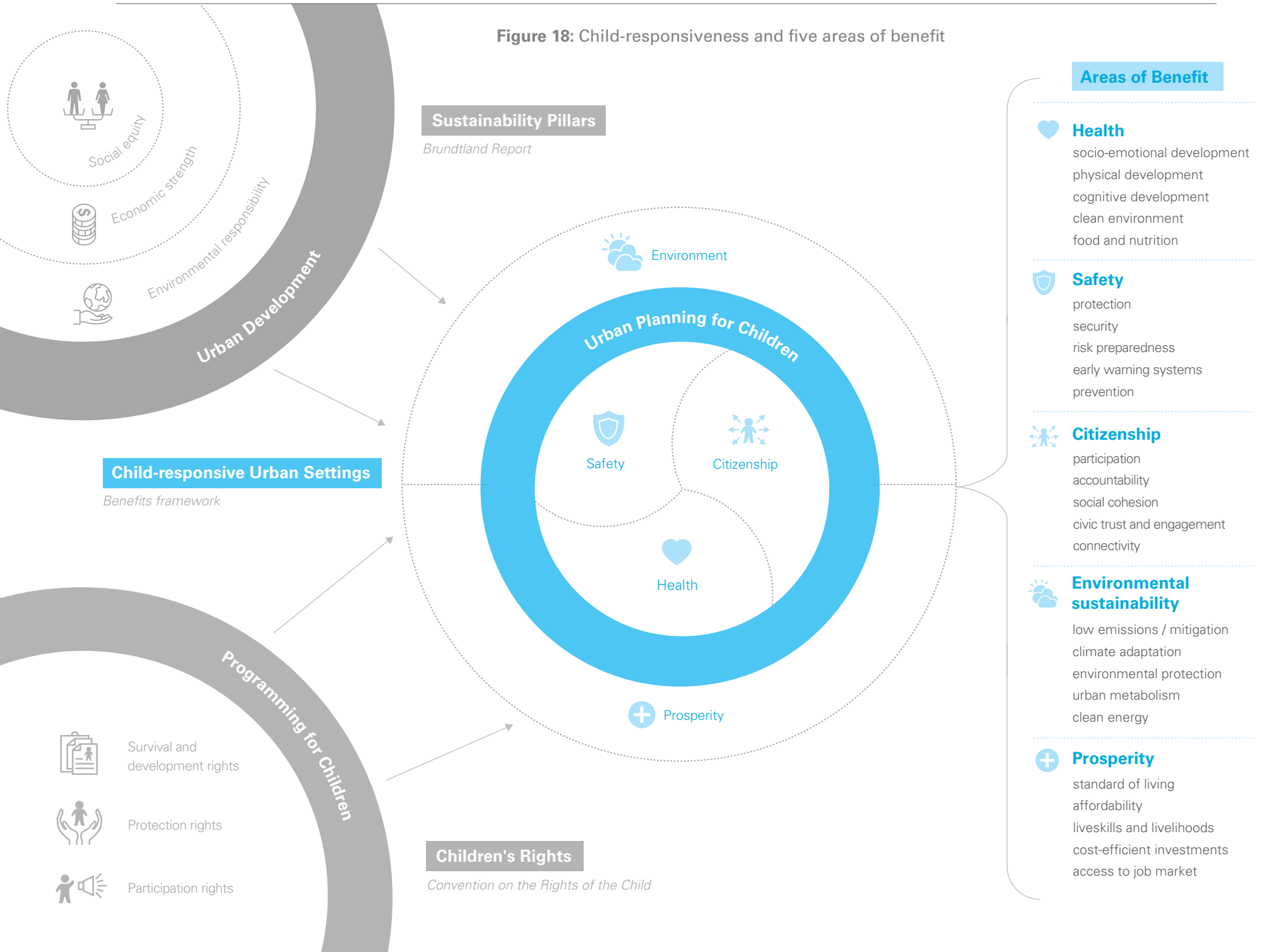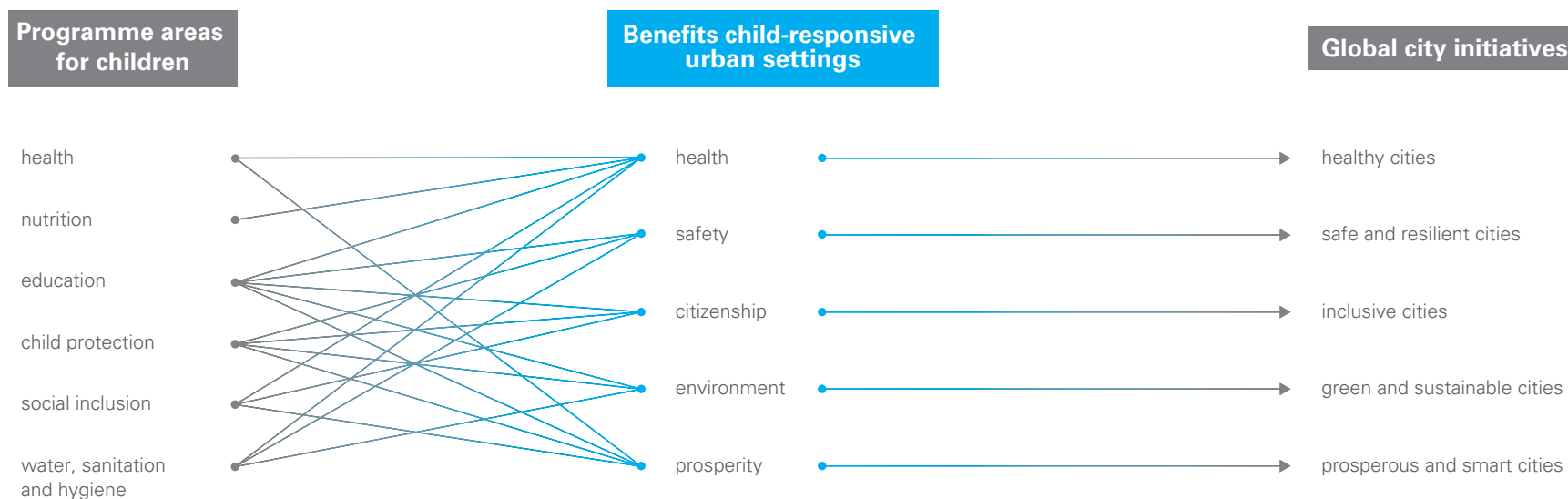**Figure 18:** Child-responsiveness and five areas of benefit

Sustainability Pillars

Brundtland Report

Social equity

Economic strength

Environmental responsibility

Urban Development

Child-responsive Urban Settings

Benefits framework

Programming for Children

Survival and development rights

Protection rights

Participation rights

Children's Rights

Convention on the Rights of the Child

Urban Planning for Children

Environment

Safety

Citizenship

Health

Prosperity

Areas of Benefit

Health
socio-emotional development
physical development
cognitive development
clean environment
food and nutrition

Safety
protection
security
risk preparedness
early warning systems
prevention

Citizenship
participation
accountability
social cohesion
civic trust and engagement
connectivity

Environmental sustainability
low emissions / mitigation
climate adaptation
environmental protection
urban metabolism
clean energy

Prosperity
standard of living
affordability
liveskills and livelihoods
cost-efficient investments
access to job market

Figure 19: Entry points to global city initiatives and urban programmes

broader local policies. The benefit framework highlights challenges and solutions based on children's perspectives, especially girls, adolescents and vulnerable groups.[2] Crime Prevention through Environmental Design is a growing practice in urban planning, focusing on interventions in the physical environment in a way to prevent violent crime and encourage respectable social behaviour and community engagement. City resilience based on risk-preparedness is a growing concern for communities, as cities have experienced major deadlocks, disasters and civil unrest. [3]

- **Initiatives on inclusive cities and communities** commit to increase civic engagement and civic trust through participation, urban planning and broader

local policies. The benefit framework of child-responsive urban settings incorporates perspective of children with disabilities and vulnerable groups such as migrants.[4] Universal access, spatial equity and social justice have become the pillars of a broad movement of inclusive planning, echoed in the New Urban Agenda and Cities for All campaigns.[5]

- **Initiatives for green and sustainable cities and communities** support low-carbon, resource-efficient and bio-diverse urbanization through urban planning and broader local policies. The benefit framework of child-responsive urban settings provides the means for highlighting specific threads and solutions from the perspective of children and other

vulnerable groups, in particular those living in areas with high environmental risks. Of the three pillars of sustainability, the pillar on environmental responsibility has been the most prominent in the urban debate, leading to a myriad of initiatives and networks dealing with greening cities, the green economy and the climate agenda. Strong evidence and practice has been developed around sustainable resource management and green infrastructure (buildings, transportation, energy, water, food, waste).[6]

- **Initiatives on prosperous and smart cities and communities** support economic strength; information, communication and technology; and innovation-driven solutions for prosperity. The benefit framework on

child-responsive urban settings is a means to highlight threads and solutions from the perspective of children, especially the most disadvantaged who lack access to quality education, the job market and reliable information and technology.[7]

Supporting urban programmes for children

The benefits are also entry points to different urban programming areas, such as health, education, protection, social inclusion and environment. As urban planning deals with the built environment in order to create child-responsive urban settings, it can use the areas of benefits as a lens to support programmes for children to be integrated in an area-based approach on a local level (neighbourhood or city level).

Interdependency of the benefits of child-responsive urban planning[8]

For the best urban planning and design, the five benefits should be considered with equal attention: Focusing on one benefit may neutralize other benefits. For example, road safety measures often work to remove dangers from the road environment, instead of removing children from danger. Successful policies on road safety often focus on raising children's and family awareness of the dangers of the road and improving infrastructure for drivers.

However, although road causalities declined in many industrialized countries, it's at the cost of children's independent mobility. Such policies mean that children have less freedom to walk, bike and play in their neighbourhoods without adult supervision. With less freedom to walk or bike, relying on parents and caretakers to drive,

limits children's natural physical activity, leading to health issues such as obesity. Car-oriented transportation policies raise inequity, as those who do not have the privilege of a car must still walk and are at even greater risk in car-oriented streets. The energy required to fuel automobiles, the materials and energy to build infrastructure, air and soil pollution lead to higher resource consumption, greater environmental degradation and worse climate change.

Child-responsive mobility is about more than simply road safety. To design urban settings for a child's independent mobility incorporates all five benefits of child-responsive urban planning: to ensure health, safety, citizenship, environmental resilience and prosperity for all.

Boys stand by a motorcycle in Kroo Bay, a slum area in in Freetown, Sierra Leone

Child-responsive urban settings

The term 'urban setting' can be broken down into a typology of nine tangible components of the built environment, that include:

- three urban spaces (housing, public amenities and public space);

- four urban systems (mobility, water, food and waste);

- two urban networks (energy, and data and Information, Communication and Technology (ICT).

Figure 20 indicates the specific vulnerabilities children face in each component, the potential outcomes to address these vulnerabilities and to unlock greater benefits for children.

Equally, the typology highlights that outputs in one, multiple and all components of the built environment can and should be defined in order to have benefits for children.

- In terms of health, investments and planning for health facilities, but also for proper housing to live, public spaces to play, walkable neighbourhoods to move around, markets to eat healthy food and clean energy systems to breathe clean air, will have major benefits for children, to be healthy and to adopt healthy behaviours.

- In terms of safety, investments and planning for safety nets, but also for child

Figure 20: Child-responsive urban settings and their impact on children

Components of urban settings		health clean environment – healthy habits	
Housing and land tenure SDG 1.4, SDG 11.1	vulnerability	indoor air pollution, humidity, unhygenic space and lack of water and sanitation, vector-borne diseases	
	solutions	adequate space, light, ventilation, healthy building materials	
Public amenities SDG 3.8, SDG 4A, SDG 6, SDG 8.6	vulnerability	lack of city-wide health facilities	
	solutions	city-wide health and WASH facilities, childcare and other mixed use programmess	
Public spaces SDG 11.7, SDG 16.1.4	vulnerability	lack of play areas and green space, exposure to sources of pollution	
	solutions	green spaces to filter pollution and reduce heat island effects, playful spaces to improve physical activity	
Transportation systems SDG 3.6.2, SDG 11.2, SDG 16.1.4	vulnerability	lack of space for walking and biking, limited physical activity, fossil fuel related pollution	
	solutions	active transportation, clean energy transport leading to reduction of non-communicable diseases	
Water and sanitation management systems SDG 1.4, SDG 3.9, SDG 6.1/2/3/5	vulnerability	water and sanitation services not adapted for child needs, faecal contamination of public space	
	solutions	safe and affordable water and sanitation adapted to children, reduction of urban heat island effect	
Food systems SDG 2.4, SDG 12.3	vulnerability	malnutrition leading to stunting, wasting and obesity	
	solutions	local healthy food shops, food markets and farms, composting, healthy school food programmes	
Waste cycle systems SDG 11.6, SDG 12.3	vulnerability	dirty streets, polluted soil, air and water, burning toxic waste, presence of landfills in housing area	
	solutions	clean streets and municipal waste management reduces health risks	
Energy networks SDG 7.1, SDG 7.2, SDG 9.4	vulnerability	unhealthy energy production (air pollution)	
	solutions	clean energy for light and power supply	
Data and ICT networks SDG 4.4, SDG 9C, SDG 17.18	vulnerability	lack of information systems raising awareness on children health	
	solutions	health information systems in private and public spaces	

safety safe environment – risk informed	citizenship inclusive environment – participating	environmental sustainability a green planet – sustainable lifestyle	prosperity decent standard of living – life skills
poor structure, construction materials and devices leading to electrocution, burns, fires and collapsed buildings	lack of formal recognition, no access to basic services, homelesness,	located in risk prone areas, unclean energy consumption and non-recyclable material	lack of land security and incentives for investment, unafford-able housing
solid construction, safe devices for fire and evacuation	mixed use development, access to urban amenities and collective spaces	stormwater catchment, green roofs, proper insulation	affordable housing, land tenure, increased tax base through land property
lack of coverage of safe playgrounds, sport, daycare and after-school programmes	lack of amenities for individual and collective expression, exclusion of children with disabilities	located in risk prone areas, unclean energy consumption and non-recyclable material	lack of amenities for livelihood skill development
city-wide education facilities, afterschool and other pro-grammes	public amenities, one-stop youth clubs and other mixed use programmes	stormwater catchment, green roofs, proper insulation, risk informed	advanced learning and after-school programmes
lack of safe spaces and mixed use, which leads to sexual harrassment, street violence and flooding	lack of public space for social interaction, exlusive use by specific groups, no space for play	urban space distabilises water and other natural systems, decrease of biodiversity	lack of mixed use and dedicated space for the development of local economy, lack of public space decreases property value
mixed use public spaces increase social safety, green spaces and vegetation regulate flooding	space that promotes mixed use activities, community-based design	green space and vegetation reduces pollution, regulates water, food production, awareness about the environment	inviting spaces attract local economy and mixed use
lack of infrastructure for walking and biking, unsafe crossings, absence of emergency planning	lack of effective city-wide public transit impedes access to all services and impedes participation	fossil fuel driven cars contribute to high GHG emissions and pollution	lack of efficient transportation options to access services and the labour market
road safety, safe crossings and safe school environments	active transportation and public transit, children's indepen-dent mobility	green mobility, clean air in streets	inviting streets attract local economy and mixed use, reduc-tion of public health cost related with traffic accidents
flooding (drowning), dangerous water supply systems, not designed for children	infrastructure not adapted for child use in terms of security, infrastructure placed in remote places	destabilised natural water systems, water pollution, water scarcity	unaffordable water and sanitation services
green infrastructure maximises water infiltration and buffer-ing to reduce flooding risks	access to safe and affordable water and sanitation in public spaces, visibility of and playfull access to water	water buffering, rainwater collection and reuse, awareness about the environment and water	affordability of water, reduced investment and maintenance cost of infrastructure and energy for water and sanitation
food insecurity potentially leading to unrest	lack of education and skils in healthy food systems, lack of awareness about food insecurity, deserts and swamps	food systems leading to exploitation of land and water, land degradation, pollution, high energy and GHG	higher food prices, dependant on global market prices
food and nutrition security	affordable healthy food, local production	less use of land, water and energy, local sustainable food production	more local agriculture, education and skils in food production and distribution
unprotected landfill and waste treatment sites, proximity to industrial chemicals, risks of explosion	lack of awareness of waste impact and potential waste reduction	pollution of environment, high consumption of resources, flooding	poor waste mangement strains municipal budgets, acknowl-edgment of informal waste management sector
secured land-fills, waste sites and polluted areas, buffer zones	public waste collection programmes	reduction of use of resources, clean waste cycles	regulation of in/formal stakeholders, green economy market, reduction public cost waste management
lack of indoor and outdoor light, unsafe power supply (kero-sene/paraffin)	lack of street lights and access to energy impedes social connectivity	unclean energy production leading to air and water pollution	higher energy prices, dependant on global market prices, lack of indoor light to read
safe power supply, street lighting	affordable access to energy in public spaces and local power production	clean energy, reduction GHG emissions	more local energy production, reduction of public health cost related to air pollution
lack of warning systems adapted for children	lack of access to reliable public information and online communities	lack of warning systems of natural and climate-related disasters	lack of use of ICT/data to develop life and livelihood skills
warning systems in public spaces for children being risk informed	access to Wi-Fi in public spaces supports participation	support systems for climate mitigation and disaster prepared-ness	innovative and interactive learning with ICT/data support

care and after school programmes, safe streets to go to school, green and blue networks to mitigate flooding and ICT/data networks to have access to information, will have major benefits for children, to be safe and risk informed.

- In terms of citizenship, investments and planning for community centres, but also for mixed use neighbourhoods to increase social interaction, public spaces to meet and discuss, urban agriculture to grow food together, waste management to live in a clean environment, will have major benefits for children, to gain civic trust, feel connected and participate as proud citizens.

- In terms of environmental sustainability, investments and planning for water and sanitation infrastructure to recycle and minimize need for water, but also for waste and clean energy management to reduce waste and greenhouse gas (GHG) emissions, will have major benefits for children, to live in cities with a neutral ecological footprint and become champions for a safe and green planet.

- In terms of prosperity, investments and planning for schools, but also for land security and affordable housing and transportation, local economy, advanced learning and ICT/data connectivity, will have major benefits for children, to have a decent standard of living and have the required life skills to access job markets.

Children's Rights and Urban Planning Principles

The five benefits and the typology of nine built environment components identify precisely why and what child-responsive urban settings should be planned in order to respect children's rights and support sustainable urban development.

Translated in to a set of 10 principles, all stakeholders can promote and commit to the planning of child-responsive urban settings.

Principle 1 outlines three preconditions for urban planning to be beneficial for children and involve their participation – to be area-based (promoting people centred design and spatial planning), to be process-oriented (supporting children's participation in local stakeholder engagement) and to be evidence-driven (addressing spatial equity and people-centred decision-making.

The remaining nine principles translate the general Principle 1 in to the built environment components of an urban setting, in terms of providing urban places, developing urban systems and integrating urban networks.

The 10 Children's Rights and Urban Planning Principles call on cities to:

Principle 1 **Investments**

Respect children's rights and invest in child-responsive urban planning that ensures a safe and clean environment for children and involves children's participation in area-based interventions, stakeholder engagement and evidence based decision-making, securing children's health, safety, citizenship, environmental sustainability and prosperity, from early childhood through adolescence.

Principle 2 Housing and Land Tenure

Provide affordable and adequate housing and secure land tenure for children and the community, where they feel safe and secure to live, to sleep, to play and to learn.

Principle 5 Transportation Systems

Develop active transportation and public transit systems and ensure independent mobility for children and the community, so they have equal and safe access to all services and opportunities in their city.
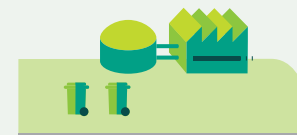
Principle 8 Waste Cycle Systems

Develop a zero waste system and ensure sustainable resource management, so children and the community can thrive in a safe and clean environment.

Principle 3 Public Amenities

Provide infrastructure for health, education and social services for children and the community, which they have access to, in order to thrive and to develop life skills.
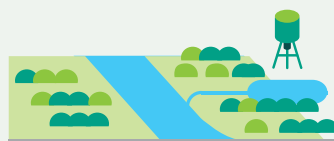
Principle 6 Integrated Urban Water and Sanitation Management Systems

Develop safely managed water and sanitation services and ensure an Integrated Urban Water Management system for children and the community, so they have universal and equitable access to safe and affordable water and hygiene.
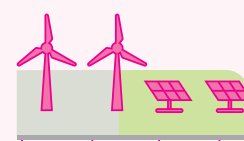
Principle 9 Energy Networks

Integrate clean energy networks and ensure reliable access to power, so children and the community have access to all urban services day and night.

Principle 4 Public Spaces

Provide safe and inclusive public and green spaces for children and the community, where they can gather and engage in outdoor activities.

Principle 7 Food Systems

Develop a food system with farms, markets and vendors, so children and the community have permanent access to healthy, affordable and sustainably-produced food and nutrition.
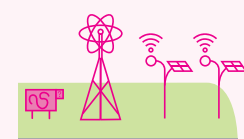
Principle 10 Data and ICT Networks

Integrate data and ICT networks to ensure digital connectivity for children and the community, to universally accessible, affordable, safe and reliable information and communication.

10 Children's Rights and Urban Planning Principles

Principle 1
Investments

To Provide Urban Places

Principle 2
**Housing and
Land Tenure**

Principle 3
**Public
Amenities**

Principle 4
Public Spaces

To Provide Urban Places

Principle 5
**Transportation
Systems**

Principle 6
**Integrated
Urban Water
and Sanitation
Management
Systems**

Principle 7
**Food
Systems**

Principle 8
**Waste Cycle
Systems**

To Integrate Urban Networks
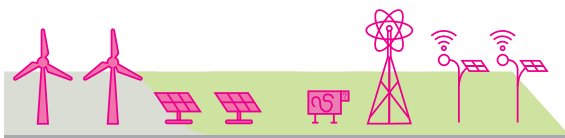
Principle 9
**Energy
Networks**

Principle 10
**Data and ICT
Networks**

Iraqi men and children play football at a park in an unfinished housing unit in a suburb that is now home to thousands of displaced Iraqis in the Kurdistan region of Iraq

3 Shaping child-responsive urban settings

How to plan for children?

- Planning space for children and the community
- Designing the process with children and the community
- Using evidence about children and their community

How to plan for children?

Adjust tools to design space, engage stakeholders and use evidence

To plan child-responsive urban settings is not a matter of inventing new tools, but fine-tuning and adjusting existing instruments, strategies and methods to focus on children:

1. **Instruments to plan, design and manage urban space on different scales for children and the community**
   Urban planners should verify that the places, systems and networks listed in the Children's Rights and Urban Planning principles are planned, designed and managed with a child's perspective at various scales of intervention, and comply with universal design.

2. **Strategies to design the process to strengthen local capacities of children and other stakeholders**
   Urban planners should question if children and community participation have set the agenda and defined a vision. Has there been consistency in building coalitions among stakeholders, and in mobilizing resources to translate the vision into meaningful co-production for structural change?

3. **Methods for evidence-based and people-centred decision-making through data**
   Urban planners should take the lead in child-centred assessments to define a city's priorities, to install and feed GIS-based

Figure 21: Schematic overview of urban planning tools
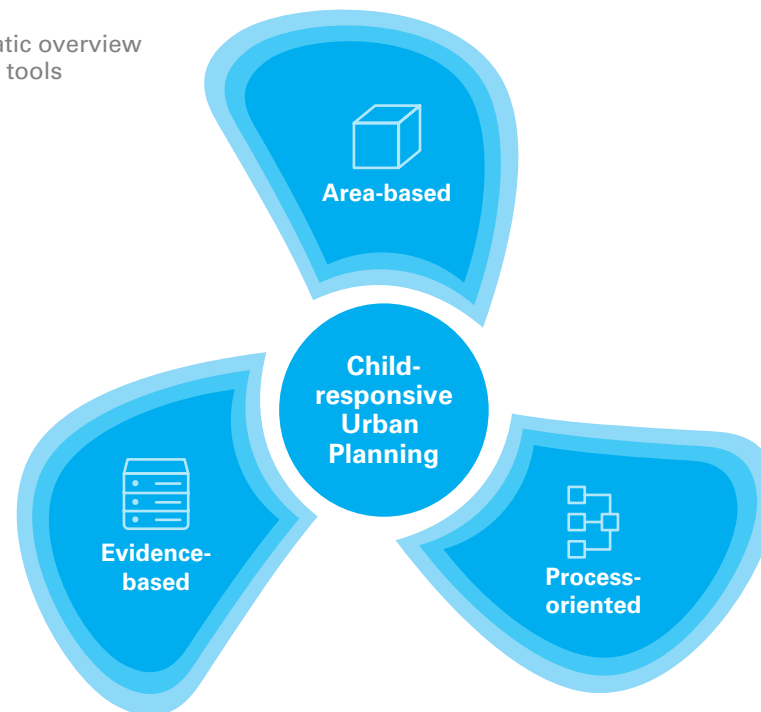
open-data platforms, to offer insight on how to correlate the built environment with children's well-being; build accountability and strengthen governance structures for child-responsive urban planning.

To address the reality of limited resources, human capacity and challenging urban contexts, urban planners need to advocate for and

technically support planning in a modular way, seeking multiple-entry points where cities can improve children's life and identifying the first step for improvements: starting small and with a horizon of one year (step 1), scaling-up based on evidence of the first step with a horizon of three years (step 2), and finally, mainstreaming child-responsiveness in all aspects of urban planning policy (step 3).

1. Planning space for children and the community

Urban planning supports area-based urban programmes that ensure service delivery to children but also a *built environment that supports children's rights.* Also, people-centred design and spatial planning ensure that urban development cycles include everyone, including children, in issues of planning, design and construction. Planning child-responsive urban settings is more tangible on a small scale, developing physical projects that have a visible impact and can be evaluated on how the space is safe and healthy for children, if it's used by children and whether children feel ownership.
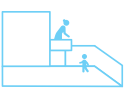
Projects are also easy to communicate as an action that can be supported by children and communities from conception to execution.

Many characteristics of a child-responsive urban setting depend on connecting small-scale local **project interventions** to a larger systems-level **policy scale**. For example, children will be healthier, safer and more empowered if they can move through the city by walking along safe streets and breathing clean air. This implies better land use, transportation networks and clean energy

policies, which are addressed on a city-wide or larger scale. To fully address all needs and challenges for children in urban settings, urban planning must simultaneously address the different scales of possible spatial intervention.

There are two ways to address scaling-up simultaneously: 1. Ensure that child-responsive interventions in urban settings are strategically laid out and can be scaled-up (bottom-up), and 2. Invest in urban planning policy and ensure implementation in numerous local contexts (top-down).

Figure 22: Instruments to plan, design and manage the urban space at different scales

Step 1		Step 2		Step 3
Building and infrastructural regulations	Urban design and area-based community planning	Land use planning	City development planning	Urban planning policy
building scale	neighbourhood scale	city scale	city scale	multi-level scale
child-responsive norms and standards (security, accessibility, safety, health)	child-responsive neighbourhood action development plan	child-responsive land use standards (availability, accessibility, proximity)	integrated spatial development strategy (urban systems)	legislative and institutional frameworks (all policy levels)
child-responsive design guidelines (use, comfort, stimulation)	urban childhood design (multifunctional programming, universal design, strategic site interventions)	child-responsive land use plans (zoning plans, alignment plans, protection plans)	urban resiliency plan (natural, climate, other risks)	land use and property registries (use, building rights, land value and taxation)
child-responsive impact assessments (planning, design, built phase)	coordination of infrastructure projects and community initiatives (co-design, co-production, maintenance)	child-responsive building permit regulations (general urbanistic rules, specific masterplans)	implementation strategy (financial, interagency coordination)	urban data observatories (disaggregated, open data, GIS)

project ←————————————————————————————————→ policy

Universal Design Principles [1] [2]

Universal design is "the design of products, environments, programmes and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialised design."

Universal design is often associated with accessibility and disability. However, it actually covers good design for all, including the 1 billion people with disabilities worldwide. In this sense, applying universal design helps create buildings, tools, spaces and learning or communication systems that are useful and usable for everyone. Universal design accommodates diverse literacy skills, and promotes designs that are safe and easy to use, including by children. There are seven universal designs: 1) equitable use, 2) flexibility in use; 3) simple and intuitive use; 4) perceptible information; 5) tolerance for error; 6) low physical effort; and 7) size and space for approach and use.

Applying these principles and goal areas leads to designs that can be used equitably and without restriction by children and adults, and those with and without disabilities. The concept of universal design applies to almost every area of life and is particularly important in three key domains:

- Information: accessibility and usability of websites, documents and electronic communication, or videos with captions;
- Designing places and spaces: buildings, playgrounds, parking places and pathways;

Design of specific hardware or furniture, such as light switches that turn on and off easily or a tap that can easily be turned on or off by a child with limited strength.

Building and infrastructure regulations – building scale

- **Child-responsive norms and standards** ensure that buildings and infrastructure meet quantitative requirements in terms of children's security, accessibility, safety and health;

- **Child-responsive design guidelines** describe qualitative recommendations for buildings and infrastructure to ensure better use, comfort and stimulation opportunities for children;

- **Child-responsive impact assessments in planning and design phase** ensure that the benefits for children are optimized and negative impacts minimized (community, environmental, economic perspective).

Housing programme in Integrated Sanitation Programme, Maués, Brazil

Urban design and area-based community planning – neighbourhood scale

- **A neighbourhood action development plan for children** sets out priorities for urban places, systems and networks for children in their neighbourhood;

- **Urban design workshops with children and the neighbourhood community** ensure programmes will be multi-functional and strategic, based on universal design principles and the choice of well-located interventions;

- **Co-production initiatives set up with children** ensure children participate in design, execution and daily maintenance, linking infrastructure investments (hardware) with people's use (software).

Spanish library, Medellin, Colombia

Land use planning – city scale

- **Child-responsive land use standards** are based on agreed norms and identified benefits for children in terms of availability, accessibility and proximity to specific land use;

- **Child-responsive land use plans** ensure spaces are accessible by children or safely disclosed. Zoning plans, alignment plans and protection areas define precisely, in a geo-spatial and juridical way, where building densities, land use, infrastructure and urban spaces can be located, where areas are protected or inaccessible (heritage, nature, agriculture, etc.);

- **Child-responsive building permit regulations** ensure that building heights, alignments between build and unbuilt space, mixed use and building typologies of public and private development are considered from a child's perspective, on a human scale and with emphasis on collective spaces and social control.

