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Urban solutions 🤽 Making cities strong, smart, sustainable



Tony Tan Keng Yam The Singapore story

Joan Clos Seizing the opportunity Mauricio Rodas Espinel Empowering cities

Margaret Chan Healthy cities



OurPlanet

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Reflections





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Erik Solheim

United Nations Under-Secretary-General and UN Environment Executive Director

n 1996, when the United Nations held its last conference on the urban environment, Habitat II, the city of Nairobi had some 800,000 inhabitants. At that time the ride from the airport to UN Environment headquarters on the other side of the city was something of a mini-safari.

As we prepare for Habitat III, Nairobi has become a bustling metropolitan hub in East Africa, a city of 3.5 million people. The same journey from the airport now takes you past sparkling glass-clad buildings on a six-lane highway, and a number of informal settlements.

Nairobi is just one example of many around the globe that illustrate the dramatic transformation underway in urban areas. A bit more than half of the world's population lives in cities today. That portion is expected to grow to twothirds by 2050.

We are living in the age of the city. Decisions we make now on our urban environment have an enormous impact on the future of billions of city dwellers. Can we make the right choices that allow us to live in cities sustainably? Can we harness the transformative power of cities to achieve goals for fighting climate change? Can we use these decisions to make our cities more equitable and secure? Technology is not the limiting factor. It is a matter of choice.

We need to make choices that break down economic and social barriers, while restoring our ecosystems on which we depend for our very survival.

Cities currently account for more than 70 per cent of global energy and resource consumption. But energy efficient technologies and clean energy options are quickly evolving as costs fall. Today, renewable energy capacity far surpasses even the most optimistic forecasts from a couple of decades ago. With this windfall of technology, a number of cities have adopted ambitious objectives. Some, like Copenhagen, aim to be 100 per cent renewable-powered. We need more ambitious targets like this.

How will we transform infrastructure and housing and who will finance it? Much of the technology to make this a positive transformation already exists: walls that store energy for heating or cooling, roofs and windows that collect rainwater and generate electricity. Modern district energy systems can pipe heating and cooling into connected buildings while making use of wasted heat from power stations, industry and local renewables. New York City has district heating systems that provide heat and electricity to critical infrastructure such as hospitals. During Hurricane Sandy, a number of hospitals stayed online because of their district heating system.

One infrastructure technology that has already seen widespread adoption has been bike sharing. Over 500 cities have some form of bike sharing initiative, which is a great complement to public transport. Thinking big, we can imagine that by the time of the next Habitat meeting, autonomous vehicles powered by clean energy may be a core element of city transport systems, reducing local air pollution, and storing renewable energy capacity in vehicle batteries.

Environmentally sound solutions are not necessarily more costly. Often, investments are paid be accounted for.

back by lower operating costs. And taking a longer-term perspective, efficiency gains reduce the need for more infrastructure. In Sydney, the city's comprehensive Energy Efficiency Master Plan estimates that a \$166 million investment in residential energy efficiency will result in infrastructure savings of more than \$70 million, in addition to direct energy savings of \$286 million.

For cities to make the right choices, every economic decision must tell the environmental truth. That means the future cost and risk of environmental impact must be accounted for.

The best choices and solutions will address several challenges at the same time. For example, urban green space in cities caters for recreational activities and makes a city more attractive for its citizens. At the same time, it provides ecosystem services such as cooling down heat islands, cleaning the air and water management. Some studies even point to reduced crime and violence in urban areas with prominent green space.

All of these choices rely on ambition. Does a city want to be healthier, more environmentally friendly, and better-off economically? If it does, there should be no limit to the goals that it sets for itself. What if all cities had the aim of producing zero net waste and zero net carbon emissions? What if all cities aimed to meet World Health Organization air quality standards (only 12 per cent do now)? What if every city aimed for a minimum percentage of public green space? These are questions of aspiration.

Cities have the opportunity to be havens of sustainability, security and equality. What's required is ambition and commitment.