Extension Plan Nino-Prampram, Accra, Ghana

City development planning – city scale

- **An integrated city development strategy** is child-responsive as it identifies, supports and coordinates all required urban systems for children (such as housing, water, sanitation, transportation, green, public spaces, food);

- **An urban resiliency plan** is child-responsive as it ensures that communities and in particular children are resilient and prepared by integrating knowledge on disaster, climate and other risks for children and ensuring training and communication (contingency planning, preparedness, humanitarian response);

- **An implementation strategy** foresees financial investments based on a cost-benefit analysis from a child perspective and identification of all possible budget resources for children. It highlights required city-wide coordination to increase impact for children (intra-agencies coordination, development of public land and increased value of private land, budget and financial regulatory coordination tools). It also identifies special planning areas (neighbourhoods) for concentrated investments in the built environment.

Busan, South Korea

Urban planning policy – multi-level scale

- **Legislative and institutional frameworks** are child-responsive by explicitly addressing spatial equity and ensuring coordination mechanisms, modularity and flexibility for updates on all institutional levels, highlighting the duties and obligations of the duty bearers of children's rights (the state, parents, guardians, care-givers);

- **Land use and property registries** are child-responsive as they increase stability and accountability through ownership and provide a tax base for land value taxation and redistribution toward public investment in spaces for children;

- **Urban data observatories** are child-responsive when collected data is disaggregated by age, to enable measuring, evaluation and better decision-making for children.

Land surveyors, Chad

2. Designing the process with children and the community

Urban planning is a matter of physical and functional planning of urban places, systems and networks, but it is also a process-oriented practice. It fosters **stakeholders' engagement,** that builds local capacity in process-based urban development and put children first in terms of **participation, coalition building and co-production** of child-responsive urban settings. By emphasising the built environment as a common good, urban planning can promote its capacity to inspire stakeholders and communities to *form a coalition* and achieve shared and tangible outcomes in the built environment.

Children and their community contribute insight and understanding. As they engage throughout the process, urban planning articulates their concerns, ideas and solutions into technically and financially sound plans. From **vision to strategy to implementation,** children and young people will ensure that projects lead productively to structural change. Also, co-production will make children feel ownership of the process and of their city experience, and as adults will be more likely to continue to develop the culture of child-responsive planning. From the beginning, children's participation in urban planning is the best investment for short-term results and for the long-term perspective.

Neighbourhood Contract Passer-Compas, Brussels, Belgium

Figure 23: Strategies to build coalitions, mobilize resources and co-produce with stakeholders

Step 1	Step 2	Step 3
Stakeholder engagement	**Budgeting**	**Incremental change**
coalitions	resources	co-production
participation with children and their communities first	child-responsive resource planning (estimation, phasing)	pilots and interim projects in co-production with children
building coalitions between children and other constituents with shared interests	mobilising financial resources and assets (public, private, land value capture, funding)	child-focused communication (public opinion, media)
involving experts to define co-benefits for children and other stakeholders	presenting a cost-benefit analysis for child-responsive planning	child-focused action plan (next steps, recommendations)
vision	strategy	implementation

Stakeholder engagement and children's participation

- Putting **participation with children and their community first in stakeholders management** allows urban planners to understand the unique perspective children have regarding their built environment and their livelihood, to highlight their priorities and consider the solutions they propose;

- Engaging with constituents who have shared interests allows urban planners to **build coalitions between local 'champions' and children**, often not fully visible and verbal. Urban planners can advocate more widely once they recognize the objectives and benefits of child-responsive urban settings;

- Involving **experts to assist in determining benefits for children in a rational way**, based on evidence and benchmarks.

Budgeting and mobilizing resources

- Calculate the **required resources** for investments in the built environment for children, with realistic objectives, to be integrated in infrastructure development plans, possibly to be phased or grow incrementally from small and temporary to large and structural;

- Screen **financial resources** from public and private origin (sponsors, developers, communities, crowd sourcing, donations, social impact bonds, project generated cash flows) and use appropriate financing methods (municipal investment planning, intergovernmental transfers, public land value optimization, developer exactions) for child-responsive urban development;

- Present a **cost-benefit analysis** that shows the cost-efficiency of urban planning in terms of costs of building and maintenance, and their return on investment in terms of benefits for children.

Co-production for incremental change

- **Child-led pilots** and interim projects that are low-cost, quick to build, test and evaluate with children and communities;

- **Child-focused communication** to influence public opinion and for media coverage, to reach a broader audience to join the child-responsive agenda and call for structural change;

- Analyse outcomes of pilots in terms of benefits for children and their community, and use this evidence to **define recommendations for improvement and upscaling** by the different stakeholders.

Playful and engaging participation through gaming

Gamification tools such as the Block by Block Program, developed by UN-Habitat and the Oasis Game by the Instituto Elos, support community-led assessments and stakeholder engagement. When carefully incorporated, gaming programmes can enhance the practice of conventional urban design and planning. They can aid communication, proactively trigger interaction and participation, and facilitate understanding of spatial parameters, decision scenarios and consequences.

Used as tools to facilitate interaction of those involved in the design process, and to offer a visualization of complex issues, gaming techniques can be used as promising social technology, and they are particularly advantageous to enable and engage children's participation.

Block by Block Program with the Dandora community, Nairobi, Kenya

3. Using evidence about children and the community

Urban planners use, provide and visualise a variety of urban data, mostly GIS based. Data supports objectivity and transparency in **profiling neighbourhoods** to determine where the most disadvantaged children live; to support area-based interventions; and to galvanise children and stakeholder collaboration with maps and other data visualisations.

With monitoring and evaluation of **data and indicators** on how the built environment, land use and spatial distribution affects children's well-being, urban planners will gain credibility to integrate their tools into the design of policy and urban programming, and become key players in knowledge exchange and capacity building on child-responsive planning of cities. By using urban data in different stages, urban planners will also gain confidence and be informed to develop **area-based policies** that address the spatial component of urban inequity that the most disadvantaged children are exposed to.

Making evidence-based and people-centred decisions requires technical expertise, but also contextual knowledge by children and communities themselves. Self-assessment tools, public hearings and grievance mechanisms are platforms for children to offer critical input and help to set agendas for change. Public and political support for change is more likely when data is used effectively. Innovation enhances better evidence gathering, risk-preparedness and participation in decision-making with real-time modules and open data dashboards, from an ICT point of view (GIS, open data, online tools) and

from a social perspective (collective mapping, knowledge sharing, crowd sourcing).
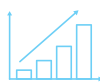
Urban situation analysis

An urban situation analysis compiles knowledge and resources, determines missing information and assesses the urban potential, the planning priorities and the stakeholders who shape child-responsive urban settings. The analysis summarizes a background of statistics and data that describes and defines the current context

as preparation and as input for planning. The situation analysis covers different urban scales, for example streets, neighbourhoods and the city itself, with a focus on one or more. Using tools such as audits, surveys and records of public hearings, the process is a collaboration between urban planners and communities to undertake the situation analysis and follow up with monitoring and evaluation. A child-responsive urban situation analysis contains the following elements:

- **Assessments with children and their community, in particular the most**

Figure 24: Methods for evidence-based and people-centred decision-making through data

Step 1	Step 2	Step 3
Urban situation analysis	**Monitoring and evaluation**	**Building accountability**
baseline	indicators	policy
self-assesments with children (audits, mapping, surveys)	physical characteristics of the urban setting (supply, proximity)	child-led public hearings and participation mechanisms
expert assesment (space scales, proces capacities, data)	outcome characteristics (use, access) and output characteristics (commitment)	child-led public observatories and grievance mechanisms
priority map for children's benefits (risks, opportunities)	impact on children characteristics (benefits of health, safety, citizenship, environment, prosperity)	child-focused agendas (research, capacities, political)
profile	measure	progress

20 working children from Dhaka and Barisal, Bangladesh, took part in a UNICEF-organized photography training workshop. The five-day training course introduced them to basic photography concepts and techniques. Once the training was complete, the children returned to the slum areas and drop-in centres they call home. Each was armed with a digital camera, new found journalistic skills and a determination to give viewers a glimpse into their daily reality – so often ignored or misunderstood

marginalised, using self-assessment tools, quantitative interviews and other techniques to gather data and opinions on all components of urban settings in terms of the spatial morphology, functionality and more general urban issues. The urban planner prepares and assists the community to formulate accurate input and synthesize struggles and strengths;

- **An expert urban situation diagnosis by the urban planner,** based on new or existing profiling tools:

  ○ *Spatial, functional and socio-economic analysis*, using child-specific data (household

surveys, administrative data, GIS data);

  ○ *Stakeholder analysis*, to identify constituents who represent children or have similar needs to children, who can support urban planning in terms of knowledge and resources. Urban planners will invest in the participation of these stakeholders during the different stages of the planning process;

  ○ *Child-centred risk assessments*, with multi-hazard vulnerability mapping;

  ○ *Planning and investment capacity* of authorities and stakeholders on possible scales of intervention;

- **Priority maps about children**

  ○ *Area-based*: indicating neighbourhoods or communities with highest exposure to risks;

System-based: visualising the child-responsive interventions that improve the built environment (places, systems, networks) and strengthen capacity for intervention (governance, resources).[3]

Measuring for progress

It is important to monitor and evaluate urban planning interventions using a baseline as a reference to measure the target accomplishments. The monitoring and evaluation process, called Result Based Management, is based on a results-chain of inputs, activities, outputs, outcomes and impacts that measure elements of children's well-being. It can be used to evaluate the effectiveness of urban planning's impact on children. Collecting certain metrics can be complex. Working with children and communities, it is important to focus on metrics that can be collected easily, in collaboration or from available data and ICT platforms.

Metrics are also referred to as Key Performance Indicators (KPIs), often used in urban planning regulations, land use standards and city development plans. KPIs are used for different scales: the project level, the neighbourhood, the city. If working on the city scale, avoid measuring averages and look into intra-urban differences.

There are four categories of metrics which are useful to distinguish for child-responsive urban planning:

The Place Standard tool

The Place Standard tool is a simple framework to structure conversations about place, developed by the Scottish Government, NHS Health Scotland, and Architecture and Design Scotland' in order to create better places. It allows participants to think about the physical elements of a place (for example its buildings, spaces, and transport links) as well as the social aspects (for example whether people feel they have a say in decision-making). It can assess places that are well established, undergoing change, or are still being planned. The tool helps with self-assessments to identify population's priorities for a particular place – communities, the public sector, the third sector (voluntary and non-profit organizations), and the private sector. It can be used in different circumstances and for different purposes, but it allows people to work
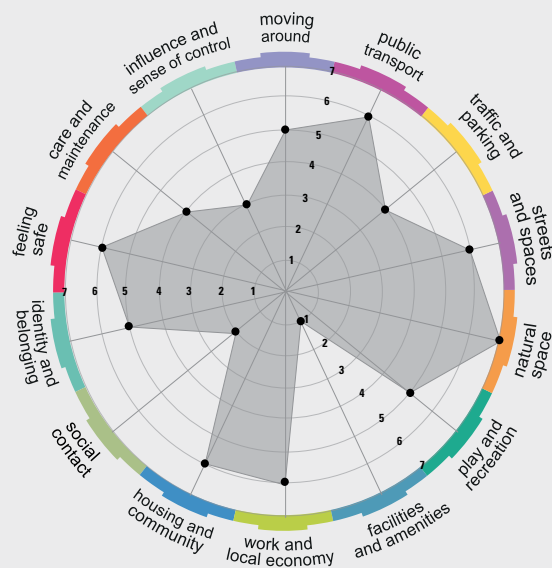
together productively and consistently across sectors and boundaries.

Profiling in UT section, Khayelitsha, Cape Town, South Africa

- **Functionality and quality-related indicators,** to measure qualitative and functional characteristics, such as the effective use of a place by children, the practical accessibility, the types of activities at different times (day, night, week day versus weekend). The indicators provide information beyond the quantitative, to reveal when a space or infrastructure is not or cannot be used, is unaffordable or poorly adapted for children and their community;

- **Impact-related indicators,** to measure how interventions affect children in terms of benefits over time. These indicators build evidence for why investing in child-responsive urban settings matters;

- **Process-related indicators,** to measure policy performance and the degree to which accountable stakeholders, in particular public authorities, have implemented activities to fulfil their commitment to child-responsive urban planning.

- **Physical and quantity-related indicators,** to measure quantitative characteristics to gather information on the proximity of child-responsive space and infrastructure (such as surface area, coverage, distribution);

To truly measure how child-responsive an urban setting or a planning process is, based on the Children's Rights and Urban Planning

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Data dashboards help cities improve Early Childhood Development [4]

A data dashboard is a tool that collates and disseminates data in an accessible format. A dashboard helps urban planners set policy priorities, monitor progress, encourage collaboration, inform decisions, increase accountability and strengthen children's voices.

The Open Data Institute and the Bernard van Leer Foundation have published a white paper to determine the characteristics of dashboards in order to be relevant and to be effective in improving early childhood development. Inspiring examples are analysed in terms of:

- Strategy: the purpose of data collection, the audience, the levels of access;

- Choice of indicators: the process of selection and targets related to indicators;

- The ease of design and maintenance;

- The need for leadership, culture and data literacy amongst the supporting team;

- The accordance to privacy laws and the clarity of guidelines.

principles, the indicators must be clearly defined and tangible: such as the amount of area of green and public space available per child, the proportion of children walking to school, the proportion of children who are victims of traffic accidents, and the proportion of infrastructural budget reserved for active transportation.

Building accountability

The better the quality of data, the more precise and effective policies can be. To maximize the value of data, urban planners can support children and their community in participation venues such as workshops or public hearings, to present their concerns and priorities supported by evidence. Urban planners should advocate for more participation opportunities, and support children's access to them. Based on the evidence of the benefits of specific urban planning investments for children and based on the existing gaps in knowledge, urban planners can also influence research agendas and political dynamics.

- Child-responsive **public hearings and participation mechanisms** are an opportunity for children and communities to express their opinion, to support them in their arguments, and to be prepared by preparatory workshops. Make sure participation is mandatory for interventions in the built environment, and pay attention to formats and timing.

- Child-responsive **public observatories and grievance mechanisms** are easily accessible, well communicated and feed into transparent, open data observatories, to collect city-wide data and make them accessible and useable, especially for and by children.

- Be involved in **setting the research and political agendas**. Be alert: follow new research, political cycles and professional conferences and influence the agenda with data and good practice.

Resources

Existing guidelines, tools and literature

- Compendium of best practices of Child Friendly Cities (National Institute of Urban Affairs)
- Cities Alive: Designing for Urban Childhoods (ARUP International Development)
- Urban95 Starter Kit (Bernard van Leer Foundation)
- Building Better Cities with Young Children and Families (8-80 Cities)
- How dashboards can help cities improve early childhood development (Open Data Institute)
- PASSA Youth – Participatory Approach for Safe Shelter and Settlements Awareness (International Federation of Red Cross and Red Crescent Societies/Habitat for Humanity)
- A Toolkit for Monitoring and Evaluating Children's Participation (Save the Children/UNICEF)
- Place Standard (Scotland Government)

- Active Design Guidelines (Center for Active Design)
- Active Design toolkit for Communities (Center for Active Design)
- Making sense of the city (World Vision International)
- Just Cities for Children: Voices from Urban Slums (World Vision International)
- Child-Centred Urban Resilience Framework (ARUP International Development/Plan International)
- Violence Prevention through Urban Upgrading Manual (VPUU)
- Urban context analysis toolkit (Stronger Cities Consortium)
- Urban stakeholder engagement and coordination (Stronger Cities Consortium)

- Habitat III, New Urban Agenda (UN-Habitat)
- Urban Planning for City Leaders (UN-Habitat)

Relevant networks and platforms

- Child Friendly Cities Initiative (UNICEF)
- European Network of Child Friendly Cities
- Child Friendly Smart Cities (National Institute of Urban Affairs)
- Urban95 Initiative (Bernard van Leer Foundation)
- Equity for Children (The New School)
- Children's Environments Research Group – CERG
- Know Your City (Slum Dwellers International)
- Cities Alliance

Children's Rights and Urban Planning Principles – Checklist

How can you invest in child-responsive urban planning, step by step?

■ Public institutions	● Private sector	⬡ Civil society	▲ Specialists

Area-based

1. Planning space for children and the community *(see page 51-54)*
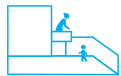
Step 1

Building and infrastructure regulations – building scale

Child-responsive norms and standards for buildings and infrastructure to meet quantitative requirements in terms of children's security, accessibility, safety and health.	Child-responsive design guidelines with qualitative recommendations for buildings and infrastructure to ensure better use, comfort and stimulation opportunities for children.	Child-responsive impact assessments in planning and design phases to ensure that the benefits for children are optimized and negative impacts minimized.
■ ● ⬡ ▲	■ ● ⬡ ▲	■ ● ⬡ ▲

Urban design and area-based community planning – neighbourhood scale

A neighbourhood action development plan for children that sets out priorities for urban places, systems and networks for children.	Urban design workshops with children and the neighbourhood community to ensure programmes will be multi-functional and strategic, based on universal design principles and the choice of well-located interventions.	Co-production initiatives set up with children to ensure they participate in design, execution and daily maintenance, linking infrastructure investments with daily use.
■ ● ⬡ ▲	■ ● ⬡ ▲	■ ● ⬡ ▲

Principle 1
Investments

Principle 2
Housing and Land Tenure
(see page 69)

Principle 3
Public Amenities
(see page 83)

Principle 4
Public Spaces
(see page 97)

Principle 5
Transportation Systems
(see page 109)
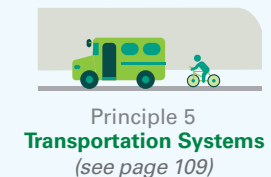
Land use planning – city scale

Child-responsive land use standards that are based on agreed norms and identified benefits for children, in terms of availability, accessibility and proximity of specific land use.

Child-responsive land use plans to ensure spaces are accessible by children or are safely disclosed.

Child-responsive building permit regulations to ensure that public and private development are considered from a children's perspective, on a human scale and with emphasis on collective spaces and social safety.

City development planning – city scale

An integrated city development strategy that identifies, supports and coordinates all urban systems from a child's perspective.

An urban resiliency plan to ensure that communities and in particular children are resilient and risk-prepared, by integrating knowledge on natural and other risks for children and ensuring training and communication.

A child-responsive implementation strategy that foresees financial investments, city-wide coordination and priority intervention areas (neighbourhoods).

Urban planning policy – multi-level scale

Legislative and institutional frameworks that address spatial equity for children and ensure coordination, modularity and flexibility for updates on institutional levels.

Land use and property registries that increase stability and accountability through ownership and provide a tax base for land value taxation and redistribution towards public investment in spaces for children.

Urban data observatories with collected data that is disaggregated by age, to enable measurement, evaluation and better decision-making for children.

Step 2

Step 3
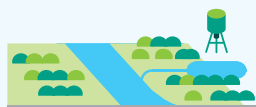
Principle 6
Integrated Urban Water and Sanitation Management Systems
(see page 123)

Principle 7
Food Systems
(see page 137)
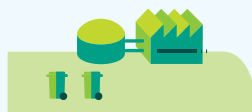
Principle 8
Waste Cycle Systems
(see page 149)
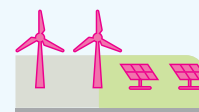
Principle 9
Energy Networks
(see page 161)
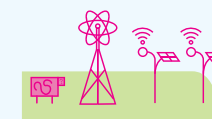
Principle 10
Data and ICT Networks
(see page 173)

How can you invest in child-responsive urban planning, step by step?

■ Public institutions	● Private sector	⬡ Civil society	▲ Specialists

Process-oriented
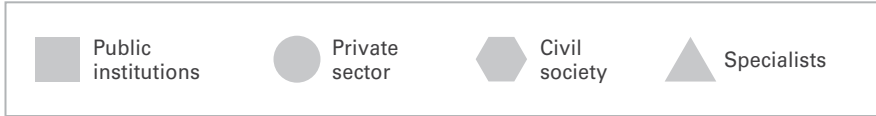
2. Designing the process with children and the community *(see page 55-56)*

Step 1

Stakeholder engagement and coalition building

Participation with children and their community first in stakeholders engagement, to understand the unique perspective children have regarding their environments, to highlight their priorities and to consider the solutions they propose.

■ ● ⬡ ▲

Engagement with other consituents with shared interest, to build coalition between local champions and children.

■ ● ⬡ ▲

Engagement with experts to assist in determining benefits for children, based on evidence and benchmarks.

■ ● ⬡ ▲

Step 2

Budgeting and mobilizing resources

Calculation of the required resources for projects with realistic objectives, possibly to be phased or grow incrementally from small and temporary, towards large and structural.

■ ● ⬡ ▲

Screening of financial resources from public and private origin; employment of appropriate financing methods for child-responsive urban development

■ ● ⬡ ▲

A cost-benefit analysis to show the cost-efficiency of urban planning in terms of costs of building and maintenance, and their return on investment in terms of benefits for children

■ ● ⬡ ▲

Step 3

Co-production for incremental change

Child-led pilots and interim projects that are low-cost, quick to build, test and evaluate with children and communities

■ ● ⬡ ▲

Child-focused communication to influence the public opinion and get media coverage, to ensure a broader audience will join the child-responsive agenda and call for structural change.

■ ● ⬡ ▲

Analyse outcomes of pilots in terms of benefits for children and their community, and use this evidence to determine recommendations for improvement and upscaling by the different stakeholders.

■ ● ⬡ ▲

Evidence use

3. Using evidence about children and the community *(see page 57-61)*

Step 1

Urban situation analysis

Self-assessments by children and their community, supported and prepared with urban planning experts.

An expert urban situation diagnosis, with a spatial, functional and socio-economic quickscan, a stakeholders analysis, child-centred risk assesment and a investment and capacity evaluation.

A priority map focusing on children's risks and priorities.

Step 2

Measuring for progress

Key Performance Indicators on quantity and availability of child-responsive urban places, systems and networks

Key Performance Indicators on functionality and quality of urban settings for children

Key Performance Indicators on impact for children (vulnerabilities, benefits)

Key Performance Indicators on process of implementation of child-responsive urban planning, urban programming and policy adoption

Step 3

Building accountability

Use and optimization of public hearings and participation mechanisms for children to express their opinions, making well-documented arguments and relevant proposals.

Make public observatories and grievance mechanisms easily accessible and supported by open data, so children can access and contribute to them.

Involvement in agenda settings in terms of research, political cycles and professional conferences with gathered knowledge, data and good practice on child-responsive urban planning.

To host the many Syrian refugees, 4 schools were built in Beirut, Lebanon, serving 17 Informal Tented Settlements that provide over 1,100 children with formal education, psychological support and basic numeracy and literacy. The IBATSEM playground was constructed after an extensive design consultation with the camp's children.

4 Localizing children's rights and urban planning principles

Why should we invest?
What should we plan?
How can we plan?
Resources

- Urban spaces
  - Principle 2 Housing and Land Tenure
  - Principle 3 Public Amenities
  - Principle 4 Public Spaces

- Urban systems
  - Principle 5 Transportation Systems
  - Principle 6 Integrated Urban Water and Sanitation Management Systems
  - Principle 7 Food Systems
  - Principle 8 Waste Cycle Systems

- Urban networks
  - Principle 9 Energy Networks
  - Principle 10 Data and ICT networks

Incremental housing Quinta Monroy, Iquique, Chile.
The multi-unit housing project reimagines afford-
able housing. Working under a strict budget, the
architects and families developed a unit configura-
tion that provided residents with the most essential
'half' of the housing unit, the remaining compo-
nents were incrementally expanded and custom-
ized by the residents themselves.

The home

" *More than one out of every three children in the developing world does not live in adequate housing.*[1]

Principle 2

Through urban planning, all cities should provide **affordable and adequate housing and secure land tenure** for children and the community, where they feel safe and secure to live, to sleep, to play and to learn.

Why should we invest?

Current challenges

Seventy per cent of urban land use is dedicated to housing; evidently, the provision of housing is a priority in addressing urbanization. The house is the space where children spend most of their time, especially as infants and toddlers.

Despite global efforts to reduce slum conditions and supply new housing at scale, slums across the globe have increased every year since 1990. In 2016,[2] 880 million people were estimated to live in inadequate urban housing in cities. While private sector investment in housing has been steady over the years, the investment has not translated into affordable housing for low-income households. The global affordable-housing gap is estimated at 330 million urban households and forecast to grow over 30 per cent to 440 million households, or 1.6 billion people by 2025.[3] The overall shortage of housing leads to overcrowding, homelessness, illness and even death.

In many countries, land registry systems or national urban policies are lacking: the presence of slums is usually not adressed, and its inhabitants are often denied access to basic services. Informal status and legal land tenure conflicts are major barriers to cities investing in appropriate housing, which force children to live in unhealthy and unsafe homes without proper space to play, learn or grow. The dangerous conditions of these homes affect children physically and emotionally, increasing

A woman walks with a child through the ruins of homes in a poor neighbourhood in Abuja. Homes for more prosperous people rise in the distance, while poor Nigerians are being relocated.

anxiety, sleeplessness and aggression.

Even if adequate housing is available, access and proximity to urban services is not always guaranteed. Many residential areas are single use and located in the urban peripheries, forcing caretakers to undertake long commutes, leaving children alone and unsupervised. In dense urban areas, typologies and unit sizes are not designed appropriately for families with children. In multi-family housing developments, the benefits of scale are not explored to provide family-friendly collective spaces to meet and play.

The benefits for children and their community

Adequate housing supports children to grow healthy and strong

- Well ventilated and naturally lit houses with quality floors, roofs and cladding and with access to clean water, energy and sanitation will provide a dry, bright and stimulating environment for children to live, play, study and socialize with their family, which can lead to improved health outcomes and a longer life span.[4]

- Mixed use housing and community social programmes (childcare, preschool) support children's cognitive and socio-emotional development.

Adequate housing ensures children are safe and risk-prepared

- Structurally sound, weather-proof and equipped houses reduce risks and ensure children live safely and are prepared to evacuate in case of emergency (from earthquakes and other natural disasters, fires, conflicts).

- Appropriately planned housing developments avoid natural disaster prone areas (floodplains, landslide risk zones), polluted land or territories that could expose residents to harmful activities (military targets, factories emitting dangerous chemicals).

Adequate housing enables citizenship of children

- Mixed use housing and community social programmes (childcare, preschool) foster cohesion and interaction between different ages.

- Housing that is centrally located or well connected via public transportation with central places in urban areas, enables children to be present and visible in all urban activities, which facilitates their involvement in decision-making and life skills training to become fully engaged citizens in their cities.

- Housing designed for all users ensures access by children with specific needs, but also other people like the elderly. Adequate housing allows residents to access their homes with a large degree of autonomy, but also to have access to public life and thus participate in their community.

Adequate housing ensures children live in a sustainable and climate-resilient environment

- Housing infrastructure can be carbon-neutral by using recycled and recyclable materials, building a tight building envelope and utilizing renewable or low energy use systems. Energy consumption can be compensated by small-scale individual and collective energy systems, powered by solar, wind and biomass energy.

- Green and efficient housing integrates water management by utilizing storm water and rainwater catchment systems, water reuse and delayed evacuation (green roofs, storage spaces, infiltration in un-built areas).

Adequate housing ensures prosperity for children and their community

- Security of tenure allows children and their families to live in one community without threat of eviction or loss of income-generating activities, leaving more time for children to stay in school, take up life skills training and enjoy community life; this can also increase opportunities for jobs, future income and expand their lifetime earning potential.

- Affordable housing allows children and their families to spend their income on improving health and well-being, by purchasing healthier foods containing higher amounts of fresh fruits and vegetables, primary care and necessary preventative medical expenditures.

What should we plan?

Definitions and concepts

Pallobi slum, Mirpur, Dhaka, Bangladesh

Programa Social e Ambiental dos Igarapés de Manaus, Prosamin, Amazonas, Brazil

Participatory Slum Upgrading Programme Majengo, Kenya

Acknowledge informal settlements and slums – Informal settlements are urban areas with one or more of the following characteristics: 1) poor structural quality of housing; 2) overcrowding; 3) inadequate access to water; 4) Inadequate access to sanitation and other infrastructure; and 5) insecure residential status.[5] Informal settlements tend to not have municipal services such as waste collection, schools and clinics within easy reach, or safe space for children to play and where the community can meet and socialize.[6] Slums are the most deprived and excluded form of informal settlements and are characterized by poverty and large agglomerations of dilapidated housing often located on hazardous urban land.

Plan for affordable housing – To be appropriate for very low- to moderate-income households, affordable housing is priced so households can meet other basic living costs of food, clothing, transport, medical care and education. 'Affordable' is often defined as a threshold of standard net monthly expenditures not exceeding 30 per cent of household income. As market rate housing is not affordable for the poor, many authorities have developed affordable housing policies, such as public housing construction, private housing finance systems and inclusionary housing schemes in private developments.

Ensure security of tenure – Security of tenure ensures that residents can invest in adequate housing, as a renter or home owner. It guarantees legal protection against forced evictions, harassment and other threats. Tenure could comprise of rental accommodation, cooperative housing, leased, owner occupied, emergency housing, and informal settlements including occupation of land or property.[7]

Yerwada slum upgrading, Pune, India

Affordable housing in Bukit Batok, Singapore

Tulou Housing, Guanghzou, China

Support community-led slum upgrading
– This approach is often recognised as the most financially and socially appropriate option to address challenges of existing slums. It is integrated with city level and country policies with physical, social, economic and institutional components, ensuring land rights, housing and public amenities, micro-financing and local upgrading. Relocation only happens if there are serious and verified environmental or safety concerns.

Support affordable rental housing policies – The support of rental housing markets is an effective strategy for authorities to meet population's housing needs by offering: subsidies to renters; financial guarantees to developers and owners; and improving legal and contractual frameworks that support the rights of tenants and landlords and avoid bias against women or minority groups. Rental possibilities can also be hybrid, eventually leading to ownership over time.

Support collective housing schemes – To accelerate and scale-up appropriate and affordable housing, innovative programming, design, construction and financing of collective housing responds to the economic reality of limited public financing and the needs of populations, with examples such as incremental housing, transit and post-disaster housing, cooperatives and community land trusts.

Promising practices

Baan Mankong programme, Thailand

The Baan Mankong Community Upgrading Programme addresses affordable and adequate housing problems. The initiative improves the lives of those who reside in informal settlements by bringing their voices to the forefront of the development process. It puts poor communities at the centre of decision-making, allowing local beneficiaries to plan every step of the slum-upgrading programme. Government funds are directed to the community boards and individual families, promoting land security and improved housing for residents of Thailand's informal settlements. The initiative benefits local children by allowing them to enjoy improved living accommodations and live in a stronger, more cohesive community.

Incremental Housing Quinta Monroy, Iquique, Chile

Quinta Monroy reimagines affordable housing and preserves an existing community, based on a spatial approach to a multifamily housing arrangement. A team of architects and engineers protected the community's social and economic networks in a small city. Working under a strict budget, the firm was able to relocate nearly 100 families from a decades-old informal settlement to a middle-class standard housing complex. The architects and families developed a unit configuration that provided residents with the most essential 'half' of the housing unit; the remaining components were incrementally expanded and customized by the residents. After only one year, property values increased dramatically and residents reported the desire to stay and continue to improve their homes and strengthen their community.

Via Verde, Bronx, New York City, United States of America

Via Verde advances revitalization of the South Bronx. The mixed-income residential development incorporates urban agriculture into affordable housing practices. Via Verde brings together residents of varying income levels to engage in civic management in on-site community service programmes. The project promotes healthy lifestyles with educational initiatives such as a community garden club, exercise and nutrition lessons, and environment and recycling education. The development complex strengthens community engagement with social activities and an on-site food cooperative.

Supporting international frameworks

Right to adequate housing

International human rights law recognizes everyone's right to an adequate standard of living, including adequate housing. The right to adequate housing is also recognized in the Convention on the Rights of the Child. It has several dimensions:

Security of tenure, guaranteeing legal protection against forced evictions, harassment and other threats;

- Availability of services, materials, facilities, and infrastructure;

- Affordability, so other basic needs will not be threatened or compromised;

- Habitability, providing the occupants with adequate and healthy space;

- Accessibility to all, including disadvantaged and marginalized groups;

- Location, allowing access to employment, health care services, schools, childcare centre, and other social facilities, and ensuring distance from pollution sources and polluted sites;

- Cultural adequacy, respecting and taking into account the expression of cultural identity and diversity.[8]

More than 100 countries have recognized the right to adequate housing in their constitution and have translated it in to national legislation. Some have elaborated specific policies, institutional and regulatory frameworks that facilitate the production of housing.[9]

2030 Agenda for Sustainable Development

SDG 1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance

SDG 11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums

New Urban Agenda

Para 31. … commit to promote national, sub-national, and local housing policies that support the progressive realization of the right to adequate housing for all as a component of the right to an adequate standard of living, that address all forms of discrimination and violence, prevent arbitrary forced evictions, and that focus on the needs of the homeless, persons in vulnerable situations, low-income groups, and persons with disabilities, while enabling participation and engagement of communities and relevant stakeholders, in the planning and implementation of these policies including supporting the social production of habitat, according to national legislations and standards.

Para 32. … commit to promote the development of integrated and age- and gender-responsive housing policies and approaches across all sectors, in particular employment, education, healthcare, and social integration sectors, and at all levels of government, which incorporate the provision of adequate, affordable, accessible, resource efficient, safe, resilient, well-connected, and well-located housing, with special attention to the proximity factor and the strengthening of the spatial relationship with the rest of the urban fabric and the surrounding functional areas.

How should we plan?

Planning the space

Building and infrastructure regulations – building scale

- **Norms and standards for housing**, ensuring child-focused accessibility to housing and safety amenities for children and their families:
  - **on technical security:** to ensure stability, protection and evacuation of children (for example safe and solid pathways and handrails on balconies, external fire-exits and stairs), use of building materials and construction methods that are structurally sound and protect residents in case of emergency;
  - **on accessibility:** minimum of steps and stairs with maximum height of steps, maximal levelled access; availability of elevators for higher floor housing units; wide stairs, unlocked stairwells, doorways and passages clear of obstructions, wide enough for manoeuvres with strollers and wheel-chairs; provision of housing units for residents with disabilities in multi-unit residential buildings;
  - **on safety and health:** quality of flooring; mould controlling materials; safe access to drinking water, sanitation, electricity for every unit; cooking devices for every unit or in close proximity to every unit; minimal surfaces for units and rooms in units; natural ventilation and house screening;

access to adequate natural light for all living rooms; visible and attractive stairs to promote active use for vertical travelling of three floors or less.

- **Design guidelines** for housing, improving the use by children and their families:
  - **on comfort:** separate rooms for children with adequate natural light and ventilation, and if not possible, a common space to study and play; child-focused visibility and readability of spaces and lay-out of the building; direct access to views outdoors, green space or close proximity to safe public outdoor space for every housing unit;
  - **on multi-functionality:** modularity and flexibility of the building to allow easy and affordable modifications; collective amenities for children in the building (child care, play space, school, learning room, restrooms) mostly on ground floors to interact with the outdoor space, respecting cultural or local habits on privacy;
  - **on stimulation and physical activity:** space defined for physical activity and play; proportions and/or minimum provisions of large units for families in multi-unit housing buildings to attract families with children; grouping of large units together to improve interaction between families with

Arbor House, New York City, United States of America

children; location of large units for families with children on lower floors to ensure quick evacuation, passive supervision and proximity to ground floor amenities; reservation of a spacious lobby entrance to promote social interaction and locate them with direct orientation to playgrounds or playful spaces and collective amenities; secured space for parking bikes and other objects for active transportation; reserve community oriented amenities to enable gatherings and social interaction;

- **Impact assessments in planning and design phase** of housing development, for optimal benefits for and minimal negative impacts on children and their families.

Urban design and area-based community planning – neighbourhood scale

- A neighbourhood housing plan, to plan services and facilities that are essential for residential areas (playgrounds, youth centres, safe spaces for specific groups, schools, libraries, day-care, parks, access to sustainable transportation); to plan a more diverse housing stock, with different unit types, innovative typologies, units responding to specific demands such as transit housing for migrants or orphans;

- Child-led multi-unit housing upgrading workshops, to improve security, accessibility, safety, comfort, mixed use and physical activity in collective spaces.

Land use planning – city scale

- **Land use standards** to quantify the appropriate density of housing units based on agreed norms and identified needs (demographic previsions, proximity of public transit and services, geographical and patrimonial context).

- **Land use plans** that increase the supply and distribution of affordable housing for families with children, with good access to urban amenities and transport on a city-wide scale, situated in environmentally safe areas:
  - Reservation of **areas for housing or mixed use development** that maximize mixed use development, allowing the mix of affordable and regular housing, allowing the mix of residential with other urban activities such as public amenities, local economy and services;
  - Definition of **building heights** to support density in low-rise and mid-rise buildings
  - Definition of **exclusion areas** that exclude housing in polluted or risk prone areas and near harmful infrastructure (exposure to sound and air pollution, nearby transportation infrastructure, polluted sites, waste-sites, high voltage electricity, factories).

- **Building permit regulations** that ensure optimal supply and distribution of affordable housing for families with children, with access to urban amenities and transport in new private developments
  - **General urban rules** to produce and ensure affordable housing (bonus systems, perimeters for rent-regulated housing, inclusionary housing schemes);
  - **Specific master plans and allotment plans** with detailed density coefficients, the location and proportions of large units for families with children in new large-scale private developments; maximize safe, accessible outdoor space and recreation amenities.

Growing Up: Planning for children in vertical communities, Toronto, Canada
In many cities, vertical communities are the predominant housing type to accommodate a growing urban population. Toronto has developed city-wide guidelines for new multi-unit residential buildings to meet the needs of a diversity of households, in particular those with children. The guidelines are organized in three scales – the neighbourhood, the building and the unit – based on the recognition that each positively contributes to how a family experiences living in vertical communities.

Growing Up, Toronto, Canada

City development planning – city scale

- **City-wide housing strategy** to provide housing based on demographic growth estimates and adequate housing principles, including city-wide slum upgrading programmes, affordable housing programmes and urban expansion planning, well aligned with transit-oriented development principles and consideration of livability, to avoid urban sprawl, unplanned settlements and overcrowding;

- **Support of local public housing development agencies** for land acquisition, construction and management for affordable housing that is family-friendly and child-responsive;

- **Support of cooperative housing associations** in technical and legal procedure to have access to land (lease or acquisition), to build and to manage collective housing schemes, such as community land trust, condominiums.

Urban planning policy – multi-level scale

- Create and revise **legislation and frameworks to support slum upgrading and affordable housing with priority access for (families with) children**, like land registries, long term land leases, access to rental credits for families to rent, to achieve home ownership or install home improvements;

- Support **inclusive housing policies for specific groups:** for migrants (transit or temporary housing), unaccompanied minors, large families (larger units), households containing members with disabilities (universally accessible units). Avoid exclusionary zoning, excluding certain types of land uses from a given community;

- Refine and enforce **land use regulations that ensure affordable land prices** such as Transfer of Development Rights, special assessment districts, mixed use development, cross-subsidy schemes, and land pooling;

- **Housing observatories** with disaggregated data and geographic information system (GIS) – maps on quantity, quality, density and stock of affordable housing accessible for children and their families.

SOS Children's Village, Tadjoura, Djibouti

Designing the process

Stakeholder engagement and coalition building

- Ask children and communities to engage in **assessments about their houses and neighbourhoods**, to identify safety and accessibility issues. Particularly in slum areas, assessments on risk-awareness are important to undertake community-led slum upgrading and resettlement initiatives;

- Engage with constituents with shared interests, such as **self-help landlords, cooperative housing organizations and the elderly**, to form common objectives in the process of land acquisition, financial and technical resources for building and upgrading.

- Engage with **slum dwellers associations and social workers** to understand how many and where homeless children live, identify root causes and find solutions.

Budgeting and mobilizing resources

- Support **housing finance programmes for low-income groups on the rental and buyer market**, for new housing or improvement, with government housing subsidies, not only for basic housing needs but also for cost-saving energy-efficient systems and technologies;

- Support **loan instruments that give credit to the poor** for housing, services, and business development, with low transaction costs, for new construction or improvement;

- Engage through **public-private partnerships with the real estate sector** to build child-responsive housing units and inclusionary housing mixed developments with priority access for children.

Co-production for incremental change

- Support **self-build community groups and citizens to plan and build collective housing schemes**, that focus on child-responsive and family-friendly living;

- Organize **child-centred activities in housing areas**, to improve the use of collective space, to exchange and share toys and play devices;

- **Make recommendations to public authorities, housing owners and landlords on easy improvements in housing**, describing benefits for children and projected outcomes, proposing low-cost interventions, such as replacing dirt floors with solid floors or installing insulation and ventilation.

PASSA Youth (Participatory Approach for Safe Shelter and Settlements Awareness) [10]

PASSA Youth is a participatory method of disaster risk reduction related to shelter and settlements safety, developed by the International Federation of Red Cross and Red Crescent Societies (IFRC), in collaboration with Habitat for Humanity. Supported with an online digital track, it recognizes the role of youth as first responders and change-makers in their communities, particularly relating to urban violence prevention and social inclusion. It supports disaster-preparedness tools such as contingency plans at local and municipal levels for shelter safety improvement. PASSA Youth strengthens a 'software component'– namely knowledge and skills development within the community – and a 'hardware component' – leading to the physical improvement of housing and infrastructure.

Facilitated by volunteers, youth leaders develop awareness on shelter safety issues in their community, identify hazards and vulnerabilities, analyse causes, prioritize improvement strategies and make plans and implementation proposals. Throughout the process, a the PASSA Youth group is mentored by built environment specialists and digital mentors.

PASSA Youth training, Costa Rica

Using evidence

The comprehensive urban situation analysis should focus on housing and include all data on urban planning scales, stakeholders, resources and priorities:

- Conduct an institutional analysis to understand the **housing policy environment**;

- Assess current **housing needs**, projections of future needs and thresholds for different target groups;

- Analyse the **housing supply** in terms of provision of land and infrastructure;

- Evaluate **existing regulations** that impact the housing sector.

Measuring for progress

Progress with adequate housing for children and their families can be measured and evaluated by various indicators, both objective and subjective. Some examples include:

- **Physical related indicators:** housing unit density per square kilometre; current and projected rates of urban and rural population growth; rate of slum growth, demographic demand disaggregated by vulnerable people and persons with special needs; proportion of housing by property type (owner occupied or rental, single, couple, family or multifamily occupant); proportion of quantitative housing deficit;

- **Functionality and quality related indicators:** proportion of adequate housing with flooring quality and ventilation insulation; proportion of 'improved' urban slum homes, as defined by measures for structural resilience, heat/cold resilience, access to safe drinking water and improved sanitation, electric lights, low-emissions, and efficient modes of heating/cooking with adequate ventilation; proportion of new and existing houses that are accessible for persons with disabilities (sufficient width doors, ramp);

- **Affordable housing indicators:** average ratio price-to-income; proportion of children who live in a household that spends less than 30 per cent of their equalized disposable income on housing; proportion of social, affordable, priority housing; capital availability and market penetration rates for the mortgage finance system (to low-income, less-creditworthy, and other marginal borrower groups); social housing and services available for special needs groups; social housing budget as a proportion of the total national government budget; types of subsidies available; availability of secondary mortgage markets and microcredit for housing;

- **Impact related indicators:** SDG 1.4.1 Proportion of population living in households with access to basic services; SDG 1.4.2 Proportion of total adult population with secure tenure rights to land, with legally recognized documentation and who perceive their rights to land as secure, by sex and by type of tenure; SDG 11.1.1 Proportion of urban population living in slums, informal settlements or inadequate housing; number of homeless per 100,000 population;

- **Process related indicators:** the coverage of neighbourhood upgrading programmes in low-income settlements; amount of approved physical plans for urban expansion to accommodate population; quantity of planned new housing; the existence and enforcement of a national housing policy; degree to which exclusionary housing policies are prohibited; agency budgets for homelessness and vulnerable groups; SDG 11.c.1 Proportion of financial support to the least developed countries that is allocated to the construction and retrofitting of sustainable, resilient and resource-efficient buildings utilizing local materials

Building accountability

- Help children and their community, in particular youth, **define and enforce land rights to include secure land tenure and property rights** in public hearings and political decision-making processes such as housing and urban development plan approval procedures, on local and national level;

- Support with geo-spatial mapping and the urban situation analysis **general and** **area-based knowledge about needs and demands of affordable and adequate housing** for families with children;

- Support **housing policy reforms and adjustments to current urban planning regulations** to create possible densification and housing supply strategies, on local and national level. Support research on the correlation between housing and impact on children, on affordable housing standards and rapid production mechanisms of community-led housing for families.

Resources

Existing guidelines, tools and literature

- Monitoring Security of Tenure in Cities (UN-Habitat)
- Designing a Land Records System for the Poor (UN-Habitat)
- Gendering Land Tools (UN-Habitat)
- What Land Means to Youth (UN-Habitat)
- Green Building Interventions for Social Housing (UN-Habitat)
- Policy Guide to Rental Housing in Developing Countries (UN-Habitat)
- Public-Private Partnership in Housing and Urban Development (UN-Habitat)
- Housing for All: The Challenges of Affordability, Accessibility and Sustainability (UN-Habitat)
- Designing and Implementing Street-Led Citywide Slum Upgrading Programmes: A training module companion (UN-Habitat)
- A Practical Guide to Designing, Planning, and Executing Citywide Slum Upgrading Programmes (UN-Habitat)
- Streets as Tools for Urban Transformation in Slums (UN-Habitat)
- Confronting the Urban Housing Crisis in the Global South (World Resource Institute)
- Affordable design for affordable housing (Centre for Active Design)

Relevant networks and platforms

- Participatory Slum Upgrading Programme (PSUP – UN-Habitat)
- Slum Dwellers International (SDI)
- Cities Alliance
- Centre for Affordable Housing Finance Africa (CHAF)
- Co-operative Housing International (COOP)
- International Housing and Planning Federation (IHPF)
- Centre for Active Design

Klong Toey Community
Lantern, Bangkok, Thailand

Public amenities

> *"There are 61 million children of primary school age who are out of school, 60 million of lower secondary school age and 142 million of upper secondary school age (2016).*[1]

Principle 3

Through urban planning, all cities should provide **infrastructure for health, education and social services** for children and the community, where they have access to thrive, to develop life skills and to meet.

Why should we invest?

Current challenges

Urbanization creates scarcity of urban land, which is mostly reserved for housing and economic demand. Without planning and specification of land use for public amenities such as schools and health centres, the development cost for land acquisition and construction is high and coverage tends to be unequal. When land is reserved, the way in which health centres, playgrounds and community centres are planned, designed and managed – as lighthouses in the community – is often overlooked. As schools and health clinics push beyond traditional academic and basic health delivery roles in urban settings, innovative programmes and infrastructures, within and without the parcel boundaries of the amenity, are more important.

The right to play is fundamental for a child's development. However playgrounds or places with toys are often missing in urban development. Access to early learning and pre-primary enrolment has grown in the past decade, but still 159 million children – over half of all three to six year olds – are missing out. These are the most marginalized children who need early learning the most.[12]

For older children, education is not only about the academic curriculum. It a place to learn and engage with civic development, to improve economic inclusion, social cohesion and environmental sustainability. The fast

An Afghan boy walks along a street of Lahore as he looks for garbage, Pakistan

cycles of economic transitions, globalization and innovation demand advanced and life-long learning, pushing the schools of the future to become platforms for economic progress, smart communities and urban change.

Children in poor neighbourhoods, slums and conflict-affected areas are isolated from urban services and experience daily exposure to urban violence, leading to many health and social problems. Limited or lack of access to public amenities such as schools, community centres and libraries reflects the indifference or absence

of public investment. It fosters disillusion and discontent, giving children the impression that there is no alternative to violence, often confronted with the choice to become a member of a gang or to never leave home.

Finally, with rapid urbanization and the magnitude of the refugee crises, cities are stressed to deliver public services. There are limited accurate population counts, and the current service delivery system is already under pressure. This creates tensions and xenophobia between the local population and newcomers.

The benefits for children and their community

Adequate infrastructure for urban services supports children to grow healthy and strong

- Well ventilated and naturally lit infrastructure with access to safe and clean water, energy and sanitation to provide a dry, bright and stimulating environment for children to live, play, study and socialize with their peers, caretakers and community, leads to better health and a longer life.

- Coverage of urban services on walking distances supports children's cognitive and socio-emotional development.

Adequate infrastructure for urban services ensures children are safe and risk-prepared

- Structurally sound, weather-proofed and equipped urban services reduce the risk for children to live safely and be prepared to evacuate safely in case of emergency (natural disasters, fires, conflicts).

- Well planned urban services will avoid areas prone to natural disaster (floodplains, landslide risk zones), polluted land or territories that could expose children to harmful activities (military targets, factories emitting dangerous chemicals).

- Access to adequate urban safety nets, such as child-care, playgrounds, safe spaces, after-school programmes or one-stop youth hubs, help keep children safe and help prevent children being left alone at home or on the street.

Adequate infrastructure for urban services enables citizenship of children

- Accessibility of urban services in walking distance or well connected via public transportation, fosters cohesion and interaction between different ages.

- Urban services that are centrally located in neighbourhoods enable children to be present and visible in all urban activities, which facilitates children's participation and their involvement in decisions.

- Urban services designed for all users ensure access by children with special needs, but also other people such as the elderly.

- When schools, libraries and other public amenities are strategically located, there is a negative correlation with crime.[13]

Adequate infrastructure for urban services that ensures children live in a sustainable and climate-resilient environment

- Urban services can be carbon-neutral by using recycled and recyclable materials, building a tight building envelope and utilizing renewable or low energy use systems. Energy consumption can be compensated by individual on-site or collective neighbourhood energy systems, powered by solar, wind and biomass energy.

- Green and efficient urban services support integrated water management by utilizing storm water and rainwater catchment systems, water reuse and delayed evacuation (green roofs, storage spaces, infiltration in un-built areas).

Adequate infrastructure for urban services ensures prosperity for children and their communities

- Adequate urban services for advanced learning and life skills development, with access to energy, ICT and information, to ensure that children are skilled and have access to the labour market.

- Affordable urban services allow children and their families to spend their income on improving health and well-being.

What should we plan?

Definitions and concepts

Little Rock Early Childhood Development Centre in Kibera, Nairobi, Kenya

Provide early child care – Early child care is often an overlooked component of child development. Early child care providers are our children's first teachers, and play an integral role in systems of early childhood education. Professional caretakers work in centre-based care including day care, preschools and schools, or a home-based care.

Basketball in a closed school, Benghazi, Libya

Plan safe spaces for children – In crisis and post-crisis situations, children need educational equipment and materials for learning, social and recreational activities. UNICEF and other child-focused organizations provide safe spaces for children, sometimes in combination with psychosocial support for children who are emotionally distressed after conflict experience or tragedy.

Santo Domingo Savio Kindergarten, Medellin, Colombia

Support social urbanism – Dubbed as 'urban acupuncture', this type of participatory urban planning has been implemented mostly in existing informal areas and impoverished neighbourhoods in Europe and Latin-America, using spatial design and community involvement to provide answers to physical and social pressures. Focusing on small-scale types of social infrastructure at strategically chosen locations, it addresses urban challenges such as violence, poor education and severed social connectivity.[14]

Teenagers at Instituto Reciclar, during their training at the recycling factory in Sao Paulo, Brazil

Promote the cradle-to-career approach – Based on the belief that a child's success requires community strength, this approach complements educational assistance with programmes that address drug use, violent crime and chronic health issues. Educational programmes are administered in collaboration with non-profit organizations, foundations, businesses and government to break cycles of intergenerational poverty.

Promising practices

Youth Hub in Tacloban City, Philippines

The Youth Hub in Tacloban City offers a 'one stop shop' for adolescents to access health services and counselling support, sports, recreation, arts, workshops and trainings. Thirty per cent of the population in the area were aged 10 to 24 years old, but no adequate education or recreational facility existed to meet their needs. The Hub is two semi-permanent shipping containers with a health clinic, an office, workshop rooms, urban garden and the city's first skate park designed by local skaters and BMXers. It is a safe platform for social connection for children and youth, designed by hundreds of young people of Tacloban City who contributed artwork and murals and produced outdoor furniture and who landscaped the space.

Klong Toey Community Lantern, Bangkok, Thailand

Klong Toey Community Lantern is a community-driven space transformation project for children and their families living in typical slum districts of Bangkok, known by the maze of narrow walkways. After a year-long preparation period with workshops, interviews and group discussions involving community leaders, the design process integrated the community's specific needs, such as sheltered playgrounds and a well-lit communal area. The new space now offers a safer, more inspiring playground for children including basketball hoops, a stage for performances or public meetings, and walls for climbing. Also, by building the main construction in a simple, durable and repetitive design, the project enables the Klong Toey community to adapt the space with their evolving needs without compromising the initial purpose of the playground for children.

Farming Kindergarten, Dong Nai, Viet Nam

The Farming Kindergarten is a large pre-school located in a rapidly urbanizing neighbourhood in a historically agricultural country. Featuring a continuous green roof that provides food, green space, an extensive playground and outdoor learning environment for children, the kindergarten allows children to forge a close relationship with nature while also understanding the importance of sustainable education and design. In particular, the building harnesses innovative design to maximize the environmental and educational outcome for children. A triple-ring shape drawn with a single stroke creates the green roof, where children can plant vegetables for agricultural education, while also encircling three courtyards inside as safe playgrounds for children's physical and social activities. Additional architectural and mechanical sustainability methods include solar water heating and the recycling of wastewater from a nearby factory to irrigate greenery and flush toilets.

Youth Hub in Tacloban City, Philippines

Supporting international frameworks

Right to Health

The human right to health care means that hospitals, clinics, medication and doctor's services must be accessible, available, acceptable and of good quality for everyone, on an equitable basis, where and when needed. It is based on the following principles:

Universality: Everyone must have access to equal high-quality and comprehensive health care.

Equity: Resources and services must be distributed and accessed according to people's needs on the premise that "We get what we need and give what we can."

Accountability: The health care system must be accountable to the people it serves.

Transparency: The health care system must be open with regard to information, decision-making and management.

Participation: The health care system must enable meaningful public participation in all decisions affecting people's right to health care.

Right to Education

Education is both a human right in and of itself and an indispensable means of realizing other human rights. As an empowerment right, education is the primary vehicle by which economically and socially marginalized adults and children can lift themselves out of poverty and obtain the means to participate fully in their communities. Education in all its forms and at all levels shall exhibit the following interrelated and essential features: availability, accessibility, acceptability and adaptability.

2030 Agenda for Sustainable Development

SDG 1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance

SDG 3.8 Achieve universal health coverage

SDG 4.A Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all

New Urban Agenda

Para 34. … ensure ... access to sustainable basic physical and social infrastructure for all, without discrimination, including affordable serviced land, housing, modern and renewable energy, safe drinking water and sanitation, safe nutritious and adequate food, waste disposal, sustainable mobility, healthcare and family planning, education, culture, and information and communication technologies ... commit to ensure that these services are responsive to the rights and needs of ... children and youth ... and others that are in vulnerable situations

Para 56. ... to increase economic productivity by providing the labour force with access to income-earning opportunities, as well as the knowledge, skills and educational facilities that contribute to an innovative and competitive urban economy

How should we plan?

Planning the space

Building and infrastructure regulations – building scale

- **Norms and standards** for public amenities, ensuring child-focused accessibility and safety amenities for children and their families to public amenities:

  ○ **technical security:** to ensure stability, protection and evacuation of children (for example safe and solid pathway and handrails on balconies, external fire-exits and stairs), use of building materials and construction methods that are structurally sound and protect users in case of emergency;

  ○ **accessibility:** minimum number of steps and stairs with maximum height of steps, maximal levelled access; availability of elevators for higher floor spaces; wide stairs, unlocked stairwells, doorways and passages clear of obstructions, wide enough for manoeuvres with strollers and wheel-chairs;

  ○ **safety and health:** quality of flooring; mould controlling materials; safe access to drinking water, sanitation, electricity; minimal surfaces for public rooms; natural ventilation and screening; adequate natural light for all public rooms; visible and

Accessibility for children with disabilities, India

attractive stairs to promote active use for vertical travelling of three floors or less.

- **Design guidelines** for public amenities, improving the use by children and their families:

  ○ **comfort:** child-focused visibility and readability of spaces and lay-out of the building; direct access to views outdoors, green space or close proximity to safe public outdoor space;

  ○ **multi-functionality:** modularity and flexibility of the building to allow

easy and affordable modifications; hybrid programmes to increase public accessibility 24/7; multi-generational programmes to foster interaction and shared benefits for different age groups;

  ○ **stimulation and physical activity:** defined space for physical activity and play; spacious lobby entrance to promote social interaction, oriented to playgrounds or playful space and collective amenities; secured space for parking bicycles and other such transportation; community-oriented amenities that enable gatherings and social interaction indoors and in the public space outdoors (courtyards, gardens, terraces, rooftops, squares).

School for Girls, Schu'fat refugee camps, Jerusalem

Urban design and area-based community planning – neighbourhood scale

- **A neighbourhood social infrastructure plan:** to determine what innovative amenities can be contextually embedded in the infrastructure of public services such as health facilities, schools and social safety spaces. This fixed infrastructure can be complemented with mobile centres to increase coverage in the short term. Examples:

  ○ Hybrid, one-stop civic centres where children play and study, social and cultural events take place, the community gathers for information and to share opinions on issues such as health and nutrition;

  ○ Child care centres combined with multi-generation programmes that allow caretakers to go to work and know their children are in safe hands;

  ○ Learning and co-working spaces for children and youth that foster knowledge exchange and collaboration;

  ○ Urban farms, maker spaces, "FabLabs", recycle centres and repair-cafes where people can learn to make, recycle and repair products and optimize the use of resources.

- **Child-led public amenities workshops** to co-define programmes, influence design and management, improve security, accessibility, safety and comfort;

Land use planning – city scale

- **Land use standards** to quantify public amenities at the city and neighbourhood level based on global standards, agreed norms, the local context and identified needs (population density, demographic previsions, proximity of public transit and services, geographical and patrimonial context).

  ○ **Minimum standards for supply and availability:** surface of building infrastructure and outdoor space per child/population density;

  ○ **Minimum standards to quantify effective accessibility and proximity:** proximity of public amenities, expressed in distance or in walking time for a child; differentiation of types of infrastructure for public amenities according to distances.

- **Land use plans** to protect and ensure effective supply, equal distribution and differentiation of public amenities for families with children, with access to active and public transport on a city-wide scale, situated in environmentally safe areas:

  ○ Reserve and delimitate areas for public amenities. Secondary programmes can be allowed if they do not hinder the primary function of the public amenity (housing, other public amenities, small commercial use and services);

  ○ Define **exclusion areas** that exclude public amenities in polluted or risk prone areas and near harmful infrastructure (sound and air pollution, polluted sites, waste-sites, high voltage electricity, factories).

- **Building permit regulations** that ensure optimal supply and distribution of infrastructure for public amenities in areas for mixed used development, that is well located, visible and accessible from outside;

  ○ **General urban rules** to produce and ensure public amenities in new or retrofitted private development (bonus systems, mandatory floor area for public amenities/total proportion development);

  ○ **Specific master plans and allotment plans** with detailed alignments and public amenities configuration in new large-scale private developments.

City development planning – city scale

- **City-wide public amenities strategy** to provide public amenities according to current needs and demographic growth provisions, well aligned with transit-oriented development principles and concerns of livability, and detailed in terms of priority areas of implementation;

- **Support of local public facilities agency** for land acquisition, construction and management of public amenities.

School Contracts, Brussels, Belgium

Urban planning policy – multi-level scale

- Create and revise **legislation and frameworks to support slum upgrading and public amenities programmes with priority access for children and their families** such as child-care, schools, safe spaces for children, health care;

- Refine and enforce **land use regulations that ensure affordable land prices for public amenities** such as Transfer of Development Rights, special assessment districts, mixed use development, cross-subsidy schemes, and land pooling;

- **Public amenities observatories** with disaggregated data and GIS-maps on quantity, quality, density and the gap between offer and demand for public amenities for children and their families.