For cities to make the right choices, every economic decision must tell the environmental truth. That means the future cost and risk of environmental impact must

Tony Tan Keng Yam The Singapore story

Environmental achievements of this nation-state over the past five decades



Dr Tony Tan Keng Yam

President of the Republic of Singapore

🔿 ingapore has come a long way in its journey towards Sustainability. In the 1960s, Singapore was like any other developing country of that time - dirty and polluted, lacking proper sanitation and facing high unemployment. These challenges were more acute for Singapore given our constraints as a small island city-state with no natural resources.

The imperative of a clean and green Singapore was recognised early on by Singapore's founding Prime Minister Mr Lee Kuan Yew. He believed that "a blighted urban jungle of concrete destroys the human spirit" and that "we need the greenery of nature to lift our spirits". In 1963, Mr Lee planted the first tree to kickstart the national effort for tree planting. Today, almost 50 per cent of Singapore is covered by greenery, with about 3 million trees in our streetscapes, parks and residential areas.

Besides our early efforts to green the country, we also shifted pollutive industries away from residential areas and made new laws against pollution. As a young nation that needed to attract industries and secure economic growth, our leaders were committed to ensuring that the environment was not compromised in the pursuit of rapid industrialisation.

One of our largest transformations involved the Singapore River, which was literally an open sewer in the early days. The cleanup of the river was an enormous endeavour that required the efforts of numerous agencies. It involved the relocation of thousands of street hawkers, squatters and pollutive industries such as pig farms, and the removal of over 250 tons of rubbish accumulated in the river and its banks. The cleanup took 10 years, and when it was completed in 1987, the water was finally clean enough for fish and other aquatic life to return.

It was, however, not enough to simply clean up the Singapore River; we made bold plans to transform the riverine stretch into an attractive waterfront promenade. The successful cleanup also set in motion a process to create a reservoir in the heart of the city. By damming the mouth of the Marina channel, the Marina Barrage, completed in 2009, offers the triple benefits of water supply, flood control, and a place for recreation.

Driven by our vision to make Singapore a 'City of Gardens and Water', we launched the Active, Beautiful, Clean (ABC) Waters Programme in 2006 to transform utilitarian drains into attractive waterways, bring people closer to water, and improve runoff quality using green cleansing features. Our waters have become a part of 'home' that Singaporeans enjoy and cherish.

As a small island with limited land for water storage, Singapore needed to diversify our water sources. Apart from water import, we expanded our local catchment areas to capture as much rainwater as possible, and invested in drought-resilient sources, namely NEWater - high-grade reclaimed water produced from treated used water that is further purified using advanced membrane technologies and ultra-violet disinfection, making it ultra-clean and safe to drink - and desalinated water. We also planned water infrastructure well ahead of demand. For example, we are now building Phase 2 of our Deep Tunnel Sewerage System that will meet Singapore's needs for the next 100 years.

Given our dense urban development and large industrial base, maintaining good air quality is another top priority for Singapore. To ensure good air quality, we have implemented strict enforcement programmes and air quality monitoring since the 1970s. Over the years, we have shifted from the use of fuel oil to natural gas in our power plants, mandated the use of near sulphur-free diesel for vehicles, and regularly tightened our emissions standards. As a result, Singapore today enjoys a high standard of air quality.



Singapore is diversifying its water supplies by expanding its catchment areas and securing drought-resilient supplies through investment in high-grade water reclamation and desalination.

> Singapore has also made great strides in building an effective waste management system and aims to become a 'Zero Waste' nation. In 1979, we built our first waste-to-energy plant, where waste is incinerated to generate energy. Today, about 37 per cent of waste generated in Singapore is incinerated at four 'waste-to-energy' plants and most of the remaining waste is recycled. We aim to achieve a national recycling rate of 70 per cent by 2030. The ash generated from the incineration process and non-incinerable waste is disposed at our offshore Semakau Landfill. The landfill not only meets our waste disposal needs, but also supports a thriving ecosystem with rich biodiversity. It is a good example of how countries can pursue environmental protection in tandem with development goals.

As part of plans for a 'car-lite' Singapore and to further reduce our carbon footprint, we are investing heavily in our rail network, bus services, and supporting infrastructure such as sheltered walkways and cycling paths. Electric car-sharing is being trialled alongside a state-of-the-art GPS-based Electronic Road Pricing system to regulate car usage.