Designing the process

Stakeholder engagement and coalition building

- Ask children and communities to engage in **self-assessments about public amenities and the environment**, to identify problems in terms of safety and accessibility, to increase risk-awareness and ensure risk-preparedness;

- Engage with constituents with shared interests such as **the elderly, community-based organizations and women's organizations** to formulate common objectives and needs in the process of availability of land, required resources for building or upgrading, administrative and technical support, daily management;

- Involve **child care, youth workers and other experts on health, education, child protection and social protection** to assist in determining benefits of public amenities for children in a rational way.

Budgeting and mobilizing resources

- Calculate the **required resources *for investments in infrastructure for public amenities for children*** to be integrated in urban development and upgrading programmes (in particular slum upgrading programmes);

- Screen **financial resources** from public and private origins (developers, communities, social impact bonds, project generated cash flows) and use appropriate financing methods (municipal investment planning, intergovernmental transfers, public land value optimization, developer exactions) for child-responsive urban development;

- Engage through **public-private partnerships with the real estate sector** to ensure public amenities for children in mixed developments.

Co-production for incremental change

- Support **self-build community groups and citizens to plan, build and manage public amenities** that focus on children;

- Organize **child-centred activities in neighbourhoods** to improve the use of collective space, to exchange and share toys and play devices;

- **Make recommendations to public authorities on easy improvements for public amenities**, proposing low-cost interventions, such as improving multi-functionality with secondary functions, or technical upgrades like access for children with disabilities, healthy and safe indoor environments (evacuation, solid floors, light, insulation, ventilation).

Kidogo early childhood care and education for children in urban slums, Kenya

Using evidence

Urban situation analysis

The comprehensive urban situation analysis should have a focus on public amenities for children and include all data on urban planning scales, stakeholders, resources and priorities. It combines the self-assessment capacity of children and the community with an expert diagnosis:

- The **spatial and functional coverage of public amenities** for children: health facilities, educational and life-skills training centres, safe spaces for children, child-care, libraries and community centres;

- Assess **social infrastructure demand** based on requests from the community, vulnerability of neighbourhoods, projection of future needs and thresholds for target groups among children and communities;

- Conduct **a stakeholder and institutional analysis** to determine the stakeholders, regulations, investment capacity environment;

- **A priority map on needs** for public amenities for children, based on demand and relevant existing standards and good practice.
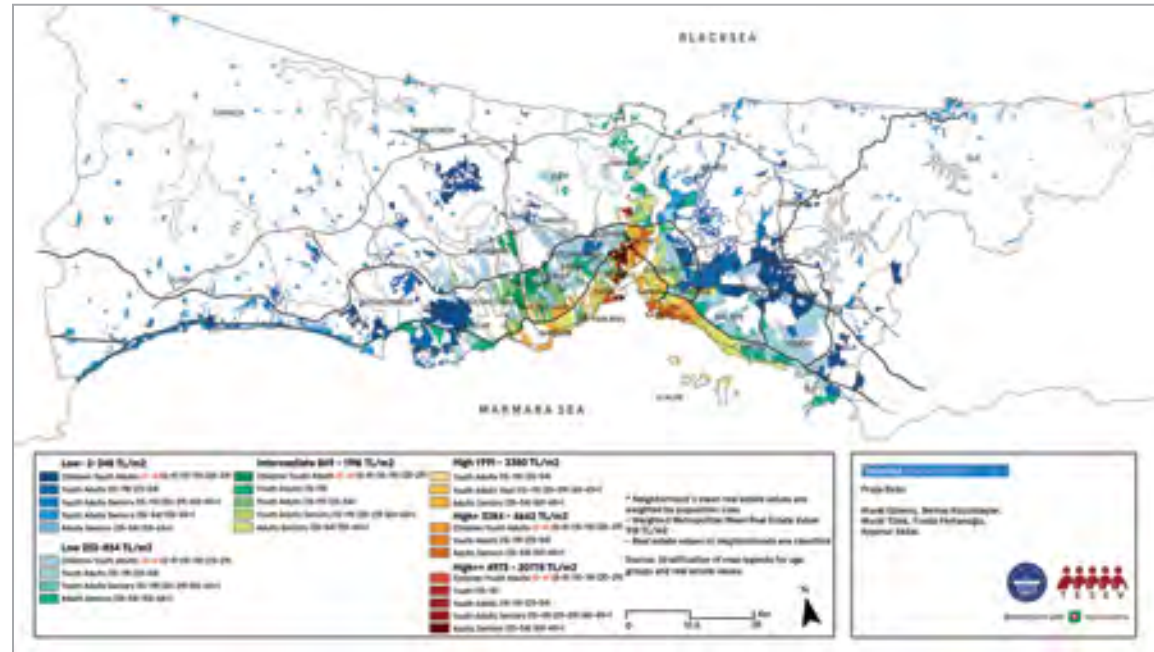
Interactive map that helps identify priority areas for investment in services for children, Istanbul, Turkey

Measuring for progress

Progress on access to public amenities/services for children and their families can be measured and evaluated with many types of indicators, objective and subjective ones. Some examples:

- **Physical related indicators:** number of amenities (disaggregated in health facilities/

schools/children and youth centres/libraries/ child care) per 100,000 population; proportion of children who have access to public amenities in walking or biking distance or reachable within a defined distance or a time;

- **Function and quality-related indicators:** proportion of public amenities accessible to children with disabilities; proportion of public amenities that are affordable; SDG 4.A.1 Proportion of schools with access to:

(a) electricity; (b) the Internet for pedagogical purposes; (c) computers for pedagogical purposes; (d) adapted infrastructure and materials for students with disabilities; e) basic drinking water; (f) single sex basic sanitation facilities; and (g) basic hand washing facilities (as per the WASH indicator definitions); proportion of public amenities with quality flooring, ventilation insulation, energy-efficiency; proportion of public amenities for children or the number of children exposed to ambient air pollution;

- **Impact related indicators:** SDG 1.4.1 Proportion of population living in households with access to basic services; proportion of children who attend or have access to child-care, primary health care, primary education, secondary education, advanced learning, libraries, community and youth centres;

reduction of assault-related injuries in the public space; increased safety of children when moving around the community;

- **Process related indicators:** SDG 3.8.1 Coverage of essential health services; area coverage of neighbourhood upgrading programme in low-income settlements; amount of approved physical plans for public amenities for children; the proportion of public financing for public amenities for children.

Building accountability

- Help children and their community **define programmes and enforce investments in public amenities for children** in public

hearings and political decision-making processes such as urban development plan approval procedures, on the local and national level;

- Support geo-spatial mapping and urban situation analysis of **general and area-based knowledge about needs and demands of public amenities** for families with children;

- Support **social policy, public financing and adjustments to current urban planning regulations** to accelerate supply of public amenities, on local and national level. Support research on the impact of public amenities on children, on new public amenities programmes, financing and management.

Resources

Existing guidelines, tools and literature

- Manual Child Friendly Schools (UNICEF)
- A Practical Guide for Developing Child Friendly Spaces (UNICEF)
- Making Schools Accessible to Children with Disabilities (UNICEF India)
- Forthcoming Accessibility Toolkit (UNICEF)
- Designing and Implementing Street-Led Citywide Slum Upgrading Programmes: A training module companion (UN-Habitat)
- A Practical Guide to Designing, Planning, and Executing Citywide Slum Upgrading Programmes (UN-Habitat)
- Active Design. Playbook for Early Childhood Settings (New York City Health Department)

Relevant networks and platforms

- Global Partnership for Education (UNICEF, UNESCO, World Bank)
- Education Cannot Wait (UNICEF, UNHCR, UNESCO)
- Participatory Slum Upgrading Programme – PSUP (UN-Habitat)
- Global Network of Learning Cities (UNESCO)
- Slum Dwellers International (SDI)
- Cities Alliance
- Centre for Active Design

New playgrounds in a square previously used as a parking lot, Tirana, Albania

Playgrounds, squares and parks

> *Recent estimates show that physical inactivity, linked to poor walkability and lack of access to recreational areas, accounts for 3.3 per cent of global deaths.*[1]

Principle 4

Through urban planning, all cities should provide **safe and inclusive public and green spaces** for children and the community, where they can gather and engage in outdoor activities.

Why should we invest?

Current challenges

With urbanization comes greater population density and worse land scarcity. As built land has a higher land value than undeveloped land, land reservation for public space and green space is often lacking. Globally, the proportion of public space is decreasing.[16]

In slums, public space and green spaces hardly exist, as slums lack formal land registry systems to define land for building and for public space. As a result, children are forced to play in unhealthy and unsafe places, in remote, insecure areas along water banks and steep hills.

In planned urban areas, public space may be unsafe or unappealing, being reduced to a functional space, dominated by private motorized traffic or commercial activities. The surrounding buildings may lack mixed programmes on the ground floors or social control, exposing the public space to increased risk for physical and sexual harassment.

In cities that are unable to offer free access to public and green spaces, children end up in privatized spaces or at home, less able to connect with the community, congregate or socialize, unable to benefit from the opportunities of life in an urban setting or participate in decisions. In cities with central, healthy and safe public spaces, vulnerable groups of children, such as children with disabilities, may lack access.

A child stands in a small alleyway amid cold winter weather in the Shabbora refugee camp, near the city of Rafah, State of Palestine*

* The State of Palestine was accorded non-member observer State status in the United Nations effective 29 November 2012. Ref: General Assembly Resolution A/RES/67/19 adopted 29 November 2012.

The benefits for children and their community

Public and green spaces support children to grow healthy and strong

- Playgrounds and child-friendly public and green spaces enable the cognitive development of children.[17] The spaces create opportunities for interactive, bonding relationships between the child, the caretaker and the urban context.

- Public and green spaces increase physical activity with positive effects on health for all ages.[18]

- City-scale greening of the environment filters air pollution. Trees and vegetation reduce urban noise. Combined with water surfaces and pervious soil, green reduces urban heating (air humidity and temperature reduction) and risks of dehydration.[19]

Public spaces ensure children are safe and risk-prepared

- Well programmed public spaces attract children and others to undertake multiple activities during extended hours, increasing social control and safety.

- Well-lit public spaces are safe at night. Accurate public information and emergency devices are displayed as risk-preparedness measures.

- Combined with water surfaces and pervious soils, greening decreases the risks of flooding and drowning (buffering, water infiltration and flood speed reduction).

Public spaces enable citizenship of children

- Public spaces provide a place for children to freely express their opinions, participate in decision-making and learn about urban opportunities.

- Community-led public space projects create spaces that are accessible to all. They create and develop a sense of community and solidarity for citizens, as social spaces for individuals to meet and build their community.

- The public space network is often the backbone of cities, expressing the population's identity, culture and history. Green space networks introduce the natural environment into the city. They broaden children's horizons and respect for the public realm of the city and the value of nature.

Public spaces ensure children live in a sustainable and climate-resilient environment

- Green and public spaces have an environmental value to reduce pollution, regulate water flow, provide food and strengthen biodiversity.[20]

- Green and public space mitigate and temper extreme weather conditions, like droughts that can lead to food and water scarcity, and storms that can lead to flooding.

- Green areas reduce energy demand for air conditioners and heating.

Public spaces ensures prosperity for children and their community

- Green spaces and urban forests provide public health gains, reducing health care costs.[21] Public and green space fosters private investment in terms of local economies that depend on the quality of these spaces and the frequency and intensity of people passing by. They also generate revenue for governments, increasing revenues of surrounding property values and business activities.[22]

- By choosing to invest in public spaces in poorer urban areas, authorities address inequity.

- Green space reduces costs in healthcare, waste water facilities, building energy and CO_2 sequestration.

What should we plan?

Definitions and concepts

Pedestrianised street, Mitrovica, Kosovo

Plan public space – There are three types of public space: 1) space connected with mobility such as streets, squares and plazas, passages and other publicly-owned spaces; 2) space connected with leisure and recreation activities such as parks and playgrounds and other publicly-own spaces 3) public buildings with access for all such as civic centres and public sport facilities.[23]

Flagey Square, Brussels, Belgium

Plan open spaces for children – Defined as the sum of the areas of the built-up areas of cities devoted to streets and boulevards– including walkways, sidewalks and bicycle lanes–and the areas devoted to public parks, public squares, recreational green areas, public playgrounds and open areas of public facilities.[24]

Playful space in Lake Park, Tirana, Albania

Plan green space – Defined as public and private open spaces in urban areas, primarily covered by vegetation, that are directly (e.g. active or passive recreation) or indirectly (e.g. positive influence on the urban environment) available for the user.[25]

Supporting international frameworks

Ermitaño Linear Park, San Juan City, Philippines

Develop green corridors – A concept that promotes a city-wide public and green space network strategy, composed of large green areas, linear parks and street greenery, integrated in a larger green and blue network plan for ecologic land preservation, better storm water management, regional bike paths and walkways, and urban agricultural land reservation.

Placemaking Program Corona Plaza Queens, New York City, United States of America

Support place making – An approach that improves a neighbourhood, city or region by inspiring people to collectively re-imagine and reinvent public space as the heart of every community, by strengthening the connection between people and the places they share. Place making is a collaborative process by which the public realm is shaped in order to maximize shared value.

2030 Agenda for Sustainable Development

SDG 11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities

SDG 16.1 Significantly reduce all forms of violence and related death rates everywhere

New Urban Agenda

Para 67. ... to promote the creation and maintenance of well-connected and well-distributed networks of open, multi-purpose, safe, inclusive, accessible, green, and quality public spaces to improve the resilience of cities to disasters and climate change, including reducing flood and drought risks and heat waves, improving food security and nutrition, physical and mental health, household and ambient air quality, reducing noise, and promoting attractive and liveable cities and human settlements and urban landscapes, prioritizing the conservation of endemic species

Promising practices

Kibera Public Space Project, Nairobi, Kenya

Violence Prevention through Urban Upgrading, (UPUU) Khayelitsha, Cape Town, South Africa

Playtime in Africa Initiative, Dzorwulu, Accra, Ghana

Located in one of the world's largest slums, the Kibera Public Space project offers a healthy, safe and playful environment for children, raising environmental awareness, decision-making and civic management. Watersheds are cleaned, river banks become places for play and community gatherings, and refuse is used as compost. The site houses a versatile pavilion, a park, a playground, a sanitation centre with a rainwater-fed water tap, a day care centre and a new bridge. Design-oriented experts work with the community, local contractors and newly created micro-enterprises to develop a set of interventions and installations. Local residents are involved throughout the project to learn about watershed issues, prepare proposals, and participate in the design process.

The initiative uses urban planning strategies to improve the quality of life of residents in low-income neighbourhoods. The programme aims to create sustainable neighbourhoods and promotes a safe environment for children that encourages them to participate in social and educational activities and build a stronger relationship with their community. Through partnerships with local community leaders, the VPUU project team created a platform for increased social interaction and control, particularly near playgrounds and educational facilities. There, through integration of locally generated community based information, co-production of urban planning strategies and social engagement in public sector interventions, the programme achieved a dramatic decrease in crime. By improving access to public spaces, enhancing lighting and visibility, setting up social and business centres along walkways, pedestrian traffic, community surveillance and social cohesion increased.

The Playtime in Africa Initiative brings child-oriented multi-functional outdoor and indoor spaces to Accra. The programme ensures a creative outlet for kids, where rapid urbanization deprived city residents of public green spaces. Playtime in Africa creates places for children to convene in a safe outdoor environment to play, learn and create. The initiative combines best practices from around the world and integrates them into local conditions to develop a strategy for child-focused places. Through a collaborative effort among Ghanaian-based professionals, local community members and international experts, the initiative developed strategies to convert a two-acre plot of land into an urban green space. The park serves as a learning centre for arts and crafts, literacy, gardening, science, as well as dance and theatre among other activities.

How should we plan?

Planning the space

Building and infrastructure regulations – building scale

- **Norms and standards for public and green spaces** ensuring child-focused security, access and safety:

  ○ **On technical security:** to ensure stability, for example, no potholes or trenches dangerous to children; protection, for example no deep water where children could drown; and ease of evacuation for children;

  ○ **On accessibility**: level pavement, clear of obstructions, wide enough for manoeuvres with strollers and wheel-chairs; accessible through safe routes, minimal distance, with a minimum of intersections;

  ○ **On safety and health**: child-focused visibility and readability, with priority for obstructing elements for public good, limiting permanent elements for private use (publicity).

Bicentennial Park, Recoleta, Santiago, Chile

- **Design guidelines** to improve the use of public and green spaces for children and their families:

  ○ **On comfort**: child-friendly shelter (shade), toilet facilities, seating at regular intervals and drinking fountains;

  ○ **On multi-functionality**: design and programmes for day and night use and for all seasons for all ages, with a variety of micro-climates, with public lighting on sidewalks and play areas to extend opportunities for physical activity during the evenings, with access to free potable water, electricity, Wi-Fi and open data for public good;

  ○ **On stimulation**: design elements and natural terrain to promote physical activity, discovery, adventure, imagination and risk-taking; public art installations.

- **Impact assessment in planning and design phases** of public and green spaces, for optimal benefits for and minimal negative impacts on children and their families.

Urban design and area-based community planning – neighbourhood scale

- **A neighbourhood public and green space plan** to provide more, safer and better-connected public and green spaces based on the identification of needs, potential threats and opportunities for unused spaces and better connections for children.

- **Place-making workshops** led by children from programme definition to design, execution and daily maintenance and operation, supported by ICT to improve online collaborate and visual interaction.

- **Recommendations for built spaces and enabling environments** around public and green spaces, with buildings that support spaces, improving economic activities and safety of the whole neighbourhood, with activities in adjacent buildings and lighting and access to ICT-networks in the public space.

Public Space Public Life Survey, Chongqing, China

Land use planning – city scale

- **Land use standards** to quantify the public and green spaces at city and neighbourhood level based on global standards, agreed norms, the local context and identified needs (population density, demographic previsions, age group compositions, proximity of public transit and services, geographical and patrimonial context):

  ○ **Minimum standards for supply and availability**: surface of playgrounds, public space and green space per child or per built environment area; surface of green space, playgrounds, sports areas and other public open spaces for daily needs/total city area;

  > **Minimum standards for quantity of surface**
  >
  > WHO recommends that urban areas provide 9 square metres of green space per person.
  >
  > The Rotterdam Child-Friendly City suggests following standards:
  >
  > - A pavement suitable for playing is three to five metres (10 to 16 feet) wide on at least one side of the street, preferably on the sunny side of the road.
  > - Sports and play areas, minimum 5,000 square metres for each demarcated residential zone larger than 15 hectares. In blocks covering less than 15 hectares, a single combined sports and play area minimum 1,000 square metres;
  > - A second sports and play area of at least 1,000 square metres within 300 metres of the central sports and play area.

Privately Owned Public Space, Paley Park, New York City, United States of America

  ○ **Minimum standards to quantify effective accessibility and proximity**: proximity of playgrounds, public space and green space, expressed in distance or in walking time for a child; differentiation of surfaces and prime functionality according to distances.

- **Land use plans** to protect and ensure effective supply, equal distribution and differentiation in typologies and primary uses on different scales:

  ○ **Zoning plans** that delimitate green areas, public parks, recreational zones, natural areas, agricultural and other protected areas. These zones are part of a public and green space network, or form the limits of urban areas;

  ○ **Alignment plans** that delimitate building alignments and define public land exclusively for green space or for

streets that are child-responsive public spaces (see page 109 Principle 5 on urban transportation systems);

  ○ **Protection plans** to guarantee safety and protection for children from dangerous places such as polluted sites, waste sites, high voltage electricity and dangerous water areas.

- **Building permit regulations** that increase the supply, equal distribution and differentiation in typologies and primary public uses on different scales in new private developments:

  ○ **General urban rules** to produce and ensure publicly accessible open spaces in new private developments;

  ○ **Specific master plans and allotment plans** with detailed alignments and open space typologies in new large-scale private developments.

> **Some minimum standards for playgrounds**
>
> Certain standards guide the required size of playgrounds for children, taking into account age groups and capacities for independent mobility.
>
> Guidelines used in urban planning estimate the area be designated for playgrounds in new developments:
>
> - Three per cent of all the surface for the neighbourhood
> - Surface needed formal playgrounds = housing units x 10 m2

City development planning – city scale

- **Public spaces and green network plans** that comprehensively cover and extend continuously throughout the city, including the valorisation of eco-systems;

- **Greening strategies for open space** to reduce heat island effects, maximize soil permeability and increase climate resilience in general;

- **Local public agency for public space** that ensures implementation in terms of acquisition, planning and management, including the development of a municipal playground plan.

Extension Plan Nino-Prampram, Accra, Ghana

Minimum standards for green spaces[26]

The United Kingdom Natural Greenspace Standard connects minimal surfaces of green spaces with distances:

- At least two hectares in size, no more than 300 metres linear distance (five minutes' walk) from home;

- At least one accessible 20 ha site within two kilometers of home;

- One accessible 100 ha site within five kilometers of home;

- One accessible 500 ha site within 10 kilometers of home; and

- A minimum of one ha of nature reserves per 1,000 population.

Urban planning policy – multi-level scale

- **Frameworks that enable acquisition and creation of land for public and green space by public and private actors**, including incentive mechanisms for private owners to participate in the creation and maintenance of open and public space (session of private land, bonus system and constituencies);

- **Coordination mechanisms for public space and green space policy to be integrated in other relevant policies,** such as transportation, environmental and health policies.

'Superilla' initiative to downgrade roads and offer space for green networks and play space, Barcelona, Spain

Designing the process

Stakeholder engagement and coalition building

- **Initiatives** to create places for daily use by children and their community, attracting them to participate as a family, a school or a youth organization in a familiar space;

- **Constituents who share an interest in public and green spaces** such as neighbourhood residents, the elderly, local business and environmentalists;

- **Constituents who advocate for the benefits of public and green space** such as public health specialists and child development specialists.

Budgeting and mobilizing resources

- **Municipal financing and budgeting**: allocate resources for open spaces or parks (acquisition, building, maintenance and daily management); generate municipal revenue from private use of public spaces (car parking fees in public space, publicity, concessions for commercial use); land value capture in proximity to public spaces;

- **Direct private financing and resources** – crowd-funding, conservancies and other community-led mechanisms;

- Integrate **public space projects into large infrastructure and urban development**

programmes, funded through national and international programmes;

- **A cost-benefit analysis on public and green spaces** in terms of costs of building and maintenance, and the return on investment in terms of benefits for children.

Co-production for incremental change

- **Transformative public space and green space co-productions** with children and families that focus on play and convening, such as playful urban furniture;

- **Child-centred activities in public and green spaces**: planting trees, gentle maintenance work, storytelling, concerts, sport and play competitions. Use events to gather opinions regarding the space;

- **Recommendations to public authorities on simple improvements in public and green spaces**.

Afghan peace volunteers plant trees in Habul, Afghanistan

Using evidence

Urban situation analysis

The comprehensive urban situation analysis should focus on public spaces and include data on the scares of urban planning, the stakeholders, potential resources and priorities:

- **Community-led assessments** that map public and green spaces, revealing deficits and opportunities, and collecting users' opinions and suggestions (i.e. children, parents, commerce owners, public authorities);

- **In-depth interviews with key stakeholders** to reveal possibilities and limitations in terms of public and green space planning instruments, capacities and resources;

- **A priority map on needs** of new or adapted public spaces, based on demand and existing standards and good practice.

Measuring for progress

The progress of establishing public and green space for children can be measured and evaluated with various objective and subjective indicators, for example:

- **Physical and quantity related indicators:** SDG 11.7.1 Average share of the built-up area

of cities that is open space for public use for all, by sex, age and persons with disabilities; green area (hectares) per 100,000 population; availability of public space, green space; playground surface per capita (or child); proportion of children with access to public space, green space or playgrounds within 300 metre distance; proportion of preserved areas/reservoirs/waterways/parks in relation to total land area; proportion of median tree coverage in relation to city area and child population size; number of trees per 100,000 population;

- **Functionality and quality related indicators:** children's usage patterns in parks at different times of the day and week; proportion of public space, green space and playgrounds with free access to water, public toilets, free Wi-Fi, average distance/time to travel on foot to a park or open space suitable for children to play;

- **Impact-related indicators:** SDG 11.7.2 Proportion of persons victim to physical or sexual harassment, by sex, age, disability status and place of occurrence, in the previous 12 months; proportion of users of specific public spaces who report the space is safe; health outcomes on physical activity;

- **Process-related indicators:** proportion of municipal budget dedicated to public space and green space acquisition, building, maintenance and daily management; process of implementation of public and green space policy.

Building accountability

- Organize **public hearings close to, or at the public space** to provide access to all and to share a common perception and evaluation of the space and proposals for change;

- Centralize opinions and surveys of children on public spaces in **publicly accessible observatories**, posted online or on boards centrally located in the community;

- Make **grievance mechanisms on public and green space accessible to children** to address concerns in terms of accessibility, use, safety and comfort.

WHAT MAKES A GREAT PLACE?

Healthy Places Audit, Project Public Spaces

Resources

Existing guidelines, tools and literature

- Global Public Space Toolkit (UN-Habitat)
- Block by Block Program (Minecraft/UN-Habitat)
- Habitat III Issue paper 11 on public space (Habitat III)
- CABE Space Shaper Guide (CABE)
- Streets as Public Spaces and Drivers of Urban Prosperity (UN-Habitat)
- Public Space Public Life Strategies (PSPL) (Gehl Architects)
- Place making 101, The Place Diagram, Healthy Places Audit (Project for Public Spaces)
- Guidelines on urban and peri-urban forestry (FAO)
- UK Accessible Green Standard (UK)
- Green Space Strategy (CABE)
- Tactical Urbanist's Guide to materials and design (Street Plans Collaborative)
- Public Space Policy Framework (UCLG)
- Urban Green Spaces and Health, a review of evidence (WHO)
- City at eye level (STIPO)

Relevant networks and platforms

- Urban95 Initiative (Bernard van Leer Foundation)
- Project for Public Spaces (PPS)
- Good practice playgrounds and playful spaces policy (City of Play)

Ciclovía is an official programme promoted by the City Government Bogotá since 1976 and has inspired many other cities to block off main streets to cars during weekends and holidays. It gives an opportunity to enjoy and practice walking, running or biking and provides space for various performances and recreational activities, Colombia.

Streets and public transit

> " *Every day around the world more than 3,000 children and adolescents – a toll equivalent to the student population of two large schools – suffer a road traffic death or serious injury.*[1]

Principle 5

Through urban planning, all cities should develop **active transportation and public transit systems and ensure independent mobility** for children and their community, so they have equal and safe access to all services and opportunities in their city.

Why should we invest?

Current challenges

Streets and mass transit constitute a large part of any urban infrastructure. Not only do roads ensure population mobility, they foster the local economy and prosperity in general. Between 30 and 35 per cent of a city's land area should be reserved for this essential urban backbone, in order to prioritise active and public transport.[2] With limited to no streets, slums are socially and economically weak and disconnected from the rest of urban areas. In planned city areas, the street space may be unequally distributed or designed in favour of active and public transportation, the modes of mobility children and their families depend on.

In many countries, streets are dominated by cars and other private transport. The unequal distribution of space and weak transportation policies in general impede children and their families of safe and healthy access to their neighbourhood and the wider city area. As long as motorized transport is fossil fuelled, urban settings, and in particular street canyons, concentrate air and sound pollution, often causing severe health issues for children. The numbers of child-related traffic fatalities and casualties, especially of adolescents, are high, caused by dangerous driving behaviour, poor street design, and lack of basic infrastructure and traffic safety requirements such as walkways, pedestrian crossings and street lights.[3] Recent estimates also show that physical inactivity, linked to poor walkability and

Air pollution and inaccessibility along a main transportation road to the city, Lagos, Nigeria

lack of access to recreational areas, accounts for 3 per cent of global deaths.[4]

Unsafe and unhealthy transportation options and street design has impeded children's independent mobility, as children must be driven by adults or kept at home. A lack of public transportation also cuts off the urban poor, limiting access to the urban social and economic infrastructure such as schools, libraries, work, businesses, parks and recreational activities. The increased amount of time required to navigate inefficient modes of transportation raises the odds of children being left alone at home or in the streets, and they are therefore more prone to violence and dropping out of school, disconnected from social services and urban participation.

The benefits for children and their community

Sustainable transportation systems support a child to grow healthy and strong

- Streets that are designed for active mobility encourage a child's physical activity and reduces obesity and other heart-related disease.

- Urban mobility policies that support low- and clean-energy transportation improve air quality in street canyons, lowering the threat of respiratory disease and cancer.[5]

Sustainable transportation systems ensure children are safe and risk-prepared

- A safe-system approach to road safety, with infrastructure design that priorities active transportation on safety campaigns and law enforcement, will decrease road traffic injuries.

- A greater pedestrian population on the streets generates more human interaction, increasing social control and diminishing rates of harassment and violence.

Sustainable transportation systems enable citizenship of children

- Cities that dedicate space for bike paths and public transport in the streets or underground, increase the performance and reliability of city-wide transportation, and offer better access for all to access urban opportunities.

- A network of active transportation and a network of transit stops support independent mobility of children, to build greater initiatives for freedom of movement and the opportunity to evaluate risks.

Sustainable transportation systems ensure children live in a sustainable environment

- Cities that invest in active and green public transport decrease air, water and soil pollution, resulting in better environmental protection.

- Investments in active and green public transport are strategies to reduce the release of greenhouse gas emissions, to mitigate climate change and to reduce environmental risks

Sustainable transportation systems ensure prosperity and well-being of children

- Compact, walkable cities have more pedestrians in streets that generate economic prosperity of the local businesses and on the ground floors of buildings.[6]

- With less traffic casualties, urban families are less at risk of injury and the subsequent cost of illness, revalidation and lost work.

- Cities that invest in multiple modes of transportation increase equitable access to employment, schools and other urban amenities.[7]

What should we plan?

Definitions and concepts

Priority investments for biking and walking, Fortaleza, Brazil

Fast and accessible Bus Rapid Transit, Curitiba, Brazil

Priority for walking and biking in the eco-quartier Vauban, Freiburg, Germany

Plan for non-motorized transport – Also known as 'active transportation' or 'human transportation', non-motorized transport includes walking and biking or other small-wheeled transport, attractive for relatively short distances. Children, in particular, but also citizens who can't afford other means of transport, rely on safe infrastructure for non-motorized transport.

Plan for public transport – Also known as public transportation transit or 'mass transit', public transport is various modes of transport available to the public and operated by a public entity. The range of informal, shared transportation systems is great – including tuk tuks and collective taxis – and includes innovative usage of traditional infrastructure such as escalators, cable cars, bus rapid transit, streetcars and light-rail. Technological developments improve shared transport systems and develop integrated multi-modal transport systems.

Promote children's independent mobility – A child's independent mobility relies on the available active transportation behaviours that promote health and activity, and are opportunities to develop skills, habits, and confidence for a life of participation in independent travel. A child's degree of independence will depend on his or her age, cognitive capacity and education, and may still require guidance from parents, caretakers or peers.

The Liuyun Xiaoqu residential building increased street connectivity after removing parking and making alleys publicly accessible, Guangzhou, China

Improving road safety through street design, Addis Ababa, Ethiopia

Improve street connectivity – 'Street connectivity' is the term describing the density of a street network's connections and direct links in a city. A well-connected street network has many short links, numerous intersections and minimal dead ends. Children depend on street connectivity as it's also a proxy for walkability. With better street connectivity, travel distances decrease, with more route options and travel modes – this improves health and access to basic services and increases productivity.[8]

Improve walkability and road safety for children – This is a measure of how friendly an area is for walking, analyzing the presence or absence and quality of footpaths, sidewalks or other pedestrian rights-of-way, traffic and road conditions, land use patterns, building accessibility and safety, among others. Walkability is an important concept in sustainable city planning, but is also mentioned in literature around health and urban economy.[9] [10]

Promising practices

Calle 107, Medellin, Bogota

'Calle 107' advances the Columbian city Medellin's revival that happened with inclusive urban planning, dubbed as 'social urbanism'. In the last 25 years, the city transformed from the world's most dangerous city to among the most inclusive. The city's success is based on an inclusive approach to urban development that targetted social issues such as urban violence and poverty with public space programmes and infrastructure investments. The approach improved social equity. The traffic-oriented street was converted into a lively and pedestrian-friendly promenade. In combination with a cable car that connected a densely-populated neighbourhood, the street became the spine of a lively area with upgraded public spaces, street lighting and an increase in commercial and social activities.

Temporary car-free events, India

Heavy traffic and overcrowded urban areas have paralyzed global cities for decades, leaving no room for people to engage with their cities. Raahgiri Day is a multi-city initiative returning streets to residents, and thereby giving residents access to public space to convene and celebrate urban life. Every week, participating Indian cities convert the main roads into pedestrian-only promenades that allow for residents to spend the day outside relaxing or engaging in biking, running, dancing, yoga, open theatre performances and other activities.

Programa de Proteção à Vida, Sao Paulo, Brazil

Road accidents are the tenth leading cause of death globally, but traffic fatalities are often preventable. The 'Programa de Proteção à Vida' is Sao Paulo's response to the UN Global Plan for the Decade of Road Safety. The programme targets pedestrian safety issues through legislative measures and innovative street design, such as lowering speed limits and the reconfiguration of crossings. Launched in 2013, Sao Paulo observed a 20.6 per cent drop in traffic fatalities from 2014 to 2015. With better public awareness around road safety and lower speeds, there are 30 per cent less traffic fatalities. To ensure public understanding and support, the programme created a platform for discussion and education through multiple workshops.

Supporting international frameworks

2030 Agenda for Sustainable Development

SDG 3.6 By 2020, halve the number of global deaths and injuries from road traffic accidents

SDG 11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons

New Urban Agenda

Para 113…Improve road safety and integrate it into sustainable mobility and transport infrastructure planning and design. … with special attention to the needs of … children and youth …enforce policies and measures to … pedestrian safety and cycling mobility ... promote a safe and healthy journey to school of every child as a priority in line with the Convention on the Right of the Child.

How should we plan?

Planning the space

Building and infrastructure regulations – building scale

- **Norms and standards for road infrastructure** ensure child-focused accessibility, comfort, safety and multi-functionality:

  - **On accessibility**: space with minimum width, free from obstruction, level curbs in pedestrian lines crossing roads, pedestrian islands and escalators/elevators in public transport hubs for access with strollers and wheel-chairs;

  - **On comfort**: seating, drinking fountains, restrooms, and infrastructure that support active transport; separation of traffic modes and users, and space, shelter, seating and information at transit stops;

  - **On safety and health**: child-focused signage with information supporting walking (indication of destinations, distances, time, calories), low speed zones, visibility enhancing actions;

  - **On multi-functionality**: use day and night with public lighting focusing on the walkways and crossings, integrated playfulness and art to promote walking, access to free Wi-Fi and open data for public benefit.

'Pedestrian first' interventions, Juiz de Flora, Brazil

- **Street design guidelines** that prioritize children's independent mobility:

  - **On space distribution**: with adequate width and the adequate proportion for active transportation (walkways, bike paths) and public transport lanes, minimizing vehicle travel lanes and space;

  - **On crossings**: investing in secured ground-level solutions for active transportation and traffic calming measures. Avoid levelled overpasses and barriers that disadvantage pedestrians, especially children, women, elderly and persons with disabilities;

  - **On accessibility**: levelled and wide sidewalks on both sides for all streets within city limits.

- **Transportation design guidelines** to improve connectivity in infrastructure and transport modes:

  ○ **On functionality**: impose maximum sizes of building blocks and impose penetrable walk trajectories to reduce walking distances throughout the city grid and increase connectivity;

  ○ **On safety and comfort**: provide requirements and incentives for active ground floor uses and transparency levels to activate the street environment, increasing social safety and walkability

  ○ **On priorities**: impose parking space for bikes in buildings; impose a maximum ratio of car parking units in buildings and minimize parking in streets to discourage use of cars.

- **Impact assessments in planning and design phase** of transportation infrastructure, for optimal benefits for and minimal negative impacts on children and their families.

Spatial equity and streetscapes

To ensure space a "rule of thumb" for space distribution in streets for active transportation and public transport, urban planners and transportation planners:

- Minimum 50 per cent of the width of streets for active transport (building entrances, sidewalks, bike paths);

- If needed, 25 per cent of the width of a street for public rapid transit (bus, tram, taxi);

- Rest of available space for private motorized vehicle use (cars), including parking space.

Urban design and area-based community planning – neighbourhood scale

- A **neighbourhood mobility plan that supports children's independent mobility** and focuses on access to destinations and road safety for children:

  ○ Ensure **walkability to destinations children use often** such as schools, bus stops, place of work and residential areas, in a five kilometre catchment area;

  ○ Implement **city-wide strategies on active transport routes, public transport coverage,** private car and parking regulations;

  ○ Promote **safe school environments**, safe street crossings, space for active transportation, signage and other protection measurements, and campaigns promoting active transportation to drop off children.

Child Health Initiative for safe school environments, United Republic of Tanzania

Land use planning – city scale

- **Land use standards** that ensure a minimum of land to promote children's independent mobility based on global standards, agreed norms, the local context and identified needs (population density, age group compositions)

  - **Minimum density of building developments** to ensure compact city development with services in walking distance;

  - **Maximum size of building blocks and pedestrian mazes** to ensure connectivity in general throughout the street grid and to ensure walkability in particular for pedestrians throughout a refined pedestrian maze;

  - **Maximum parking regulations in and around urban programmes; minimize reserved space for car parking, especially in the streets.**

- **Land use plans** that promote compact city development to limit motorized trips and trip length, protect and ensure effective supply, equal distribution and differentiation of streets and infrastructure for public transport:

  - **Street alignment plans** in land use plans, city extension plans and new allotment plans, defining public space for streets and active and public transport, versus private space to be build or developed;

  - **Walk and bike routes** localized on the land use plans, with special non-motorized short-cuts through large building blocks and green spaces, following principles of density of crossing, uses and buildings;

  - **Density zones** to determine minimal and maximum building densities according to proximity of public transit modes, following principles of Transit Oriented Development;

  - Reservation areas for public transport infrastructure (line and stations).

City development planning – city scale

- An **integrated transportation strategy and plan** following principles of active and public transport for all, healthy and safe passage for all and equitable distribution, focusing on the diversification of transport options (safe bikeways, shared bike systems, bus rapid transit, better coverage and better performance in compact city layouts);

- A **public transportation plan** with a grid of accessible stops and modes of inter-modality on walking distances following principles of Transit Oriented Development, and a clean energy objective;

- A **safe passage plan** with pedestrian and biking trajectories, focusing on safer crossings, safe and healthy school environments, traffic-calming speed management, and safety measurements for children, women and persons with disabilities;

- A **plan for low traffic areas** with low emission zones, low traffic speed, progressive parking regulations and parking locations focusing on the reduction of ambient air and noise pollution and regained public space.

Urban planning policy – multi-level scale

- Coordinate **national, subnational and local policies on urban mobility** prioritizing non-motorized transport (NMT) and public transportation over private motorized transport, based on 'Avoid, Shift and Improved' principles:

  ○ Ensure affordable access to mass transit for the urban poor;

  ○ Legalize and enable low-car areas, low emission zones and citywide public bicycle systems;

  ○ Incentivize clean energy transportation with congestion fees, pollution charges and tax benefits for active and public transportation users;

  ○ Impose integrated data observatories on transportation, congestion and air pollution.

- Coordinate **national and local coordination instruments on spatial aspects of urban transportation** particularly for children and their families:

  ○ Support transit-oriented urban development in zoning codes;

  ○ Develop comfortable and accessible public transport stops and vehicles, with priority access and seating for children and their caretakers, persons with disabilities and the elderly.

- Coordinate **national and local action plans on road safety for children**, including street

Initiation bike course for toddlers, Tirana, Albania

design measurements, speed management, law enforcement, awareness campaigns, education and better individual protection, such as child motorcycle helmets.

The six E's of sustainable transport policy

Ambitious transport policies, such as Safe Routes to School or Vision Zero, have been implemented successfully in cities across the globe. Their success is due to an integrated approach that addresses the six 'E's of sustainable transport policy:

Evaluation – Good transport policy starts with a critical analysis of the situation, analyzing in depth the focus groups (for example, Vision Zero focuses on children, mostly teenagers); the causes of dangers such as high speed, lack of safe space design, lack of law enforcement; and dangerous or vulnerable location. Evaluation data is used to monitor and evaluate policy results to ensure approval.

Equity – Good transport policy focuses on equity and addresses the needs of the most disadvantaged: children and persons with disabilities. Change is fuelled by indignation about inequity.

Engineering – Changes to the built environment through engineering improvements are a critical component of transportation policy. The most successful programmes include a thorough community assessment of the commuting barriers for children and their caretakers.

Encouragement – Special events, such as car-free days or walk-to-school days, bring awareness to

children, parents, school organizations and officials, but also inspire action.

Education – People need an opportunity to learn about regulations and receive skill-training to evaluate risk, such as how to safely cross a street or drive responsibly. Specific groups can be encouraged to use new safe and healthy transportation modes such as biking, through cycling courses.

Enforcement – Local law enforcement is important in the vicinity of schools and neighbourhoods where children live. Enforcement increases awareness and reduces crime.

Designing the process

Stakeholder engagement and coalition building

- **Children and their caretakers, schools, parents' associations, youth organizations and other children's programmes participate in safe passage to school campaigns,** assess daily mobility patterns and dangers, develop structural improvements complemented with time-bound improvements along trajectories: such as walking bus initiatives and street passage guardians;

- **Women's organizations on safe walking trajectories** based on daily trajectories day and night;

- **Communities and local authorities for temporary street closures** such as car-free days, summer play streets, seasonal closures, markets and test interventions.

Stroller test Urban95, Tucuman, Argentina

Budgeting and mobilizing resources

- **Influence municipal financing and budgeting** by allocating budgets for non-motorized (walking, biking)[11] and public transportation infrastructure (acquisition, building, maintenance and daily management); by allocating budgets for traffic safety funds (infrastructure, encouragement, education, law enforcement); and pro-poor tariffs;

- **Pool private financing for safer and better street space for active transportation** by allocating revenue gathered from commercial street use and public transport places (publicity, concessions) and private motorized traffic revenues (car parking fees in public spaces, fuel tax, congestion charges, tolls);

- **Include active transportation investments in large infrastructure and urban development programmes** funded by national and international programmes;

- **Present a cost-benefit analysis that shows the cost-efficiency of provision of space for active transportation and public transport** in terms of costs of building and maintenance, and their return on investment.

Prioritising investment in non-motorized transport in Nairobi [12]

In 2015, the Nairobi City County established the Non-Motorized Transport Policy that ensures that at least 20 per cent of the transport budget is allocated to non-motorized transport and public transport infrastructure and services. Annual road and transport improvement project estimates include costs related to planned non-motorized transport interventions, covering both development and maintenance.

Allocating non-motorized transport and public transportation separately in public financing is important leverage, especially in participatory budgeting processes.

Co-production for incremental change

- Organize child-related education, events and awareness raising on the benefits of walking, learn-to-bike classes for children and women;

- Make temporary streetscapes as pilots to promote low-car organization and space distribution in favour of more space for play, green and social gatherings;

- Provide free Wi-Fi and public information in streets and public transport places, well aligned in its focus to promote social good and awareness on health, safety, citizenship, the environment and equity.

Using evidence

Urban situation analysis

The comprehensive urban situation analysis should focus on **Road Traffic Safety for Children** and on **walkability**, including data on urban planning scales, on stakeholders, resources and priorities. Self-assessment tools used by children and their community can provide a valuable source of information to make a robust situation analysis on:

- **School area safety** assessment and improvement;

- **Walkability and inter-modality** assessments with objective and subjective indicators on the current situation. Examples:

Assessment	Walkability Is your neighbour-hood walkable and safe?	Intermodality Is space proportion-ally distributed along intensity of traffic modes?
Community driven data (mapping, surveys)	Mapping trajectories and indicate hotspots in terms of safety.	Measuring dimensions and distribution of street space. Counting people by at transport modes on different times (day, week).
ICT driven data (GIS, mobile data)	Provide geospatial maps, include ICT-driven data on trajectories.	Include ICT-driven data on intensity of transportation.
Government data (administrative data)	Use information about places where accidents or conflicts have been registered.	Include official counting on traffic.

Measuring for progress

Progress on sustainable mobility for children can be measured and evaluated with many types of indicators, objective and subjective ones. Some examples:

- **Physical and quantity related indicators**: Proportion of paved street surface; proportion of streets with sidewalks that meet locally-accepted standards; proportion of streets with adequate public lighting focusing on pedestrian safety; proportion of active transport-oriented safe crossings and crossroads; proportion of bicycle paths over total supply of streets; kilometres of high-capacity public transport system per 100,000 population; kilometres of high-capacity public transport system per 100,000 population;

- **Functionality and quality related indicators**: SDG 11.2.1 Proportion of population that has convenient access to public transport, by sex, age and persons with disabilities; proportion of residential population within walking distance of a bus stop (300 metres)/train station (1000 metres); proportion of commuters using a travel mode other than a personal vehicle; annual numbers of public transport trips per capita; proportion of children walking or biking to school; proportion of streets

and public transportation with affordable access to free Wi-Fi; proportion of public transport vehicles with designated places for children, parents with children or persons with disabilities; proportion of person trips/passenger kilometres travelled by urban public transport/transit and cycling/walking; modal split / proportion of every mode of transport; average commute time and cost.

- **Impact related indicators**: 3.6.1 Death rate due to road traffic injuries; transportation fatalities per 100,000 population; pedestrian

Measuring walkability [13]

Many organizations have developed walkability assessment tools. They allow individuals, groups and officials to determine how walkable a specific neighbourhood is, along different categories: connectivity, land use and proximity of urban amenities, traffic safety, surveillance, experience and green space.

Research on neighbourhood walkability models has concluded that traffic safety and land use are important motivations for walking. This provides empirical evidence that promoting walkability road safety for children and promoting urban planning of mixed used neighbourhood environments leads to road safety for children and increased physical activity.

and cyclist deaths as a proportion of total traffic mortality; pedestrian and cyclist deaths/1,000 kilometres of pedestrian/bicycle travel;

- **Process related indicators**: Proportion of municipal budget dedicated to active transportation/public transit/road safety for children/clean transport policy; process of implementation of active transportation policy and road safety for children (Vision Zero);

Building accountability

- Organize **public hearings and initiatives near or on the streets** to provide access

for all and to share a common perception and evaluation of urban mobility and proposals for change, such as safe school environmental initiatives;

- Centralize opinions and surveys of children on mobility in **publicly accessible observatories**, in terms of environmental health (air pollution) safety issues (road safety, social safety in public space) and connectivity (access, coverage);

- Make **grievance mechanisms on mobility accessible to children** to address concerns in terms of accessibility, use, safety and comfort.
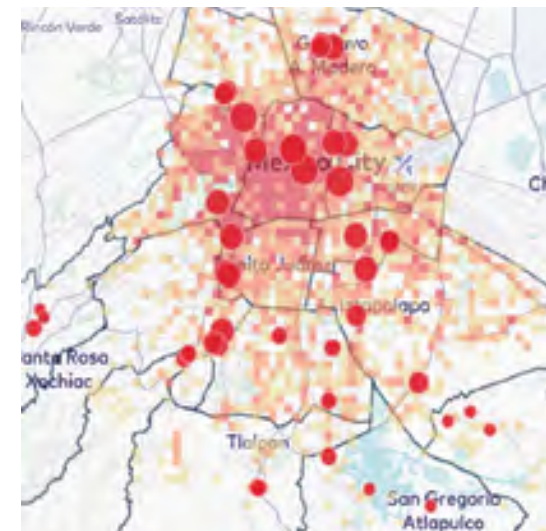
Caminito de la Escuela, Mexico City, Mexico

Resources

Existing guidelines, tools and literature

- Planning and Design for Sustainable Urban Mobility (UN-Habitat)
- Streets as Public Spaces and Drivers of Urban Prosperity (UN-Habitat)
- Habitat-III Issue Paper 19 Transport-and-Mobility (Habitat III)
- Optimizing Infrastructure: Urban Patterns for a Green Economy (UN-Habitat)
- Towards a walking world (ARUP)
- Global Street Design Guide (Global Designing Cities Initiative, C40)
- Urban Street Design Guide (NACTO)
- Transit Street Design Guide (NACTO)
- Urban Bikeway Design Guide (NACTO)
- Transit Oriented Development Guide for Urban

Communities (EMBARQ, WRI)
- Cities Safer by Design (WRI)
- Together with UNECE on the road to safety (UNECE)
- Ten strategies for keeping children safe on the road (WHO)
- Children In and Around Cars (The Royal Society for the Prevention of Accidents)
- Best Practices in School Zone Traffic Calming (Radarsign)
- The Use of Traffic Calming Near Schools (Safe Routes)
- Pedestrian safety: a road safety manual for decision-makers and practitioners (UN RSC)
- Speed management: a road safety manual for decision-makers and practitioners (UN RSC)

Relevant networks and platforms

- Child Health Initiative (FIA Foundation/UNICEF)
- Share the Road – Investment in Walking and Cycling Road Infrastructure (UNEP- FIA Foundation)
- UN Road Safety Collaboration
- Global Road Safety Partnership
- Global Designing Cities Initiative (NACTO)
- Social Light Movement

A family enjoys the use of the eco-toilet and an outdoor sink at home in District 7, one of the poorest neighbourhoods in the city of El Alto, near La Paz, Bolivia (Plurinational State of)

Integrated urban water and sanitation management systems*

Water scarcity affects more than 40 per cent of the global population and is projected to rise. Over 1.7 billion people are currently living in river basins where water use exceeds recharge. Floods and other water-related disasters account for 70 per cent of all deaths related to natural disasters.[1]
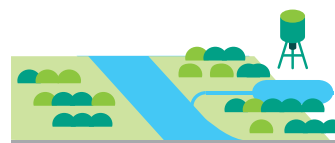
Principle 6

Through urban planning, all cities should develop **safely managed water and sanitation services and ensure an Integrated Urban Water Management system** for children and their community, so they have safe and affordable drinking water and achieve access to adequate and equitable sanitation and hygiene for all.

* This chapter focuses on the built environment aspects of water and sanitation management in urban areas, including drainage and storm water management, faecal sludge and wastewater management. Solid waste management is dealt with in the Chapter on Principle 8 **"A clean urban waste management system"** (see page 149).

Why should we invest?

Current challenges

Water is the source of life and of the *genius loci* of many cities. The proximity and access to water have determined the origin and history of many urban centres, those settled along the sea, a river, a well or an aquifer. Water and sanitation are crucial for personal use, but also food production and waste, and the functioning of urban services and the local economy. Over the centuries, the layout and growth of urban settlements account for environmental and climate features such as sea level, rivers and seasonal changes such as droughts and floods. The access to water and other resources was planned in an urban-rural continuum.

Due to the scale and pace of urbanization and a changing climate, water security and adequate sanitation and hygiene for dense urban population have come under stress. The fast pace of urbanization will complicate sanitation improvements with less space for sanitation facilities due to congestion. The rapid growth rate will also affect the utilization, operation and maintenance of existing sanitation services. Rising sea levels lead to saltwater infiltration rendering fresh water undrinkable, and increasingly extreme weather conditions result in more frequent and severe floods. Both tend to impact those who are economically frail who dwell in areas that are low lying or risk prone.

In cities in the industrialized world, the distribution of freshwater and the evacuation of wastewater are organized in a centralized and collective way, with piped infrastructure and installations operated and managed by public

and private entities, following regulations and integrated in the built environment of buildings and streetscapes. However, in cities of the developing world, less of the population are connected to a piped water and sewerage network. Slum dwellers and their children have additional disadvantages. The informal status of their neighbourhood and tenure is a bottleneck for water and sanitation in fast growing cities. Understanding and taking into account *de facto* and *de jure* tenure security is crucial to improve city-wide planning for water and sanitation.[2]

For sanitation specifically, 40 per cent of the urban population rely on non-sewered systems (pit latrines, pour flush or flush to septic tank or pit), in many cases without proper management of faecal sludge and without the space required to store, evacuate and treat it outside the neighbourhood. Faecal sludge is dumped in storm drains, buried in backyards, or open water and wastelands, with dire consequences for the environment and public health.[3] Unsafe management of faecal sludge and open defecation contaminate public spaces with especially unfavourable consequences for children who play in these areas. Hygiene is also a challenge in low-income countries, just 24 per cent of the urban population in sub-Saharan Africa had a basic handwashing facility with soap and water at home in 2015.

Sanitation in poor urban settlements often relies on shared toilets, reflecting cultural practices and a coping mechanism to respond to spatial and economic constraints in densely

populated areas. In 2015, the WHO/UNICEF Joint Monitoring Programme estimated that 600 million people worldwide used improved sanitation facilities that are shared with other households. In the 24 countries where at least one person in five used a shared sanitation facility, the proportion of people sharing facilities was larger in urban areas.[4]

Shared or communal toilets are often not child friendly in design or location. Fetching water or queuing for a communal toilet can be a challenge for children. The location of communal facilities in a settlement also determines the possibility of their use at night.[5][6] Communal infrastructure in informal settlements, such as hand pumps or communal toilets, are rarely designed in a child-friendly way, and while adults might access water and sanitation facilities in their work environments, pre-school children do not have this option.

Insufficient drainage or uncontrolled flooding of storm water, and stagnant water in containers, are potential breeding grounds for vectors such as the Aedes mosquito that transmit dengue (with growing incidence in recent years), and other infectious diseases such as Zika.[7] With their small stature and limited strength and swimming abilities, children are particularly at risk and vulnerable during floods and are prone to drowning in open water areas. Also children do not always have access to safe and affordable drinking water in their immediate environment, whereas adults might have access in their working environment.

The benefits for children and their community

An integrated water and sanitation management system supports a child to grow up in a safe and clean environment and survives and thrives healthy and strong

- It anticipates urban growth and forecasts demands in the future, ensuring children always have universal and equitable access to safe and affordable water and adequate sanitation.

- It includes secured facilities to store drinking water and conservation plans to protect aquifers.

- It includes city-wide sanitation services that effectively reduce faecal pollution of the public domain.

- It uses green storm water infrastructure to maximize re-use and recycling of storm water, to decrease water scarcity.

An integrated water and sanitation management system allows children to be safe and risk-prepared

- It includes secured and undeveloped open areas to buffer storm water and prevent uncontrolled flooding (risk of drowning, safe water contamination).

- It maximises infiltration to minimize dangerous erosion and landslides.

- It allows all children to use sanitation facilities that are safe, clean and child-friendly and that prevent the contamination of public spaces.

An integrated water and sanitation management system enables citizenship and social responsibility of children

- It makes water infrastructure visible, through green water infrastructure integrated in public spaces so children understand how water cycles work, the value of water, the risks associated with water, and what they can do as children to make water safe, healthy, and available.

- It includes participation and engagement of children in planning and monitoring the use of water and sanitation systems in their communities.

- Water education curricula increases awareness around water scarcity, storm water risks and hygiene.

An integrated water and sanitation management system ensures children live in a sustainable and climate-resilient environment

- It ensures soil and slope stability, soil fertility and nutrient recycling of storm water, grey water and wastewater.

- It restores water in aquifers, strengthens ecological systems and contributes to bio-diversity.

- It reduces the need for heavy infrastructure, energy and logistics to supply and transport water.

- It ensures water and sanitation facilities are climate resilient and are sited in appropriate and safe locations to avoid flooding and other natural disasters.

An integrated water and sanitation management system creates prosperity for children and their community

- By maximizing re-use and recycling and creating energy, it reduces the cost of water.

- Blue and green networks that are central to the city, attract local businesses and investment.

- It reduces surface and groundwater contamination thereby lowering the cost of water treatment.

- It ensures a clean environment free of open defecation and free of faecal contamination.

- It reduces the disease burden and reduces financial loss due to access time, premature death, productivity loss and expenditure on health care.[8]

What should we plan?

Relevant definitions and concepts

A girl washes her hands at an outdoor tap at her school, Icla, Bolivia (Plurinational State of)

Ensure universal and equitable access to safe and affordable water – through subsidies for schools and other public amenities accessible for children, to provide water and through subsidised tariffs for poor households or families with children.

Sewage discard from a truck tank into the Infulene Waste Water Treatment Plant, Maputo, Mozambique

Plan space for Water, Sanitation and Hygiene (WASH) – Water, Sanitation and Hygiene are programmatically combined in many development organizations that work towards the realization of Sustainable Development Goal 6.1 and 6.2: universal and equitable access to safe and affordable drinking water for all, and access to adequate and equitable sanitation and hygiene for all and end open defecation, with attention to the needs of women, girls and those in vulnerable situations. Sanitation is a system for the containment, collection, transport, treatment and disposal or reuse of human excreta.

Map with location of eight salinity monitoring stations, Can Tho City, Viet Nam

Develop regenerative water services that respond to five principles: 1) Replenish water bodies and their ecosystems; 2) Reduce the amount of water and energy used; 3) Reuse water, recover energy and recycle; 4) Use a systemic approach, integrated with other services such as waste or energy; and 5) Increase the modularity of systems and ensure multiple options.

Employees work at the Bentiu water treatment plant, South Sudan

Promote Integrated Urban Water Management (IUWM) to ensure access to water and sanitation infrastructure and services; to manage rainwater, wastewater, storm water drainage, and runoff pollution; to control waterborne diseases and epidemics; and to reduce the risk of water-related hazards, including floods, droughts, and landslides. IUWM encompasses all the water sources in an urban catchment and matches its quality with different users' requirements: blue water (surface water, groundwater, transferred water, desalinated water), storm water (rainwater), grey and black water (waste water). It considers water storage, distribution treatment, recycling and disposal as a cycle.

A faecal sludge operator working for a community-based organization contracted by Water and Sanitation for the Urban Poor (WSUP), and his colleagues stand outside a home after they cleaned a toilet drain in Maputo, Mozambique

Explore and improve decentralized water and sanitation systems – divide the city into management units where water and sanitation systems are developed, taking into account technical feasibility, availability of funds and capacity and cost recovery. This enables an incremental development approach such as the addition of a treatment facility to a sewer networks developed by the community or the upgrading of shared facilities to household facilities.

Centennial Mall, Lincoln, United States of America

Plan green storm water infrastructure – introduce ecological functions back into the built environment that intercept storm water before it reaches grey water infrastructure. By helping storm water to infiltrate, to evaporate and to be stored temporarily before being slowly released into the sewer system can reduce runoff volume to grey infrastructure and filter pollutants, protecting water quality and mitigating risks of flooding. In addition to its hydrological role, green storm water infrastructure can offer valuable co-benefits, like calming traffic and beautifying the urban landscape.

Promising practices

Urban master plan adjustment for climate resilience, inter-provincial platform for water resource management, Da Nang, Viet Nam

Coastal areas in Viet Nam are heavily urbanized and are at risk of flooding due to the impacts of climate change. The Asian Cities Climate Change Resilience Network established Climate Change Coordination Offices (CCCO's) in three cities to develop a multi-dimensional approach to climate resiliency. Regionally, the CCCO's established an inter-provincial platform for water resource management. Local governments were tasked to adjust urban master plans and land-use planning tools for climate resiliency. They conduct community-centred projects including: climate proof housing in Da Nang, water salinity monitoring in Can Tho, and flood risk management in Quy Nhon, where a forecast centre collects flood data to predict downstream flood risk. The data is transmitted to community member responders by SMS messaging, so children and their families can act and seek safety shelters in less than 40 minutes.

Urban WASH, Dhaka, Bangladesh

With today's population of 53 million, the capital of Bangladesh will be the sixth largest megacity in the world by 2030. It has 5,000 slums with an estimated population of 4 million, suffering from inadequate WASH facilities, expensive access to safe water, poor hygiene practices and environmental sanitation. In coordination with the Dhaka Water Supply and Sewerage Authority (DWASA), UNICEF delivers WASH services in seven selected slums. The programme includes a sanitation component, water supply, hygiene and community mobilization, Fecal Sludge Management and solid waste disposal. It has reached more than 150,000 poor slum dwellers, giving them access to 1,204 improved water sources, 414 communal latrines and reaching them with hygiene messages. The access to quality, affordable and reliable WASH services motivates prompt payment of water tariffs by the poor slum dwellers and increased efficiency of DWASA.

Harvesting Rain to Reduce Water Scarcity, Mexico City, Mexico

The availability of water per capita in Mexico City has declined with the rise of the urban population combined with unplanned growth of urban areas. Isla Urbana is a project that contributes to water sustainability in Mexico through rainwater harvesting (a system for capturing, storing, and filtering rain water for later use). Rainwater harvesting systems reduce the flow of storm water to drains, which mitigates flooding, and reduces energy costs associated with pumping systems and water transport. The project grants families a sustainable source of water during part or all of the year. With access to potable water, children grow up learning how to responsibly use water as a natural resource and adopt good practices. Furthermore, access to potable water reduces the chances of a child getting sick, so they are able to focus their energy on education, work, and play.

Supporting international frameworks

The right to water and sanitation

The human right to water and sanitation encompasses the following dimensions: availability, accessibility, acceptability, affordability and quality of water and sanitation.[9] [10] [11]

2030 Agenda for Sustainable Development

SDG 1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance

SDG 3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination

SDG 4.A Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all

SDG 6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all

SDG 6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations

SDG 6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally

SDG 6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate

SDG 6.B Support and strengthen the participation of local communities in improving water and sanitation management

New Urban Agenda

Para 119 ... promote adequate investments in protective, accessible and sustainable infrastructure and service provision systems for water, sanitation and hygiene, sewage, solid waste management, urban drainage, reduction of air pollution and storm water management, in order to improve safety in the event of water-related disasters, improve health, ensure universal and equitable access to safe and affordable drinking water for all, as well as access to adequate and equitable sanitation and hygiene for all and end open defecation, with special attention to the needs and safety of women and girls and those in vulnerable situations. We will seek to ensure that this infrastructure is climate resilient and forms part of integrated urban and territorial development plans, including housing and mobility, among other things, and is implemented in a participatory manner, considering innovative, resource-efficient, accessible, context-specific and culturally sensitive sustainable solutions.

How should we plan?

Planning the space

Building and infrastructure regulations – building scale

- **Norms and standards** ensure child-focused availability, accessibility and safety for children and their families to water and sanitation infrastructure:

  ○ **On technical security and availability**: ensure safe construction and installation of private and collective water and sanitation infrastructure that allows regular cleaning and maintenance; ensure collection of storm water on rooftops, in storm water collectors and tanks integrated in buildings and infrastructure;

  ○ **On accessibility**: affordable access to water (drinking fountains, where the context allows) and sanitation (single-sex toilets) in public spaces and public buildings; affordable access to water and sanitation in housing (including rented accommodation), following universal design principles with attention to the limitations of children and persons with disabilities; access to onsite sanitation facilities at the household and the neighbourhood level for emptying faecal sludge and transportation out of the neighbourhood;

  ○ **On safety and health**: maximize natural storm water infiltration in open spaces, including streets. Impose less use of mineral, impervious surface materials to reduce flood risk, erosion and water logging, and to reduce heat island effects.

- **Design guidelines** that improve the use by children and their families:

  ○ **On multi-functionality**: invest in water- and sanitation-sensitive urban design, to integrate water and sanitation infrastructure in the built environment, such as green storm water infrastructure in streets to reduce run-off, filter pollutants, protect water quality and mitigate flood risks;

  ○ **On stimulation**: where it is appropriate, provide playful fountains and integrate water in public and green spaces; make certain parts of water infrastructure visible to children to teach sustainable water management.

Unidades de Vida Articulada, Medllin, Colombia

- **Impact assessments in planning and design phase of integrated urban water and sanitation infrastructure**, for optimal benefits and minimal negative impacts on children and their families;

Urban design and area-based community planning – neighbourhood scale

- **A neighbourhood water and sanitation plan** that localizes points of public access to water and sanitation for children within reasonable distances, and that uses sensitive water and sanitation urban design to ensure resilience against climate risks, such as flooding.

- Organize **child-sensitive participatory workshops** with all stakeholders in urban planning and urban water and sanitation management, to define an action plan for improving access to safe and affordable drinking water and adequate and equitable sanitation and hygiene for all, and to ensure children are risk-prepared and flooding risks decrease;

- **Urban design recommendations for urban spaces and systems related to the integrated water and sanitation infrastructure, with integrated potable water supply,** sanitation and use of green storm water infrastructure in buildings for public amenities, playgrounds, public spaces, public markets (and other places relevant for urban food systems), parks, streets and paths for walking and biking (active transportation).

Land use planning – city scale

- **Land use standards** to quantify the amount of land needed for Integrated Urban Water Management, such as surface and infrastructure required for storm water retention and buffering, for drinking water access and storage, for sewage plants to clean different types of waste water, based on agreed norms and identified needs (population density, age group compositions, assessments)

  - Minimum **standards to quantify the required supply/availability**, based on global standards and the specific local context
    - *Open areas/reservoirs for water collection to serve as aquifer recharge;*
    - *Areas for grey water recycling and reuse, treatment facilities for wastewater and faecal sludge;*
    - *Areas for storm water retention.*

  - Minimum **standards to quantify effective accessibility, proximity and functionality**:
    - *Access and proximity to safe and affordable drinking water and sanitation facilities.*
    - *Distance and typology of sewage plants.*

- **Land use plans** to protect and ensure effective supply, equal distribution and differentiation on different scales:

  - Delimitation and protection of natural systems such as lakes, rivers, green areas and wetlands for storage, retention and purification of water resources (drinking water reservoirs, waste water treatment banks, storm water retention areas);
  - Protection of natural water sources and flood-prone areas.

- **Building permit regulations** that increase the supply, the equal distribution and differentiation of water and sanitation infrastructure on different scales in new private developments:

  - **General urban rules for buildings** to be connected with drinking water and sanitation systems, to provide permeable space and collection on roofs and reservoirs for storm water and to integrate a separated system of grey and storm water.
  - **General urban rules for the un-built space** to integrate green storm water infrastructure in built and un-built areas such as soil-water-plant systems of bio-filtration planters, bio-retention swales, trees, and permeable pavements;
  - **Specific master plans and allotment plans** with detailed alignments for storm water retention and waste water treatment and re-use in new large-scale private developments.

City development planning – city scale

- **A city-wide water and sanitation plan**, including the valorisation of hydrological and other eco-systems, taking into account future demographic growth, higher water and sanitation demand, future risks and other stress factors. The city development plan should focus on neighbourhoods where people are not served, or where people rely on decentralised/onsite systems, and where people are prone to water risk and environmental degradation.

- **A city-wide integrated water resource strategy of un-built land** to reduce heat island effects and maximize permeability of the soil.

- **Local coordination for integrated water resource management** in spatial terms, relevant for acquisition of land, planning and management of infrastructure that optimizes use of freshwater and maximizes re-use of wastewater and storm water.

Urban planning policy – multi-level scale

- **Coordination instruments for cost-effective financing for the improvement, maintenance and daily management and supervision of water and sanitation infrastructure,** particularly for children and their families, focusing on reduction of consumption and loss of resources, re-use and recycle of water and minimal harm to the ecological environment.

- **Frameworks that allow acquisition and creation of land for water and sanitation management by public and private actors**, and that describe incentive mechanisms for private owners to participate in the creation and maintenance of a built environment with safe and affordable access to water and sanitation and instalment of green storm water infrastructure (session of private land, bonus system, constituencies)

- **Integration mechanisms for water and sanitation management to be coordinated with other relevant policies**, such as urban planning (land management and urban design), transportation policy (streets), environmental policy (cleaning rivers, climate change), energy policy (reuse of human waste and waste-water for energy), public health policy (environmental health).

City policies for affordable access to water and sanitation

In Brazil, the Law of the Municipality of Porto Alegre, article 219 states:

"The populations living in non-regularized settlements have the right to be served by municipal public services."

In Paris, France, public drinking water and sanitation facilities can be used free of charge. Those who are homeless or who have inadequate housing at least have access to basic water and sanitation facilities. The network of public facilities includes public baths and showers, some of which are equipped with laundries.

Engaging children and other stakeholders

Stakeholder engagement and coalition building

- Engage with children and communities, using specific techniques for different ages, to raise awareness about water and sanitation needs in built infrastructure, including green storm water infrastructure. Reach out to children through **schools, youth organizations, and other children's programmes** and undertake walks and activities in urban spaces where water and sanitation infrastructure is visible.

- Engage with others who have a shared interest in improving access to safe and affordable drinking water and adequate and equitable sanitation and hygiene for all, such as **community health clubs, informal water vendors, informal sanitation service providers, such as informal faecal sludge management service providers** (e.g., pit emptiers), the elderly and local businesses that have no improved access to water and sanitation.

- Engage with other constituents that advocate for universal and equitable access to safe and affordable drinking water for all, access to adequate and equitable sanitation and hygiene for all, on end to open defecation, such as **public health specialists, child development specialists, climate change and urban resilience experts**.

Budgeting and mobilizing resources

- Influence **municipal financing and budgeting for integrated water and sanitation management**, by setting minimum percentages to be allocated to water and sanitation, including green storm water infrastructure.

- Include **integrated water and sanitation infrastructure,** in large urban development programmes, funded by national and international programmes, including green storm water infrastructure.

- Present a cost-benefit analysis that shows return on investment of better urban planning of neighbourhoods and city extensions, and of provision of water and sanitation infrastructure including green storm water infrastructure and other integrated design measurements, in terms of costs for construction and maintenance.

Co-production for incremental change

- Co-produce **transformative green storm water interventions with children and families** that focus on cleanliness, health, play and education, like the construction of collective rainwater umbrellas and collection tanks.

- Organize **child-centred activities around the blue network**. Use events to raise awareness of the careful use of water, pollution prevention, reduction of needs, recycling and re-use.

- Make recommendations to public authorities on **area-specific opportunities for more access to safe and affordable water and adequate and equitable sanitation and hygiene**, describing benefits for children and projected outcomes.

A woman collects water from a hand pump. In the past the Rupnagar slum residents had to collect water from two kilometres away, Dhaka, Bangladesh.

Using the evidence

Urban situation analysis

- Assessment of the components of **Integrated Water Resource Management and excreta management**, through mapping and survey access points and service levels (Water Flow Diagrams and Shit Flow Diagrams), collecting opinions and suggestions from different user and manager perspectives: children, parents, commerce owners, public authorities;

- Interview key stakeholders and collect information on the availability of urban water and sanitation planning instruments, capacities and resources: water vendors, sanitation operators, government departments;

- Define priorities in need of new or adapted water and sanitation infrastructure, based on demand and relevant existing standards and good practice.

Measuring for progress

Progress on integrated water and sanitation management systems for children can be measured and evaluated with many types of indicators. Some examples are:

- **Physical related indicators**: availability of land areas and stock volumes for drinking water storage in volume per capita; surfaces for storage of drinking water, for grey water cleaning, for storm water retention; percentage of water loss (unaccounted for water);

- **Functionality and quality related indicators**: SDG 1.4.1 Proportion of population living in households with access to basic services; SDG 4.a.1 Proportion of schools with access to: ... (e) basic drinking water; (f) single-sex basic sanitation facilities; and (g) basic hand washing facilities; SDG 6.1.1 Proportion of population using safely managed drinking water services; SDG 6.2.1a Proportion of population using safely managed sanitation services; SDG 6.2.1b Proportion of population with a hand washing facility on premises with soap and water available; Proportion of population using basic sanitation services; Proportion of population practicing open defecation; average annual hours of water services interruption per household; total water consumption per capita (litres/day); SDG 6.3.1 proportion of wastewater safely treated ; SDG 6.3.2 proportion of bodies of water with good ambient water quality; amount of re-use of storm water for purposes other than drinking water per capita;

- **Impact related indicators**: proportion of children who state that they have access to safe and affordable drinking water and adequate and equitable sanitation in public spaces; prevalence of stunting among children under 5 years of age in cities; incidence of diarrhoea and other water and sanitation related diseases; the number of children who drown in non-protected water areas or in flooding;

- **Process related indicators**: SDG 6.5.1 degree of integrated water resources management implementation (0-100); SDG 6.B.1 proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management;

Building accountability

- Use public hearings on urban planning-related public and private interventions close by, or in neighbourhoods without proper access to drinking water and sanitation, to give high access to everyone and to share a common perception and evaluation of the current situation and proposals for change, to increase participation in matters of infrastructure, service levels, tariffs, and the operation and maintenance of water and sanitation services.

- Centralize information for, opinions by and surveys of children on water and sanitation in publicly accessible observatories online or at information points in designated public spaces.

- Support grievance mechanisms regarding water and sanitation, in terms of their accessibility, use, safety and comfort by children, and direct complaints towards the accountable stakeholders, in particular the public authorities and service providers.

Flooding and vulnerability analysis, Kibera, Nairobi, Kenya

Resources

Existing guidelines, tools and literature

- Sanitation 21. A planning framework for improving City-wide Sanitation Services (Eawag-Sandec/GIZ/IWA Sustainable Sanitation Alliance)
- Community-Led Urban Environmental Sanitation Planning. CLUES. Complete Guidelines for Decision Makers (Sustainable Sanitation Alliance/ UN-Habitat)
- Principles for Water Wise Cities (International Water Association)
- Integrated Urban Water Management, background paper (Global Water Partnership)
- Urban Street Storm Water Guide (NACTO)
- Realizing the Human Rights to Water and Sanitation (Human Rights to Water and Sanitation UN Special Rapporteur)

- Thirsting for a Future (UNICEF)
- UNICEF WASH Strategy 2016-2030 (UNICEF)

Relevant networks and platforms

- JMP – Joint Monitoring Programme for water supply and sanitation (WHO/UNICEF)
- Susana – Sustainable Sanitation Alliance
- WSUP – Water and Sanitation for the Urban Poor
- International Water Association
- Global Water Partnership

KOOKMET: during the market and after closing time, children and families learn to cook healthily on a mobile cookstove, Brussels, Belgium

Markets and gardens

> *Nutrition-related factors contribute to approximately 45% of deaths in children aged under 5 years (mainly due to undernutrition), while low- and middle-income countries are now witnessing a simultaneous rise in childhood overweight and obesity.*[1]

Principle 7

Through urban planning, all cities should develop **an urban food system with farms, markets and vendors**, so children and their community have permanent access to healthy, affordable and sustainably-produced food and nutrition.

Why should we invest?

Current challenges

Urbanization stresses food systems, as urban citizens consume more processed foods laden with salt, sugar and fat, often including an increase in the demand for animal-sourced foods. Urbanization leads to loss of an estimated 1.6 to 3.3 million hectares per year of agricultural land.[2] The local urban-rural linkages that ensure food provision to cities are threatened in terms of the supply-chain of nearby farmland and a city-region distribution network, and also the nutrition transition from traditional to modern food systems. With urban population growth, urban demand will increasingly dictate what goods are grown. Cities become vulnerable as they rely on food that is 80 to 85 per cent produced, transformed and stored elsewhere.[3] Climate change will impact the provision of food to urban populations, with generally longer periods of drought and shorter and heavier rainfall, affecting the production of crops and potentially destroying critical food production, distribution and storage infrastructure.

The urban poor, particularly those living in informal settlements, face the most challenges related to food security and nutrition. Poor urban households in developing countries spend more than 50 per cent of the budget on food and are prone to price fluctuations.[4] Without affordable and reliable access to energy for cooking and safe drinking water, these households are not able to cook their own food and rely instead on unhealthy, cheap, fast and processed
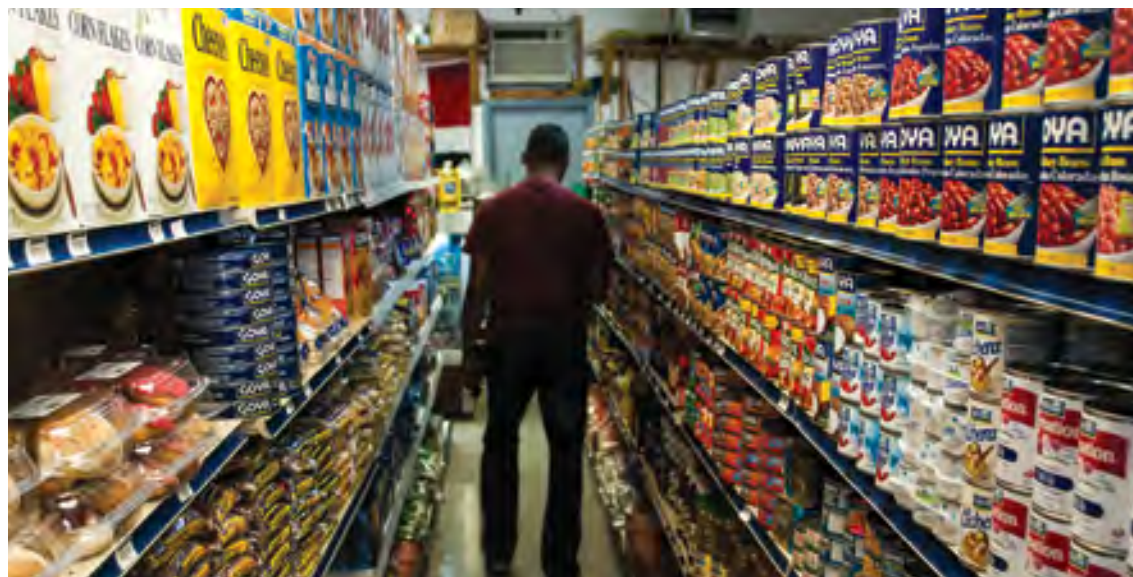
A typical corner shop with food that is imperishable, with low nutrition and vitamin content, Boston, United States of America

foods. Together with changes in lifestyles and persistent rates of under-nutrition, this leads to increased malnutrition and diet-related chronic diseases especially amongst children, often called the 'double burden of malnutrition': many poor children are stunted, wasted, and suffer from micronutrient deficiencies, at the same time as overweight and obesity are becoming increasingly and fast-growing in urban areas. In 2014, an estimated 41 million children under five across the globe were overweight, a quarter of these lived in Africa and almost half in Asia.[5]

The land and nutrition transition causes a shift to more formal supermarkets, where multi-national traders and retailers set standards and influence ways of procurement. Neighbourhoods become food swamps where fast food and junk food outlets outnumber healthy alternatives. The promotion and presence of unhealthy food around and in schools and other public spaces attended by children, highlights the need for integrated planning and active design in the development of healthy food environments for children in cities

The benefits for children and their community

Urban food systems support children to grow healthy and strong

- Nutritious, balanced and diversified diets reduce the effects of hunger, malnutrition and diet-related non-communicable diseases throughout the lifecycle.

- Safe food supply, cold chain storage and adequate water quality provide a safe food environment that diminishes risks of communicable diseases.

Urban food systems ensure that children are safe and risk-prepared

- Sustainable local food systems decrease the risks of food stress and the chance of spikes in food prizes, which can lead to increased social unrest and faster and uncontrolled rural-urban migration.

Urban food systems enable citizenship and promote children's awareness around healthy food choices

- Vibrant markets, community gardens and schools where food is produced, managed and cooked, strengthen local identity and are a vital source of community engagement.

- Healthy and sustainable food environments, at home and at school and other public spaces, stimulate children to develop life-skills regarding food consumption, production, processing and consumption.

- Through active learning regarding the health and environmental impact of different foods, children can also learn about natural resource management and build healthy and sustainable habits.

Urban food systems ensure children live in a sustainable environment

- Urban food systems could contribute to climate mitigation strategies, as they may shorten farm-to-table food transportation distances and reduce GHG emissions.[6]

- Urban food systems are also an important part of climate adaptation strategies, making cities less vulnerable to climate change, by, among other measures, advancing green urban spaces for food production and ecosystem services.

- Preservation and sustainable management of agricultural lands in rural and peri-urban areas can help to enhance flood retention or mitigate increasing temperatures, thus reducing the climate change vulnerability of both urban and rural areas.

- Organic and agricultural waste resources produced in urban and rural areas can be recycled and used to generate energy and fertilisers, thus contributing to a circular economy approach.[7]

Urban food systems ensure investments and opportunities for children as they get older

- Investments in children's nutrition have a high return and are durable and inalienable because they belong to a child for life.

- Fresh food markets are magnets for small businesses and fine-grained economic development by offering a 'lighter, quicker, cheaper' way to support, promote, and increase economic activity.

- Urban food cooperatives build on civil society capacity to create job security and produce affordable, sustainable and culturally relevant food.

What should we plan?

Definitions and concepts

Tsoka Market in Lilongwe, Malawi

Plan sustainable urban food systems – The food system entails all the elements (environment, people, inputs, processes, infrastructures, institutions) and activities that relate to the production, processing, distribution, preparation and consumption of food, and the outputs of these activities, including socio-economic and environmental outcomes. There are three constituent elements of food systems, as entry and exit points for nutrition: food supply chains; food environments; and consumer behaviour.[8]

Agroindustry workers at the cooperative Vivero Alamar, Havana, Cuba

Plan urban and peri-urban agriculture (UPA) – It is estimated that 130 million urban residents in Africa and 230 million in Latin America engage in agriculture, mainly horticulture, to provide food for their families or to earn income from sales.[9] Urban agricultural production can help households mitigate the impact of seasonal or itinerant market-based vulnerability. It is practiced more at scale in peri-urban areas and low-density communities, but also occurs in small community and family gardens in densely populated areas.

Community-supported agriculture, Santa Cruz, United States of America

Foster community supported agriculture – An alternative socio-economic model of farming that connects the producer and consumer by allowing the consumer to subscribe to purchase directly from a farm, or group of farms (farm-to-table). Consumers are organized as food cooperatives, where members decide and organize the production and distribution of typically local, organic and conventionally grown produce.

Students of the Equator School for Mentally Handicapped eat food together, produced on the school's farm, Siaya District, Kenya

Plan schools as healthy food environments – Schools educate children about the importance of healthy food and nutrition, as well as acting as the focal place in a child's day where healthy and affordable food is provided at lunch, produced by local farmers and caterers selected through public procurement (farm-to-school). Schools also have school garden programmes to grow vegetables, herbs and fruit trees, and provide children with gardening experience in small places, which lays the foundation for healthy consumption at school and at home. Unhealthy snacks and beverages are banned at these schools and in the proximity.

Promising practices

School Gardens Project by Cities without Hunger, São Paulo, Brazil

The project provides children and their families living in deprived regions access to fresh and organic food as well as nutritional and environmental education. It is part of a larger initiative to transform unused or underused plots of land into community gardens for people living in slums in the East Area of the megacity. Community Gardens, School Gardens and Agricultural Greenhouses were developed on unused and neglected public and private areas of land with social focal points to provide jobs. Sustainable agricultural projects and professional qualification courses encourage citizens to become community gardeners and improve their livelihood. Also, the School Gardens Project engages parents and teachers to help children learn and understand the importance of a healthy diet, organic food and a respect for the environment.

Cultureghem, Brussels, Belgium

The main fresh food market is located in a densely populated and central district. It recently modernized its infrastructure with a rooftop urban farm and better accommodation for local entrepreneurs. Cultureghem is the not-for-profit organization in charge of community outreach around the market. It has launched several initiatives to engage children and parents to learn about different diets while also opening up the market infrastructure as a public space for the local community. KOOKMET invites children and citizens to do grocery shopping and food preparation together. With mobile kitchens it enables children and parents to learn collectively about acquiring and preparing affordable and healthy food. Food remains from the market are recuperated to cook free meals for the most disadvantaged. KETMET converts the covered market space into one of the largest covered playgrounds in the city.

Kedai Balitaku (KeBAL: My Child's Café), Jakarta, Indonesia

The healthy food cart operation addresses the issue of food deserts and malnutrition of children in low-income communities. While a considerable portion of the city's children are malnourished and exposed to unhealthy diets, the project increases their accessibility to good nutritional sources by strengthening the quality and child-friendliness of food carts. The project tackles both the malnutrition and equity issues by empowering micro-entrepreneurs of the city. A nutritionist creates an affordable and nutritious menu that appeals to families. The colourful carts and music draw the children's interest. Additionally, the project provides the food cart vendors with training in nutrition standards, hygiene, and even marketing to ensure their business model is profitable and contributes to the local economy.

Supporting international frameworks

Paris Agreement (COP 21)

Recognizing the fundamental priority of safeguarding food security and ending hunger, and the particular vulnerabilities of food production systems to the adverse impacts of climate change,

Right to adequate food

The human right to adequate food establishes the seven 'PANTHER' principles that should govern decision-making and implementation processes: Participation, Accountability, Non-discrimination, Transparency, Human dignity, Empowerment and the Rule of law.

2030 Agenda for Sustainable Development

SDG 2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality

SDG 12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses

New Urban Agenda

Para 123 ... promote the integration of food and nutrition needs of urban residents, particularly the urban poor, in urban and territorial planning, to end hunger and malnutrition.

How should we plan?

Planning the space

Building and infrastructure regulations – building scale

- **Norms and standards for buildings and infrastructure**, ensuring the use of flat rooftops and other surfaces for urban agriculture, in terms of technical stability and accessibility.

- **Design guidelines for buildings, infrastructure and green space,** to facilitate double use for urban agriculture and make nutritious food more accessible and convenient: rooftops and vacant lots for urban agriculture, recreation and community activities, community gardens, fruit trees and other edible nutrition elements (nuts, edible leaves, syrups) in parks and green spaces; composting with food waste; in schools, health facilities and other public spaces.

Brooklyn Grange on the rooftop of a large industrial building, New York City, United States of America

Urban design and area-based community planning – neighbourhood scale

- **A neighbourhood food and nutrition plan**, to plan healthy food environments and ban unhealthy food entry points in and nearby public spaces such as schools, health clinics.

- **Community-led food networks** in terms of production, distribution and retailing, in regional urban farming areas, fresh markets, community gardens, food co-ops and people's restaurants.

After closing time the food market is transformed into a large playground, Brussels, Belgium

Land use planning – city scale

- **Land use plans**, to protect and ensure effective supply and equal distribution of land and infrastructure for the food systems, regulate urban expansion on agricultural land and facilitate compatible use of green and unused open space in the urban areas:

  - **Zoning plans** that delimitate land for UPA, preserving and protecting agricultural land and natural resources;
  - **Distribution plans** that localize places for fresh food markets covering neighbourhoods in walking distance.

- **Zoning laws and building permit regulations that regulate the proximity of food and nutrition environments to consumers:**

  - **Land use standards on the coverage of food access points**, that assesses whether there are food deserts;
  - **Incentives for building owners to use rooftops and other parts of buildings and infrastructure for urban agriculture, fostering innovation** (aquaponics, hydroponics, production techniques for edibles in spaces without natural light);

  - **Incentives for retailers to establish supermarkets** with a broad selection of healthy food in low-income areas if land use standards on coverage are not met (food deserts);
  - **Incentives for establishing farmers' markets and healthy food trucks** selling nutritious food in low-income areas and school zones;
  - **Restrictions to control the density of fast food retailers and junk food shops** (food swamps) and to put perimeters around schools and other public spaces where consumers do not have access to unhealthy food.

City development planning – city scale

- A city-region-wide **Urban and Peri-Urban Agriculture plan** that comprehensively covers the need of land and infrastructure for healthy food supply (UPA, coops), distribution (fresh markets) and consumption (healthy school food programmes, people's restaurants), including access to natural resources;

- An **urban food system resilience plan** that ensures that the city's food systems withstand and recover quickly from disruption and are prepared for demographic changes, urbanization and climate change;

- Establish a **local public food agency** that ensures cross-sectoral governance

and collaboration amongst departments and is responsible for the broader aim to create healthy food environments, looking at production and access to food, food quality and the valorisation of adequate consumption habits.

Urban planning policy – multi-level scale

- Coordination of **national and local coordination instruments on food security**, strengthening urban-rural linkages and shortening farm-to-table links by

mainstreaming horticulture (family gardens, community gardens) in food security agendas;

- Development of **metropolitan and regional planning instruments and coordination**

mechanisms to leverage small- and medium-sized cities as key nodes to link smallholders to big cities.

Designing the process

Stakeholder engagement and coalition building

- **Engage with children in schools and in communities**, sensitizing breastfeeding practice and the advantage of nutritious and healthy food, and teach about production and consumption of fresh, whole foods instead of processed food;

- **Engage other constituents who have a shared interest in healthy food systems** such as local farmers, growers' associations, women's' organizations, schools, hotels and restaurants, refugees;

- **Engage with other constituents that advocate for the benefits of healthy food and nutrition**, such as education specialists and public health and nutrition specialists.

New Roots Programme, Salt Lake City, United States of America

Budgeting and mobilizing resources

- Support **financial benefits and employment training for healthy food producers, agricultural land owners, distributors and traders** to promote healthy food and eliminate less healthy foods (tax benefits, micro-credits, social protection);

- Promote **public procurement for schools and other public spaces** which stipulates that food must be healthy and sustainable and calls for quantities and season-related types of food that can be provided by small-scale and family farmers;

- Use **urban water tariffs/income for investment in and preservation of peri-urban and rural watersheds**;

- Provide public financing and support private-public partnerships to ensure **free healthy child-care and school meal programmes** (breakfast, lunch, day camps) and school garden programmes, which provide children with gardening experience. Include free healthy food for children, through public and private financing.

Co-production for incremental change

- Support children, schools and communities to set up **farmers' markets, community gardens, family gardens**;

- Incentivise **popular restaurants with healthy and affordable food**, centrally located in neighbourhoods, in order to be able to sensitize inhabitants;

- Make **recommendations on healthier food environments**, in terms of better use of open space for production and stronger regulation to avoid food swamps.

Using evidence

Urban situation analysis

The comprehensive urban situation analysis should include a **Community Food Assessment (CFA),** a collaborative and participatory process that systematically examines a broad range of community food issues and assets with the goal of making the community more food secure:

- Assessment of **availability and accessibility of healthy food for children**, through mapping their food environment and the governance models, with children, communities and users, collecting opinions and suggestions from different user and manager perspectives: children, parents, business owners, public authorities;

- Interview **key stakeholders** and collect information on the use of instruments, capacities and resources to ensure healthy food environments, especially in schools;

- Define **priorities in need of new or adapted healthy food entry points (markets, schools)**, based on demand and relevant existing standards and good practice.

Measuring for progress

Progress on healthy urban food systems for children and their families can be measured and evaluated with many types of indicators, objective and subjective ones. Some examples:

- **Physical-related indicators**: number of supermarkets/kilometre (km)^2 within neighbourhoods/the urban boundary; number of fast food chains and junk food outlets/km^2 within neighbourhoods/the urban boundary; number of fresh food markets/km^2 within neighbourhoods/the urban boundary/the city-region; number of urban gardens/km^2 within neighbourhoods/the urban boundary/the city-region; distance between a school and the first store with unhealthy food;

- **Functionality and quality-related indicators**: SDG 2.4.1 Proportion of agricultural area under productive and sustainable agriculture; total urban agriculture area per 100 000 population; proportion of city's organic waste being reutilized as nutrition source or as growing substrate back in urban and peri-urban food production; population affected by food deserts and food swamps; number of families engaged in Community Supported Agriculture…;

- **Impact-related indicators**: proportion of children malnourished (stunting, wasting, obesity);

Map indicating coverage of fresh food markets, Barcelona, Spain

- **Process-related indicators**: proportion of food consumption met with healthy food production/Urban and Peri-Urban Agriculture; proportion of food waste recycle; number of children that have access to Healthy School Food programmes; number of schools involved in healthy food production; proportion of local food procurement that is healthy and sustainable; SDG 12.3.1 Global food loss index …;

Building accountability

- Help children and their community to **define land and infrastructure to enable Community-based Agriculture** in public hearings and political decision-making processes such as city development plans, green space development and new norms and standards for buildings, at local and national level;

- Use geo-spatial mapping in the the urban situation analysis **to generate area-based knowledge about needs and opportunities for healthy food entry points (markets, shops, agricultural land)**;

- Support research **on health and nutrition outcomes for children, and urban planning policy** in terms of coverage of neighbourhoods with healthy food entry points and healthy food programmes for children.

Farming Kindergarden for children of factory workers, Dongnai, Viet Nam

Resources

Existing guidelines, tools and literature

- What makes urban food policy happen? (IPES)
- Global Food System Analysis (WWF)
- Nutrition and Food Systems 2017 (High Level Panel of Experts for Food Security and Nutrition)
- City Region Food Systems and Food Waste Management (GIZ-RUAF Foundation-FAO)

Relevant networks and platforms

- C40 Food Systems Network
- EAT
- Greener Cities (FAO)
- Institute for the Promotion of Sustainable Development (IPES)
- Milan Urban Food Policy Pact (MUFPP)
- Resource Centres on Urban Agriculture and Food Security (RUAF Foundation)
- Urban Food Action Platforms (FAO)

By deploying a fleet of low-cost, environmentally friendly bikes into the narrow streets and alleys of the city's slum neighbourhoods, low-income communities get a chance to capture value from waste and clean up their neighbourhoods through an incentive-based recycling program, Lagos, Nigeria

A clean urban waste management system*

" *Globally, the amount of trash produced is growing faster than the rate of urbanization.*[1]
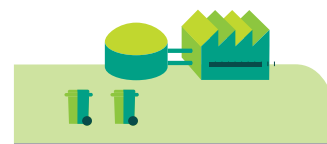
Principle 8

Through child-responsive urban planning, all cities should develop **a zero waste system and ensure sustainable resource management**, so children and their community can thrive in a clean and safe environment.

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* This principle focuses on the built environment aspects of urban solid waste management. Urban planning standards and good practice of integrated water and sanitation management, including human waste, is dealt with in the chapter on Principle 6 'Integrated urban water and sanitation systems' (see page 123).

Why should we invest?

Current challenges

In urban areas, resources are intensively used and create waste water, municipal and industrial solid waste, food waste and hazardous types of waste. Even in cities with a proper municipal waste management system, too much waste is generated, which is neither recycled or segregated. This leads to inefficient resource management that ignores the environmental impact of the waste, and in addition provides a commodity which is an economic resource to be taken advantage of. Children, who are already exposed to contaminated environments, bear the burden of poor waste management: as they will have to deal with the waste in the future.

As many developing countries do not have proper municipal waste management systems or policies, open dumping is a widespread waste-disposal method.[2] This results in polluted and unsafe settings, often in dense, informal settlements in urban and peri-urban areas. Children have constant physical contact with polluted soil and water, as they are forced to play in dirty streets and open areas that attract vermin and animals that spread infectious diseases. People discard garbage next to their own houses in slum areas because they have no ownership of the place where they live. Due to a lack or improper collection of waste, sewage systems such as storm drains or river networks are blocked continuously causing local

Boys play at the garbage landfill where parents are working, Olongapo, Philippines

flooding, soil saturation and landslides. Children are more vulnerable in local flood situations as they are less likely to be able to swim and defend themselves. The threat of flooding is growing as an effect of climate change.

Children who live near and access waste-sites are exposed to risks of explosions or uncontrolled fires. Waste-picking is a form of child labour listed as a hazardous occupation

prohibited for children under many national Child Labour Acts. Chid waste pickers collect recyclables from dump sites and are more likely to drop out of school to earn money by waste-picking on unsecured waste-sites. These children have few options for their own educational development and are not aware of the health and environmental risks of the informal waste management business.

The benefits for children and their community

Urban waste management supports children to grow healthy and strong

- Clean public spaces decrease children's risk of infectious diseases and exposure to pollution and waste.
- Clean public spaces increase the playfulness of urban settings and support children's development.
- Reduction and recycling of waste minimizes incineration of waste and thus air pollution.

Urban waste management ensures children are safe and risk-prepared

- Properly managed waste sites are fenced, thereby preventing direct access and exposure to dangerous materials, burning sites and explosions.
- Children are not engaged in waste-picking, which is a form of child labour. They are risk informed about exposure to waste.
- The reduction of waste generation and management leads to less truck traffic, less air pollution and a lower risk of road traffic accidents.

Urban waste management enables citizenship of children

- Waste-pickers associations, cleaners and self-employment groups that are engaged in community-led waste management help recognition of semi-informal livelihoods.
- Waste collection practices that require a deposit (on the package or the product itself) sensitize consumers to understand that waste has a value.
- Incentive-based waste collection using cash, healthy food or transport tickets in exchange for collected and segregated waste sensitizes consumers and is an important support for children and their families, to eat healthily or have the possibility to travel to work and school by public transport.

Urban waste management ensures children live in a sustainable and climate-resilient environment

- Through anaerobic digestion processes, human and food waste can be recuperated as bio-energy.
- Yard and farm waste can be reused for composting.
- Less production, more segregation and more recycling reduces the amounts of waste to be burned or managed in general, which will reduce GHG emission.

Urban waste management ensures prosperity for children and their community

- By acknowledging that waste is an economic resource, communities can be sensitized to engage in waste management.
- The cost of solid waste management is a major part of municipal budgeting: less waste, less generation, more segregation and more recycling saves costs;[3]
- Urban areas with clean streets and public spaces attract private investment for residential programmes, to foster the local economy.

What should we plan?

Definitions and concepts

A young man recycles waste plastic bags in Dandora, Nairobi, Kenya

Promote Municipal Solid Waste Management (MSW) – Municipal solid waste covers the generation, storage, collection, transfer and transport, processing and disposal of domestic, commercial and institutional solid waste, including food waste. It includes all administrative, financial, legal, planning and engineering functions in the solutions to solid waste issues in terms of health, economics, engineering, conservation, aesthetics, environmental considerations and public attitude.[4]

Makerspace modules for e-waste recovery, Accra, Ghana

Plan waste management infrastructure – Depending on the local context, different types of infrastructure are needed: disposal stations in buildings and public spaces, transfer stations, waste-to-energy facilities, material recovery facilities, landfills, amongst others.

Recycle bins centrally located in public spaces, Medellin, Colombia

Promote the five Rs value chain – Sustainable waste management relies on awareness of the five Rs: Refuse as consumer; Reduce sources through adapted design and production; Reuse and repair as an alternative to disposables; Recycle by collecting and segregating for optimal treatment; Rot by composting food waste in fertile soil.

A waste return point, New South Wales, Australia

Promote Extended Producer Responsibility – Extended Producer Responsibility describes a type of policy that gives producers responsibility – financial and/or physical – for the treatment or disposal of post-consumer products. Assigning such responsibility provides incentives to prevent wastes at the source, promote product design for the environment and support the achievement of public recycling and materials management goals.

Promising practices

Green Exchange programme, Curitiba, Brazil

The Green Exchange programme (O Programmea Câmbio Verde) is a city-wide initiative where residents trade recyclable materials for fresh produce. Based on the "trash purchase" programme where collected recyclables were exchanged for transportation vouchers, it promotes the trade of recyclable materials for local produce. Schools are engaged in trade for supplies, toys, chocolates and concert tickets. By using the budget of the city's Department of the Environment, the programme offers immediate incentives for children and communities to create a cleaner and more equitable environment. It also includes an educational aspect in regards to environmental sustainability, civic engagement and healthy lifestyles, combating hunger and poverty. Through this programme, children in Curitiba establish good habits and are co-creators of the city's overall environment and economy.

Wecyclers, Lagos, Nigeria

In Lagos, only 40 per cent of city waste is collected and only 13 per cent is recycled. Wecyclers, a fast-growing local start-up, collects household and corporate waste in specially adapted bicycles. Designed and manufactured locally, the bikes can manoeuvre in dense informal settlements of Lagos, where there's no waste management which leads to the spread of diseases, clogged drains and flooding. Collected waste is sold to proper recycling plants which shred it to make new products. Households are incentivised with rewards for every kilogram recycled, earning points by SMS that they can redeem for electronics, household items or training. The Lagos Waste Management Authority is partnering to scale-up this start-up and provide space to collect the waste and tactical support and advice.

Slum and Environment Clean-up Project, Nairobi, Kenya

Each week the Mathare Youth Sports Association links a football match with an environmental clean-up operation. The limited open space in the densely populated slum is filled with uncollected garbage and human waste. The programme combines group sports and environmental activities to promote a cleaner and safer environment for children. In addition to playing matches every weekend, the Mathare Youth Sports Association teams clean up surrounding garbage and plant trees to receive league points. With simple devices such as wheelbarrows, rakes and spades, the youth collects garbage at designated points on a weekly bases. The programme includes the cleaning of drainage and planting trees on public land and at local schools.

Supporting international frameworks

2030 Agenda for Sustainable Development

SDG 11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management

SDG 12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses

New Urban Agenda

Para 74 ... to promote environmentally sound waste management and to substantially reduce waste generation by reducing, re-using, and recycling (3Rs) of waste, minimizing landfills, and converting waste to energy when waste cannot be recycled

How should we plan?

Planning the space

Building and infrastructure regulations – building scale

- **Norms and standards for buildings and in particular public space** to have minimal space for waste collection (indoor, doorsteps, disposal points in public spaces);

- **Norms and standards for waste management infrastructure** to impose enclosure of waste-sites, to prevent access to unauthorized individuals and children; to impose containment of pollution in the controlled area (installation of filters on air and water evacuation, an impermeable layer at the bottom of waste-sites to prevent leachate infiltration in the groundwater;

- **Impact assessments in planning and design phase** of waste management infrastructure, for optimal benefits for and minimal negative impacts on children and their families.

RESIDENTIAL BUILDING DESIGN CONSIDERATIONS

1. Waste room: consider area, ventilation, lighting, signage. 2.03, 2.10
2. Chute and disposal of recycling on every floor required by BC 1213.3 ≥ 5 stories and ≥ 9units)
3. Consider how waste travels vertically (by chute, by residents or by building staff in regular/service elevator). 2.02
4. Provide co-location dis-posal for all waste streams including organics. Consider other waste streams that may block chutes, e.g., cardboard, textiles, hangers. 2.08
5. Trash compactor required by BC 1213.2 for ≥4 stories and ≥12 units
6. Consider path of waste to curb and staff time required. 2.02, 2.05
7. Waste storage room per BC 1213.1 or BC 707.13.4. Use containers unless room is ratproof and fireproof room per HMC 27-2021. Consider area required, ventilation, and washing of containers. 2.01, 2.03
8. Compost can be made and used on-site in gardens. 2.23
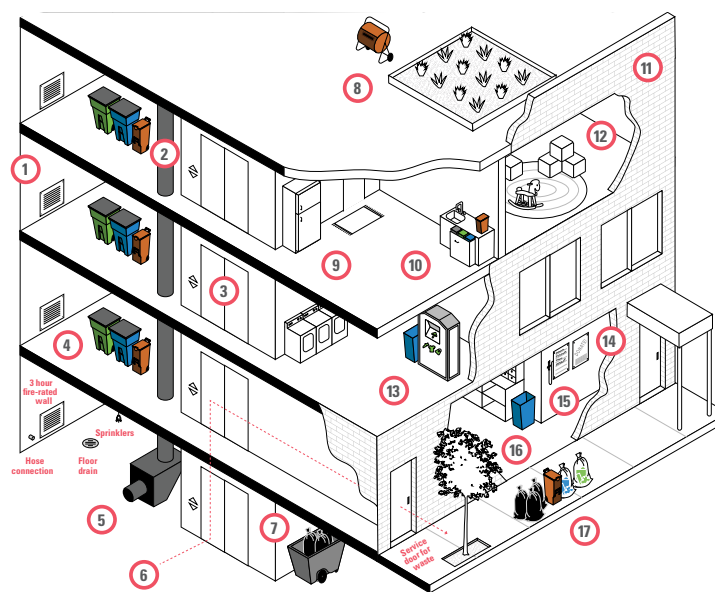
9. Shallow refrigerators and shelves to reduce "lost food," or smart refrigerators. 2.17
10. Pull-out cabinet with bins (all waste streams) and counterop organics bin. 2.08
11. Consider impacts of building materials selection and construction process. Optimize material usage, consider end of life. 2.27–2.35
12. Consider amenities that reduce material consumption (e.g., children's play areas with toys, shared goods library, cleaning service with vacuums). 2.15
13. Provide textile recycling and plastics recycling in laundry room. 2.13
14. Consider possibilities for reuse such as online bulletin boards and donation refrigerators. 2.18
15. Provide feedback on waste generation to residents and staff to change behavior. Consider how to incorporate SAYT back to resident. 2.11
16. Provide paper recycling in mail room and cardboard collection in parcel room. 2.13
17. Provide set out area, coordinate with street, trees, furniture, curb cuts and entrance. See NYC Rules for setout. 2.04

Building regulations in Zero Waste Design Guidelines, New York City, United States of America

Urban design and area based community planning – neighbourhood scale

- A **neighbourhood waste plan** to plan and maintain adequate disposal locations to collect, segregate and recycle waste; to plan and maintain on-site composting facilities for food waste in community gardens and schools; to organize the presence of mobile collective points for hazardous and residential polluted waste at specific moments; community spaces for education, assistance and exchange for repair, re-use and recycle of valuable goods and e-waste (swap shops, maker spaces, repair cafes);

- **Community-led waste management**, in particular in neighbourhoods that are not covered by traditional or official municipal waste management, such as informal settlements or areas which physically prevent access (small alleys, steep sloped alleys);

- **Community-led maintenance and programming of buffers around waste-sites and landfills**, with activities such as local food production, play and recreation.

Land use planning – city scale

- **Land use plans** that ensure supply, distribution and safety of waste management infrastructure, with minimal needs of heavy truck transport;

  ○ **Zoning plans** for infrastructure (disposal locations, transfer stations, composting pits, landfills), taking into account geographical, meteorological and hydrological conditions;

  ○ **Protection areas and buffers** around large waste sites, where no residential and recreational activities are allowed, to prevent children from being exposed to pollution.

- **Building permit regulations** that require waste management plans for new developments and new buildings.

City development planning – city scale

- An **integrated waste management strategy and plan**, including the spatial aspects of the urban waste system, which follows the principles of location and spatial integration of waste-sites;

- **Integrated waste management and clean energy plan,** supporting a market for materials, neighbourhood scale energy-to-waste, entrepreneurial options for handling waste and innovation;

- **A transition plan to close waste-sites** that are located too close to residential areas, in order to transform these into green landscapes.

Criteria for a landfill location[5]
1. Located outside densely populated areas
2. Within 10 km of an urban area
3. Located between 0.2 and 10 km of a major road
4. Not located within 1 km of surface water
5. Avoid areas of groundwater vulnerability
6. Not located within 500 m of a railway line
7. Avoid areas of ecological value
8. Not located within 500 m of sites of historic importance
9. Avoid taking up fertile agricultural land
10. Acceptable to the public

Urban planning policy – multi-level scale

- Coordination of **national, subnational and local policies on Municipal Solid Waste management**, addressing sustainability:

  ○ Equity and economy – Recognition of the role of waste pickers to mainstream them in municipal solid waste management, establish municipal solid waste advisory boards;

  ○ Environment – Impose minimal principles of municipal solid waste management: segregation of collection, reduction of the need for incineration, prohibition of open air burning;

  ○ Economies of scale – Waste regions can consolidate their resources more efficiently.

- Develop **fiscal and legal regulations** to support effective waste management:

  ○ Legal requirements where corporations are responsible for materials they generate (Extended Producer Responsibility);

  ○ Allow tax exemption on the renovation of infrastructure, on second-hand and repair shops, on barter;

  ○ Incentivize community-led collecting and separating waste.

- Impose **law enforcement** to protect children and to support behavioural change in terms of waste:

  ○ Prohibit children from waste picking by legistating against such activities in National Child Labour Acts. In a bridging period, provide education for children living near waste sites;

  ○ Enforcement of solid waste violations;

  ○ Mandatory take-back policies.

Designing the process

Stakeholder engagement and coalition building

- Engage with **children and youth clubs** to start campaigns and clean the streets periodically;

- Engage with **waste-picker cooperatives and their families** to determine current and better municipal waste management;

- Engage with **private sector specialists in recycling materials, resource generation and users of recycling materials** to decrease garbage production and increase recycling and re-use;

- Engage with **local economy representatives** (Chamber of Commerce) to set up residential waste management for business owners.

Members of the trade cooperative of waste collectors KKPK, Pune, India

Budgeting and mobilizing resources

- Influence **municipal financing and budgeting** by allocating minimum proportions of budgets to municipal solid waste and in particular the coverage of poor neighbourhoods;

- Support **a taxation system to generate revenue to finance waste management**, by imposing tax on waste and tax per household and business (principle producer and then polluter pays);

- Include the **provision of space and infrastructure for municipal waste management**, such as space for recycling and collection in large urban development programmes, funded by national and international programmes;

- Present **a cost-benefit analysis that shows the cost-efficiency of municipal waste management**, in terms of costs of building and maintenance, and their return on investment (health, water management, food management, safety).

Co-production for incremental change

- Work with children and communities to collect, recycle and separate waste during street, public space and green space events, to focus on providing healthy and safe spaces;

- Invest in communications, campaign in schools with organized education programmes on the three Rs;

- Sensitize communities regarding the value of specific wastes and create community collection points where people can bring waste materials for cash;

- Organize youth-related events on cleaning the streets ('no litter days').

Tree planting with the Buffelsdraai Landfill Community Reforestation Project, Durban, South Africa

Using evidence

Urban situation analysis

- Develop a **municipal waste stream diagram** and assessment, through mapping and surveys with children, communities and users, collecting opinions and suggestions on polluted and dirty places, sources, solutions;

- Interview **key stakeholders such as waste-pickers, local representatives and local business representatives** to draft a process flow diagram to understand the waste and recycling system;

- Use geospatial data to **detect open air burning sites, publicly accessible waste sites and monitor collection and transportation systems** to define priorities of intervention and ways to optimize collection routings.

A former waste site is transformed in to the playful Ghost Train Park, Lima, Peru

Measuring for progress

Progress on clean urban waste systems for children and their families can be measured and evaluated with many types of indicators, objective and subjective ones. Some examples:

- **Physical related indicators**: proportion of housing equipped with space for collection separate from waste; population of children with regular solid waste collection (residential); city-wide coverage of garbage and recycling points (inhabitant or district or urban areas); number of protected waste sites; proportion of households and local commerce covered by a daily door-to-door collection; volume of solid hazardous waste generated per capita;

- **Impact-related indicators**: numbers of children/families involved in waste-picking; numbers exposed to unsecured waste sites;

- **Process-related indicators**: total collected municipal solid waste per capita; volume per capita of urban municipal waste and wastewater collected/treated/recycled; SDG 11.6.1 Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities; SDG 11.6.2 Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities; proportion of city's solid waste disposed of in sanitary landfill; SDG 12.3.1 Global food loss index

Building accountability

- Help children and their community to **define land and infrastructure to enable clean waste management** in public hearings and political decision-making processes such as city development plans, green space development and new norms and standards for buildings, at local and national level;

- Support with geo-spatial mapping and urban situation analyses where **dangerous waste spaces are located and where more waste infrastructure** (recycle bins) is needed;

Children come up the public escalators in '20 de Julio' neighbourhood in the Comuna 13 slums, where recycling bins are centrally located, Medellin, Colombia

Resources

Existing guidelines, tools and literature

- Municipal Solid Waste, Key issues for Decision-makers in Developing Countries (UN-Habitat)
- Solid Waste Management in the World's Cities (UN-Habitat)
- What a Waste: A Global Review of Solid Waste Management (World Bank)
- Sustainable Solid Waste Systems (C40)
- Urban Solid Waste Management in India (NIUA)

Relevant networks and platforms

- Global Alliance of Waste Pickers
- Global Partnership on Waste Management (UNEP)
- Sustainable Solid Waste Systems (SSWS) Network (C40)
- Ellen MacArthur Foundation

Children play on well-lit a boardwalk in Philipsburg, Sint Maarten

Clean energy networks

" *In 2012, 131 million people in urban areas around the world lacked access to electricity, and 482 million used solid cooking fuels.*[1]
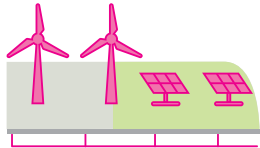
Principle 9

Through urban planning, all cities should integrate **clean energy networks in all urban settings** and ensure reliable access to power, so children and their community have access to all urban services day and night.

Why should we invest?

Current challenges

With a little over half of the world's population, cities are responsible for an estimated 60 to 70 per cent of anthropogenic greenhouse gas (GHG) emissions. Housing, food and urban transportation comprise the three major sources of upstream emissions.[1] Buildings' energy accounts for one-quarter of greenhouse gas emissions, and if today's context continues, this share is predicted to rise. Emissions from road, rail, air and water transport cause ambient air pollution, particularly in urban areas of developing countries where the number of vehicles is rising, yet emission standards are lax or non-existent.

There are two main strategies for transitioning to a low-carbon city: to shift from fossil fuels to cleaner energy sources; and to reduce urban energy consumption levels. The low-carbon transition can be accomplished through energy-efficiency measures, behavioural interventions and incorporating carbon sinks such as urban parks. Cities and their energy systems should be resilient to natural and human threats. The energy systems of cities are increasingly vulnerable to natural and human-induced disasters and the effects of climate change and extreme weather. In addition, urban energy systems directly affect the well-being and happiness of urban inhabitants. Health conditions, economic competitiveness, cultural appeal, and social, gender, and racial equality are influenced by

Ambient air pollution is a major environmental health issue for children in cities

high-energy sectors such as transportation, food production and water quality.

Access to clean and affordable energy is still an issue in cities, especially in slums and peri-urban areas. Globally, nearly half a billion urban residents use solid cooking fuels that are highly polluting.[2] Many households, which are connected to formal grids, have increased the use of firewood due to regular load shedding. Other highly toxic energy sources, such as paraffin, are still used in homes, schools and hospitals.

The benefits for children and their community

Clean energy supports children to grow healthy and strong

- Clean energy sources prevent ambient and indoor air pollution.

- Health centres need reliable access to energy and electricity to provide proper services, especially at night. Safe and clean water also depends on sustainable energy, as it is needed for drilling, pumping, transport and treatment.

- Energy efficiency, combined with proper insulation and ventilation ensure a healthy indoor climate for children.

Clean energy ensures children are safe and risk-prepared

- Streets that are well lit are safer for children, especially girls.

- Investing in clean energy reduces the dangerous impact of climate change on children (flooding, weather).

- Clean energy networks are a safe alternative to household fuels, including the collection of firewood which is normally the responsibility of girls, making them vulnerable to harassment.

Clean supports children's citizenship

- Clean energy networks are a time-saving alternative to the collection of firewood and other types of household fuels, which is often a responsibility imposed on children, giving them less time and opportunity to engage in the community and in education.

- Access to reliable energy is vital to access Information, Communication and Technology.

Clean energy ensures children live in a sustainable environment

- Clean energy is naturally replenished and is virtually inexhaustible.

- By switching from fossil fuels to renewables, clean energy networks do not impact on the environment.

- Clean energy decreases deforestation, forest and soil degradation due to biomass harvesting.

Clean energy ensures prosperity for children and the community

- Safe lighting is necessary for children to do their homework after dark. Schools require energy, proper lighting increases school attendance and learning outcomes.

- Renewable energy provides affordable electricity and stabilizes energy prices. It also improves future energy security and productivity.

- More jobs are created for each unit of electricity generated from renewable sources than from fossil fuels.

- Decentralised and compact networks in compacter settings have lower connection costs.

What should we plan?

Relevant definitions and concepts

A new residential neighbourhood equipped with solar water heaters, Tieshan, Hibei, China

Solar panels and wind turbines power street lamps, Hong Kong, China

Street lights on the Monwabisi Park Informal settlement pedestrian walkway, Cape Town, South Africa

Plan for clean energy – The development of clean energy networks entails a shift to renewable energy as well as better energy efficiency. Clean energy is one approach to achieve the Paris Agreement. Supported by innovative and diverse technologies around renewables, decreased cost and decoupling energy-related carbon emissions is possible. In doing so, developing countries will 'leapfrog' and skip inferior less efficient, more polluting technologies.

Invest in clean fuels and renewable energy – Compare clean energy strategies, retro-fit and adapt buildings with clean energy heating and ventilation, install clean cooking infrastructure in housing (fuel, cooking device, and ventilation) and clean energy transportation.

Ensure street lighting – Street lights, in particular along sidewalks, improves road security and increases social safety in streets, in particular for women and children. Investing in clean energy solutions with off-grid and mini-grid supply lowers energy consumption, maintenance costs and risks of defect installations.

Slolar Settlement, Freiburg, Germany

Solar panels, Za'atari Camp, Jordan

Electricity provision in a busy street in Mathare slum Nairobi, Kenya

A city-integrated renewable energy strategy fosters distributed, non-fossil fuel energy generated locally in urban areas, often referred to as district energy. It implies the provision of space and regulations on infrastructure to facilitate power supply, focusing on decentralisation, autonomy and back-up security. Energy is renewable from solar panels, windmills, geothermal power and is often used for district heating.

Explore decentralized grids – Detailed geospatial modelling suggests that decentralised systems, led by solar photovoltaic in off-grid systems and mini-grids, are the least-cost solution for three-quarters of the additional connections needed in sub-Saharan Africa. Decentralised grids are complementary to national grid extensions. Both need to be coordinated in national and subnational energy policies.

Invest in slum electrification to increase or improve access to electricity for the poor in urban/peri-urban areas, for healthier and improved lives, and especially to make slums safer from fires. Through dialogue with the community and stakeholder management with private operators, the increase of legally and safely connected households that pay their bills on time and the reduction of theft compensates the initial infrastructural investments and the reduced tariffs for low-income households.

Promising practices

Zero Emission School Bus, Dubai, United Arab Emirates

Globally, the transportation sector accounts for a large share of total energy use. Vehicles and public transportation are increasingly transferring to hybrid or electric, but school buses continue to predominantly use external combustion engines fuelled by diesel or gasoline. To ensure that children's transportation to school uses clean energy, Emirate Transport worked with the bus manufacturer to adjust the efficiency of applications, such as the air conditioning, to comply with local regulations and specifications. Numerous integrated bus power stations will be constructed that will recharge the batteries within four hours.

Low-cost urban housing energy upgrade project, Khayelitsha, South Africa

This project retrofits solar water heaters, insulated ceilings and energy efficient lighting in over 2,300 low-cost homes in Khayelitsha, Cape Town. It garners the Clean Development Mechanism to fund the project more effectively. An estimated 71 per cent of the population lives below the poverty line, and 32 per cent of housing uses multiple fuels for energy, including paraffin. The project provided the township with better, cleaner and safer energy sources. The energy-efficiency measures increased building heat by 5 per cent in winter and decreased heat by 5 per cent in summer. The project was recognised as a Gold Standard Clean Development Mechanism project.

The African Solar Cooperative, Old Fadama (Agbogbloshie), Ghana

Old Fadama, one of the largest dumping sites of e-waste on the planet, uses hazardous electric connections which risk electrical fires and other accidents. Child health is a community concern, and waste processing already causes respiratory, cardiac and neurological diseases. To empower the community with clean and modern energy sources, The African Solar Cooperative supplies schools and other public buildings with solar systems. It provides the community with economic independence from other fuel sources and creates a safer, cleaner community for children. As part of the UN's Energy Access Practitioners Network, the cooperative works with the Government, social enterprises and civil society.

Supporting international frameworks

Paris Agreement (COP 21)

... Acknowledge that reductions in global emissions are required to achieve the Paris Agreement and emphasize the need for urgency in addressing climate change.

... Acknowledge the need to promote universal access to sustainable energy in developing countries, in particular in Africa, through the enhanced deployment of renewable energy.

2030 Agenda for Sustainable Development

SDG 7 Ensure access to affordable, reliable, sustainable and modern energy for all.

SDG 9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities

New Urban Agenda

Para 121…ensure universal access to affordable, reliable and modern energy services by promoting energy efficiency and sustainable renewable energy, and supporting sub-national and local efforts; to apply them in public buildings, infrastructure and facilities, as well as in taking advantage of their direct control, where applicable, of local infrastructure and codes, to foster uptake in end-use sectors, such as residential, commercial, and industrial buildings, industry, transport, waste, and sanitation. We also encourage the adoption of building performance codes and standards, renewable portfolio targets, energy efficiency labelling, retrofitting of existing buildings and public procurement policies on energy, among other modalities as appropriate, to achieve energy efficiency targets. We will also prioritize smart grid, district energy systems, and community energy plans to improve synergies between renewable energy and energy efficiency.

How should we plan?

Planning the space

Building and infrastructure regulations – building scale

- **Green building codes for clean energy in building infrastructure, public spaces and appliances** focusing on energy efficiency, insulation and safe and green energy.

- **Impact assessments in planning and design phase** of energy infrastructure, for optimal benefits for and minimal negative impacts on children and their families.
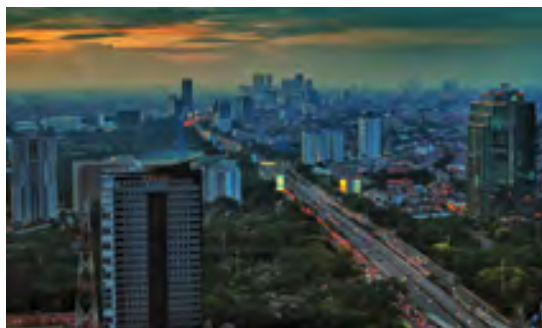
Green Building Code, Jakarta, Indonesia

Land use planning – city scale

- **Land use plans** that ensure the supply, distribution and safety of clean energy networks:

  - Zoning plans for urban parks as carbon sinks;

  - Infrastructural plans to prioritize safe below-grade lines instead of over-ground transmission.

- **Building permit regulations** that facilitate clean energy infrastructure on or close to buildings (solar, windmills, geothermal) and impose energy efficiency for retrofitting and for new developments and buildings.

Urban design and area based community planning – neighbourhood scale

- A **neighbourhood energy plan,** to plan and maintain a district energy network, with free access to clean energy and lighting for children, in particular in public amenities for children and public lighting in streets. Determine infrastructure, landfills, vacant lots and neglected places that can be used for clean energy production (solar panels, windmills);

- A **neighbourhood clean air plan** to monitor air pollution and plan local improvements such as school areas with low car numbers, mobility shift to clean transportation, energy shift in housing (fuel type, insulation).

City development planning – city scale

- An **integrated clean energy and climate action plan** determining slum electrification projects, scaling renewable energy and supporting waste-to-energy.

Urban planning policy – multi-level scale

- Invest in **land use cadastres** that record property and function of buildings and areas, and enables targeted energy audits because different activities have different demands. It also facilitates demand forecast.

Designing the process

Stakeholder engagement and coalition building

- Ask children and communities to engage in **clean air assessments about the air pollution at home, in their school and streets,** with mobile and fixed monitoring devices, to determine air pollution and health risk levels. In street canyons and adjacent buildings, in particular, local levels of air pollution can be very high.

- Engage with constituents that have shared interests, such as **child-care centres, health facilities, schools, community based organizations and the elderly** to determine sources of air pollution and to form common objectives to reduce air pollution.

- Involve **public health specialists, clean energy and transportation specialists** to assist in determining benefits of public amenities for children in a rational way, to determine sources and priorities in solutions.

Budgeting and mobilizing resources

- **Support incentives that help energy efficiency projects overcome economic barriers**, such as those related to upfront costs and 'split incentives'. They include grants and rebates, energy-efficient bonds and mortgage financing, tax incentives, priority processing for building permits, floor-area allowances, bond and mortgage financing, revolving loans, dedicated credit lines, and risk-sharing facilities.

- Develop **technical programmes and campaigns that help motivate building stakeholders**. These include local partnerships for efficient buildings, 'green lease' guidance, and behavioural mechanisms such as competitions and awards, media campaigns, user-feedback information via kiosks or computer displays, and implementing strategic energy management activities.

- **Technical and financial service provider engagement** can facilitate the development of skills and business models to meet and accelerate demand for efficiency. These include technical workforce training, procurement officer education on performance contracting, engagement with the financial sector to help standardize investment terms and reduce transaction costs, establishing revolving loan funds or dedicated credit lines, and considering public-private risk sharing facilities for investments.

Co-production for incremental change

- Support **community-based groups and citizens to implement a clean energy shift in their housing and transportation.**

The priority is safe and affordable access, the reduction of needs and consumption (insulation, low energy devices, behaviour, active transportation) and the shift to clean fuels, including off-grid and micro-grid options for clean energy production.

- Organize **child-focused improvements in neighbourhoods** to improve the quality of air and access to clean and safe energy by imposing low numbers of cars in school environments and streets.

- **Make recommendations to public authorities on impactful energy efficiency improvements** in building stock owned by individuals and governments, polluting factories, transportation, describing benefits for children and projected outcomes, proposing low-cost interventions, such as subsidies for clean cooking devices, building insulation and ventilation and low car numbers in neighbourhoods.
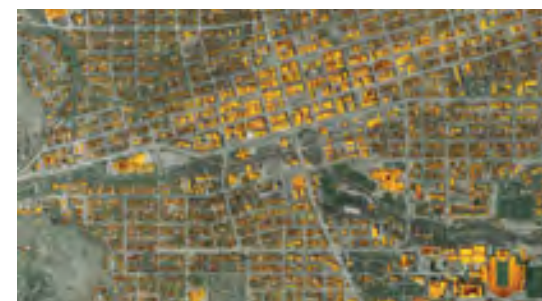
Solar System potential dashboard, Boulder, United States of America

Using evidence

Urban situation analysis

The comprehensive urban situation analysis should focus on access to clean energy for children and include all data on urban planning scales, stakeholders, resources and priorities. It combines the self-assessment capacity of children and the community with an expert diagnosis:

- The **spatial and functional coverage of clean energy**: health facilities, educational and life skills training centres, safe spaces for children, child-care, libraries and community centres;

- Assess current **energy demand** based on requests from the community, identification of vulnerability of neighbourhoods, projections of future needs, thresholds for different target groups amongst children and communities;

- Conduct **a stakeholder and institutional analysis** to determine the stakeholders, regulations, supply and distribution and tariff structures, investment capacity environment;

- **A priority map for clean energy** with an overview of possible solutions (importance versus difficulty).

Measuring for progress

Progress on clean energy networks for children and their families can be measured and evaluated with many types of indicators, objective and subjective ones. Some examples:

- **Physical and quantity related indicators**: total electrical energy use per capita (kilowatts/year); energy consumption of public buildings per year (kilowatts/square metre); greenhouse gas (GHG) emissions in tonnes per capita, disaggregated by source (building, transportation);

- **Functionality and quality related indicators**: SDG 7.1.1 Proportion of population with access to electricity; SDG 7.1.2 Proportion of population with primary reliance on clean fuels and technology; proportion of clean energy in total energy consumption; penetration of smart metering;

- **Impact related indicators**: proportion of children breathing clean air;

- **Process related indicators**: proportion of municipal budget spent on clean energy; existence of national/municipal standards for clean energy.

Building accountability

- Help children and their community **measure and monitor air pollution and define priorities** in public hearings and political decision-making processes such as urban energy plan and urban development plan approval procedures, at the local and national level;

- Support with geo-spatial mapping and the urban situation analysis **general and area-based knowledge about air pollution concentrations and polluters and streets without lighting**;

- Support **adjustments to current urban planning regulations** to accelerate the clean energy shift, at the local and national level. Support research on the impact of air pollution on children, on better monitoring, good practice in energy efficiency.

Curieuzeneuzen – Community led air pollution monitoring, Antwerp, Belgium

When there is electricity, Fares uses the Internet, city of Beit Lahia, State of Palestine*

Resources

Existing guidelines, tools and literature

- Why sustainable energy matters to children (UNICEF)
- District Energy, a good practice guide (UNEP/C40)
- State of Electricity Access Report (World Bank)
- Global Tracking Framework (UNECE)
- Renewable Energy in Cities (IRENA)
- Energy Access Outlook (IEA)
- Strategies Towards Energy Performance and Urban Planning – STEP UP (EU)
- Powering Cities in the Global South (WRI)
- Habitat III Issue Paper 18 Urban Infrastructure and Basic Services including energy (UN-Habitat)
- Sustainable Urban Energy Planning (UN-Habitat/ICLEI)

Relevant networks and platforms

- Global Initiative for Resource Efficient Cities (UNEP)
- Global Alliance for Clean Cook stoves (UN Foundation)
- 100 per cent Renewable Energy Cities & Regions Network (ICLEI)
- Market Acceleration for Green Growth (REEEP)
- Energy Sector Management Assistance Program (ESMAP)
- Energy Efficient Cities Case Studies Database (ESMAP)
- Building Efficiency Initiative (WRI)
- District Energy Initiative (UNEP)

* The State of Palestine was accorded non-member observer State status in the United Nations effective 29 November 2012. Ref: General Assembly Resolution A/RES/67/19 adopted 29 November 2012.

U-Report is a social platform created by UNICEF, available via SMS, Facebook and Twitter where young people express their opinion and be positive agent of change in their communities, Abidjan, Côte d'Ivoire

A smart data and ICT network

" About 29 per cent of youth worldwide – around 346 million individuals – are not online. African youth are the least connected. Around 60 per cent are not online, compared with just 4 per cent in Europe.[1]
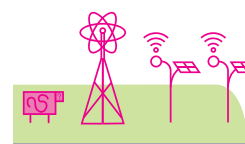
Principle 10

Through urban planning, all cities should integrate **data and information and communications technology (ICT) networks in all urban settings and ensure digital connectivity** of children and their community, to ensure universally accessible, affordable, safe and reliable information and communication.

Why should we invest?

Current challenges

Cities need technology and technology needs cities. Technology has made its mark in shaping urban life worldwide and supports business functions, data-driven industries like finance, city logistics and grids, transport, delivery of basic services, environmental management systems, government operations and people-to-people interactions. Cities have become centres of technology-driven innovation, making digital literacy and ICT access the minimal conditions for urban citizens for accessing services and the job market.

Many cities have therefore adopted a Smart City model to leverage the knowledge and use of data and ICT, in order to improve access to urban services and to be competitive in the global economic market. Communication technology is particularly important for emerging markets, where children and young people are potential users. Also, the virtual character of ICT and data networks allows much faster expansion than heavy infrastructural services such as sanitation.

However, despite the concentration of ICT and data networks in urban areas, basic connectivity to data and ICT is unequally distributed, often unaffordable, unreliable or unsafe. From an infrastructural perspective, ICT and data depend on the availability of devices and energy, which is not guaranteed in the most deprived urban areas. Similar to

In Madagascar, 16-year-old Charmela's family can't afford to send her to school. She spends much of her time on the Internet, where she has experienced online soliciting.

other urban services, technology is mostly a private service and is thus often not affordable. Also, many technological innovations focus on efficiency and optimization, which is not relevant for the poor who are often not digitally-literate. Children with disabilities, who stand to benefit greatly from technological innovation, often lack access to devices and technology that comply with accessibility standards.

Data and ICT also evoke concerns about digital identity, privacy, control of power and the media. In many countries and cities, there is a lack of public oversight in terms of regulation to ensure the physical and psychological safety of children and young people in the face of online exploitation, cyber-bullying, invasions of privacy and Internet addiction. Although connectivity increases, the reliability of information, the safety of access and the openness of data is not guaranteed.

The benefits for children and their community

ICT and data networks support children to grow healthy and strong

- Better monitoring of air quality with local sensors or remote sensing techniques allows authorities, children and their families to be better informed and to take decision in terms of exposure, protection and behaviour;

- Remote monitoring of personal health conditions ensures better routines and follow-up;

- Sensors in water systems help to detect leaks and pollution and ensure safe and clean water supply.

ICT and data networks ensure children are safe and risk-prepared

- ICT and data allow children to have permanent access to emergency services and early-warning systems, including online training and instructions;

- Monitoring of weather, climate and the environment ensure resiliency of communities and facilitate good decision-making in terms of climate adaptation infrastructure, disaster risk-reduction and investments, and in terms of post-disaster recovery;

- ICT and data facilitates interactive and updates report systems that inform citizens regarding unsafe experiences and insecure urban environments.

ICT and data networks support children's citizenship

- ICT and data facilitates better communication and access to free and reliable information;

- Web-based planning mechanisms allow residents to be involved in local government's decision-making processes, report on specific issues and communicate better with city officials;

- Online community-based mapping ensures that informal settlements or areas that lag behind in terms of public investments are better known;

- Crowdsourcing and funding facilitates individuals and communities to exchange ideas, combine capacities and collaborate better;

- Ready-access to, and performance standards for, services for all individuals which serves to improve transparency and equity in city governance and basic service delivery.

ICT and data networks ensure children live in a sustainable environment

- Improved monitoring of the environment allows for optimum use of resources without depletion, such as the use of natural water sources.

ICT and data networks ensure prosperity for children and their community

- ICT and data improves access to basic and advanced education through online learning platforms with possible interactive learning;

- Customized energy consumption through smart metering, micro-grids, and dynamic pricing lead to direct economic and environmental benefits;

- ICT and data support innovation in livelihoods and work environments, including in the informal sector.

What should we plan?

Relevant definitions and concepts

WCCD, an international standard created for cities, with cities

Humanitarian Open Street Map (HOT)

U-reporters UNICEF, Abidjan, Côte d'Ivoire

Smart Cities for All

Explore International Standards on City Data – Developed by the World Council on City Data (WCCD), ISO 37120: Sustainable Development of Communities – Indicators for City Services and Qualities of Life, is the first global standard on city indicators published by the International Organisation for Standardization.

Support open data communities – Platforms based on GIS, ICT and open data facilitate communities in feeding and using online urban observatories for their cities, which are relevant for humanitarian action, for improved urban planning and governance, and for better risk-preparedness and training. Several initiatives have proven to be reliable bi-directional systems of knowledge and engagement, such as the Humanitarian Open Street Map Team (HOT) and Know Your City (Slum Dwellers International).

Support Smart City Initiatives for Children – Many cities look for innovative city development models that use ICT and other means to improve quality of life, efficiency of urban operation and services, and competitiveness, while meeting the needs of present and future generations with respect to economic, social, environmental as well as cultural aspects.[2] Recently, the importance of social innovation and the civic component have complemented the Smart Cities' models.

Support Smart Cities for All – ICT and data innovation are critical to eliminating the barriers in cities that persons with disabilities and older persons are confronted with on a daily basis. The Smart Cities for All toolkit supports a range of organizations and roles related to Smart Cities, including government managers, policy makers, ICT professionals, disability advocates, procurement officials, technology suppliers, and developers who design Smart City apps and solutions to be accessible for all. The toolkit includes several tools targeting specific digital inclusion challenges facing all cities and is available in 10 languages.

Promising practices

Mapping neighbourhoods into Street View, Buenos Aires, Argentina

Together with Google, two social organizations ACIJ and TECHO took initiative to incorporate popular settlements into Street View which, in turn, contributes to the integration of these settlements into the rest of the city. The improvement of the overall visibility of areas that lack basic services can facilitate the regular access to public services for children in these neighbourhoods. It also provides the same technological benefits that the inhabitants of other parts of the city receive, such as the possibility of geo-referencing of public places, in case of disasters or for public decision-making. While Street View normally uses a car with a tracker to make 360-degree images, the project involved local participants and young volunteers walking the neighbourhoods on foot with a tracker on their back as an alternative.

Block by Block Place Making, Querétaro, Mexico

Developed by UN-Habitat and Minecraft, the computer game in which you make things out of virtual blocks, Block by Block, engages communities – particularly young people, women and slum dwellers – in the design of their own local public spaces. Used in 30 cities, it is attractive for youth and children while also promoting a better participation process and thus producing more solid outcomes. To help a city plan and develop improved public spaces, the project invites members of the local community to provide input into the design and management of the spaces. As Minecraft provides the visual platform based on virtual reality, it offers better geospatial references and enhances communication among the local neighbours and multiple global stakeholders from a variety of backgrounds.

Bhubaneswar Smart City, India

In line with India's National Smart Cities Mission, the initiative aims to harness technology as a means to create smart outcomes for the citizens of Bhubaneswar including children and youth. As the city has grown rapidly over the past decades, it has realized the potential benefits for its inhabitants of building infrastructure that is better connected and smarter. Thus, by tapping a range of approaches from digital and information technologies to urban planning to public-private partnerships and policy change, the project aims to provide smart solutions in planning, operating and managing mobility, energy use, waste and water management, governances and services. It also includes a plan to transform the city into an ICT and education hub for children and youth.

Supporting international frameworks

Human Rights Council

32nd Session 30/06/2016 The promotion, protection and enjoyment of human rights on the Internet

2030 Agenda for Sustainable Development

SDG 4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship

SDG 9.C Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020

SDG 17.18 By 2020, enhance capacity-building support to developing countries, including for least developed countries and Small Island Developing States, to significantly increase the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts

New Urban Agenda

Para 157 … support science, research, and innovation, including a focus on social, technological, digital and nature-based innovation, robust science-policy interfaces in urban and territorial planning and policy formulation, as well as institutionalized mechanisms for sharing and exchanging information, knowledge and expertise, including the collection, analysis, standardization and dissemination of geographically-based, community-collected, high-quality, timely and reliable data, disaggregated by income, sex, age, race, ethnicity, migration status, disability, geographic location, and other characteristics relevant in national, sub-national, and local contexts.

How should we plan?

Planning the space

Building and infrastructure regulations – building scale

- **The norm and standards for integration of data and ICT in building infrastructure and public spaces**, to strengthen the social good and ensure basic benefits for children as described above, to measure and collect data relevant for children, to alert, organize and respond to children, and to better inform children.

- **Impact assessments in the planning and the design phase** of Smart Cities initiatives and other ICT and data developments, for optimal benefits for and minimal negative impacts on children and their families, in particular ensuring they are usable and accessible for children, in particular for children with disabilities, and that they respect children's privacy.

Urban design and area-based community planning – neighbourhood scale

- **Smart neighbourhoods' coverage through public access points**
  - Increasing the number and coverage of hotspots in public spaces, allowing free and reliable access to the Internet and public information;
  - Expanding the networks in public services to be publicly accessible, including schools, community centres, health facilities;
  - Providing innovative solutions in less accessible neighbourhoods, or neighbourhoods with less coverage, such as busses with Wi-Fi access that children from these neighbourhoods can benefit from.
- **Smart building programmes** that provide both social space and digital connectivity, for example in libraries:
  - Online libraries where children can access resources remotely (digital books, textbooks, videos);
  - Public libraries and schools as centres for connectivity, Internet access, e-learning and development of skills.

Library for All, Gressier, Haiti

Land use planning – city scale

- **GIS-based mapping and innovative applications**

  ○ Remote sensing allows improved and accurate land registry and zoning, through satellite aircraft or drone imaginary;

  ○ Community-led mapping tools with smartphones and other devices support and complement official data.

ICT and data to facilitate neighbourhood participatory budgeting in Solo, Indonesia

City development planning – city scale

- **A city-wide smart infrastructure plan**, integrating multiple-purpose networks and synchronizing the installation of fibre-optic cables with existing infrastructure construction projects (road, gas, transport, telecom, energy) to minimize the cost for governments and to incentivize developers and providers to invest in smart cities or neighbourhoods;

- **Data and ICT-informed urban planning and urban management**, in transport systems (dynamic demand and traffic control), water and other environmental systems, and in climate and disaster risk-reduction planning.

Public messages for early childhood development, Sao Paulo Basics, Brazil

Urban planning policy – multi-level scale

- Coordination of **people-centred smart city frameworks** that complies with national, regional and international data protection principles and standards, that ensures public transparency and regulates partnerships between local governments and service providers;

- Promotion of **market strategies and competition among service providers** to reduce the cost of connectivity, which has been identified as the main barrier to universal access;

- **Urban data observatories and open data dashboards** that allow interaction with citizens through accessible data dashboards, in order to detail, disseminate, discuss and decide.

Designing the process

Stakeholder engagement and coalition building

- An **ICT and data-based citizen engagement strategy**, with procedures for involving communities in collecting the information required for identifying their problems and opportunities, and unlocking their knowledge into shared open data platforms;

- **Engage other constituents who have a shared interest in ICT and data** such as persons with disabilities, the elderly, migrant populations;

- **Use of information displays in public spaces in cities**, for reliable and relevant information on social good, in particular for better outcomes for children, in terms of education, social assistance, health, culture and leisure.

Neighbourhood participatory budgeting, Solo, Indonesia

Innovating for Children in an Urbanizing World[3]

Based on its Innovation Design Principles[4] UNICEF has developed a user-case handbook that seeks to outline opportunities for design, technology, and social impact, for communities to work together in creating technological innovations that improve the lives of vulnerable children in cities. It highlights the urgent need for innovation on behalf of children in the context of a rapidly urbanizing planet, and also offers guidance on specific approaches and principles – through the lens of UNICEF's innovation priorities. It promotes four approaches for technological innovation in cities:

1. Scaling existing technologies
2. Adapting existing technologies
3. Inventing new technologies
4. Equipping communities with the tools to create their own technologies

Budgeting and mobilizing resources

- **GIS-based tools for participatory budgeting**, to increase awareness of citizens to urban issues that can be decided and financed on a neighbourhood level;

- **GIS-based tools for optimal distribution of public subsidies for infrastructure** (housing, rent and energy-efficiency investments), taking into account the exact location of poor households in different quintiles. Increased knowledge regarding densities of people and buildings also enables better and more precise quantification of the needs of social infrastructure and acquisition of land and buildings.

Co-production for incremental change

- **ICT applications that facilitate skill training and information distribution for 'Do It Yourself' interventions**, such as building and upgrading safe and healthy housing.

- **Establish agreements with private ICT and data networks to provide free access for data and ICT (Wi-Fi)**, such as in and around shopping malls.

Using evidence

Urban situation analysis

ICT and data allows the urban situation analysis to be more comprehensive and to be more community-led:

- **Online platforms as tools for quick-scan assessments and contextual mapping**, used and fed by communities, especially in environments where there is a lack of data and quick decision-making is needed, such as in humanitarian situations.

Measuring for progress

The progress on ICT and data access for children can be measured and evaluated with many types of indicators, both objective and subjective. Some examples include:

- **Physical-related indicators: SDG 9.C.1 Proportion of population covered by a mobile network, by technology**; number of Internet connections per 100,000 population; number of cell phone connections per 100,000 population, number of civic Wi-Fi hotspots per km2; proportion of children living in a household with Internet access at home;

- **Functionality and quality-related indicators**: proportion of school-aged children having access to online advanced learning; proportion of public web-sites and web-sites with public services accessible for children with disabilities; proportion of children with access to sufficient high-speed broadband; coverage of public alert systems for air quality; coverage of water quality advisories; coverage of weather advisories/warning; proportion of local businesses relevant to city services which have data communication; …

- **Impact-related indicators**: SDG 4.4.1 Proportion of youth and adults with ICT skills, by type of skill; proportion of population engaged in online interaction with governance; proportion of population that estimates online governance is trustful; …

  - **Process-related indicators**: proportion of municipal budget spent on smart city innovations and initiatives per year; existence of national/municipal standards for Smart Cities; city-level support to deliver in the following SDGs: 17.18.1 Proportion of sustainable development indicators produced at the national level with full disaggregation when relevant to the target, in accordance with the Fundamental Principles of Official Statistics; SDG 17.18.2

Number of countries that have national statistical legislation that complies with the Fundamental Principles of Official Statistics; SDG 17.18.3 Number of countries with a national statistical plan that is fully funded and under implementation, by source of funding.

Building accountability

Support **online, interactive data platforms to crowd source data on the built environment** that are relevant for children and can influence decision makers, such as accessibility for children with disabilities, proximity, safety, climate risks and functionality to green spaces.

Know Your City Campaign, Slum Dwellers International

Kathmandu Living Labs, Kathmandu, Nepal

Resources

Existing guidelines, tools and literature

- Innovation Design Principles (UNICEF)
- U-Report (UNICEF)
- Innovating for Children in an Urbanizing World (UNICEF)
- Smart Cities For All Toolkit (Global Initiative for Inclusive Information and Communication Technologies)

- Habitat III Issue paper 21 on Smart Cities (Habitat III)
- Connecting cities and communities with the SDGs (ITU/UNECE)
- Enhancing innovation and participation in smart sustainable cities (ITU/UNECE)
- Implementing SDG 11 connecting policies and urban planning practices through ICTs (ITU/UNECE)
- Harnessing the Internet of Things for Global Development (ITU/Cisco)

Relevant networks and platforms

- International Telecommunication Union (ITU)
- World Council on City Data (WCCD)
- Humanitarian OpenStreetMap (HOT)
- United for Smart Sustainable Cities (ITU/UNECE)
- Know Your City (Slum Dwellers International)
- Smart Cities for All Civic Data Use Cases Overview (Harvard University)

Glossary

The following are based on technical definitions, but rendered in a simplified language for non-specialist readers:

2030 Agenda for Sustainable Development: In 2015, this agenda for action, which covers 17 Sustainable Development Goals (SDGs), was adopted by the United Nations. With these new Goals that universally apply to all, countries will mobilize efforts to end all forms of poverty, fight inequalities and tackle climate change, while ensuring that no one is left behind. While the SDGs are not legally binding, governments are expected to take ownership and establish national frameworks for the achievement of the 17 Goals, in terms of follow-up and review of the progress made in implementing the Goals.[1]

Built environment: The human-made surroundings that provide the setting for human activity, ranging in scale from buildings to infrastructure and open space. It has a physical and functional dimension, defining how people live, work, and recreate on a day-to-day basis.[2]

Convention on the Rights of the Child: The international treaty that recognizes the human rights of children, defined as persons up to the age of 18 years. The Convention establishes in international law that States Parties must ensure that all children – without discrimination in any form – benefit from special protection measures and assistance; have access to services such as education and health care; can develop their personalities, abilities and talents to the fullest potential; grow up in an environment of happiness, love and understanding; and are informed about and participate in, achieving their rights in an accessible and active manner.[3]

City: A large human settlement which generally has extensive systems for housing, transportation, sanitation, utilities, land use, and communication. The density of a city facilitates interaction between people, government organizations and businesses, sometimes benefiting different parties in the process.[4]

Compactness: The characteristic of urban form (shape, density and land use) that reduces the overexploitation of natural resources and increases economies of agglomeration, with benefits for residents in terms of proximity. It is measured in terms of density of built area and population, and concentration of urban functions.

Geographic information system (GIS): A system designed to capture, store, manipulate, analyse, manage, and present spatial or geographic data.[5]

Informal settlements and slums: Informal settlements are urban areas with one or more of the following characteristics: 1) poor structural quality of housing; 2) overcrowding; 3) inadequate access to water; 4) inadequate access to sanitation and other infrastructure; and 5) insecure residential status. Additionally, informal settlements do not tend to have municipal services such as waste collection, schools and clinics within easy reach, or safe spaces for children to play or for the community to meet and socialize. Informal settlements include slums and long-term camps for refugees and internally displaced persons. Slums are commonly understood to be the most deprived and excluded form of informal settlement and are characterized by poverty and large agglomerations of dilapidated housing, often located on the most hazardous urban land.

Land use planning: A part of urban planning practice, to order and regulate land use in an efficient and ethical way, in terms of public health, safety and sustainability. It implies the need for land use zoning that regulates the types of activities that can be accommodated on a given piece of land, as well as the amount of space and building surface devoted to these activities. Land use planning is essentially a responsibility of public authorities. To be effective, land-use planning relies on settlement land information systems that register varied and overlapping tenure rights.

New Urban Agenda: A document intended to guide national and local policies on the growth and development of cities through 2036. Adopted at the United Nations Conference on Housing and Sustainable Urban Development (Habitat III) in 2016, it serves as a roadmap for building cities that can serve as engines of

prosperity and centres of cultural and social well-being while protecting the environment. The Agenda also provides guidance for achieving the Sustainable Development Goals and provides the solid foundation for actions to address climate change.[7]

Sustainable neighbourhood: A geographical or administrative part of an urban setting that is planned, built and managed following five principles: 1) adequate space for streets and an efficient street network; 2) high density; 3) mixed land use; 4) social mix, and 5) limited land-use specialization.[8]

Placemaking: A multi-faceted approach to the planning, design and management of public spaces. It capitalizes on a local community's assets, inspiration, and potential, with the intention of creating public spaces that promote people's health, happiness, and wellbeing.[9]

Security of tenure: Understood as a set of relationships with respect to housing and land, established through statutory or customary law or informal or hybrid arrangements, that enables one to live in one's home in security, peace and dignity. It is an integral part of the right to adequate housing and a necessary ingredient for the enjoyment of many other civil, cultural, economic, political and social rights. All persons should possess a degree of security of tenure. There are different types of tenure: possession rights, use rights, rental, freehold and collective arrangements. There can

be individual and collective tenure in multiple forms, with overlapping rights.[10]

Sustainable development: Development based on three pillars, known as the "3 E's": Environmental responsibility to sustain eco-systems and make minimal use of natural resources; Economic strength to sustain economic development that creates labour and which is innovative; Social Equity to sustain inclusive communities that are fair for everyone.[11]

Universal design: The design of products, environments, programmes, and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. Universal design is often associated with accessibility and disability. However, it actually covers good design for all, including the 1 billion persons with disability worldwide.[12]

Urban (area): The definition of 'urban' varies from country to country, and, with periodic reclassification, can also vary within one country over time, making direct comparisons difficult. An urban area can be defined by one or more of the following: administrative criteria or political; a threshold population size; population density; and economic function or the presence of urban characteristics (e.g., paved streets, electric lighting, and sewerage). Every country determines its own definition of urban areas. The definition of urban has to be

used in a critical way: often large and dense populations live in urban conditions just outside urban areas, in peri-urban areas. Therefore, the urban agglomeration index is often used to geographically determine where people live in urban conditions.[13]

Urban setting/urban environment: An environment with a dominant presence of built space and where a variety and intensity of people's activities take place in an urban context.

Urban system: Cities can be described as a geography of urban resource systems that have three constituent elements: supply chains, environments where people interact with the system, and consumer behaviour. These systems are laid out in the urban-rural continuum.[14]

Walkability: A measure of how friendly an area is for walking, analysing the presence or absence and quality of footpaths, sidewalks or other pedestrian rights-of-way, traffic and road conditions, land use patterns, building accessibility and safety, among others. It is an important concept in sustainable city planning, but is also mentioned in literature around health and urban economy.

Endnotes

Chapter 1: Why shaping urbanization for children matters

1   Aravena, Alejandro, Excerpts from Pritzker Award Ceremony, 5 April 2016, New York, <www.un.org/apps/news/story.asp?NewsID+53618#.WmfEAK6nHIV>, accessed 22 March 2018.

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The handbook describes a variety of promising practices in urban planning, based on documentation provided by many individuals and organizations. They aim to inspire and illustrate what is possible and attainable through child-responsive, area-based and community-led planning, in a local context. However, the inclusion of these examples in this handbook does not mean that they are endorsed by UNICEF.

Credits

(Photographs appearing on pages from left to right/top to bottom)