To appreciate Singapore's transformation, we have distilled our urban development journey into the Liveability Framework. The Framework has three policy outcomes that have been constant in how Singapore has envisioned liveability. They are: a competitive economy that attracts investments and provides jobs; a sustainable environment that helps the city thrive despite limited natural resources, especially land and fresh water; and a high quality of life that benefits people. These outcomes are built on the twin foundations of integrated master planning and development, and dynamic urban governance.

Integrated master planning means planning for the long term, while retaining the flexibility to review plans as needs change. Dynamic urban governance means leading with vision and pragmatism, underpinned by a culture of integrity in the public service, and strong institutions with well thought-out systems and processes. It is also important that government agencies engage the public and community groups, giving everyone a stake in their country's long-term good. With these principles, we have made many environmental achievements over the last five decades and they have helped to make Singapore an endearing home.

As we work towards our vision of a liveable and sustainable home, we also need to exchange knowledge and share experiences with others, within and outside Singapore. International conferences - such as the World Cities Summit, the Singapore International Water Week and the CleanEnviro Summit Singapore - are useful for this knowledge-sharing. As a responsible global citizen, Singapore supports international efforts, including those by the United Nations, to chart a sustainable development pathway for the world.

Singapore today is the result of visionary leadership, careful long-term planning and resolute execution by our forefathers. To chart the next phase of our sustainable development till 2030 we have developed a Sustainable Singapore Blueprint 2015 that outlines our national vision and plans for an even more liveable and sustainable Singapore. Collective action and commitment are central to securing the vision laid out in the blueprint and we will continue to encourage greater stewardship over the environment, where it becomes second nature for everyone to care for our common spaces.

Our journey towards sustainability is a challenging one. Together, we can build more liveable and sustainable cities for present and future generations.

Joan Clos Seizing the opportunity

Habitat III is a chance to rethink the sustainability of our cities and launch a New Urban Agenda.



Joan Clos

Secretary-General of Habitat III and Executive Director of UN-Habitat

abitat III, the Third International Conference on Housing and Sustainable Urban Development, offers the world an exceptional opportunity to rethink the sustainability of our urban model. It is largely recognized that cities have become the main driver of economic development. Yet an analysis of the urbanization of the last two decades reveals that current urban practices are unsustainable: our cities consume 78 per cent of the world's energy, produce more than half of all greenhouse gas emissions and consume much more land than is needed, with consequent environmental impacts.

The New Urban Agenda is a set of strategies that aim at reducing and reversing these negative trends, by advocating a new model of urban development that results in equity, prosperity and environmental sustainability. It will be a guiding framework that, if implemented, will lead to better planned, designed, and governed cities in a world where half of its people are already urban. Good urbanization is essential to the success of Agenda 2030 and to the well-being of billions of people.

One key question in this analysis is to identify how good, well-planned urbanization can contribute to the planet's environmental sustainability. Urbanization that promotes compactness, connectivity and walkability is good for climate change mitigation and adaptation. Agglomeration and proximity provide enormous opportunities for energy efficiency. Compact and connected urban development results in lower greenhouse gas emissions and can also reduce the capital and operating costs of basic infrastructure and services.

The latest UN-Habitat analysis of world urbanization reveals, however, that the current model of urbanization does not follow these principles. Cities are increasingly less planned, leading to spontaneous urbanization, which in turn decreases the quality of life for millions. The density of cities has also declined by 52.5 per cent and 37.5 per cent in developed and developing countries, respectively, over the last 20 years. Such urban sprawl and reduced density is a result of lifestyle change, suburbanization both for the rich (in gated communities) and the poor (in mass housing schemes), land speculation, and spontaneous and informal land occupation. Excessive urban expansion, combined with a corresponding decrease in density, has contributed to: the increased need for transport (and thus energy consumption); environmental degradation; growing per capita costs of urban services (water, sanitation and drainage); increased per capita costs of public space and infrastructure; and decreased productivity through urbanization, with less economies of agglomeration. We must address this quickly, and effectively. UN-Habitat proposes a paradigm shift based around five strategies:

- 1) Develop National Urban Policies which establish mechanisms of coordination between central and local governments, preventing duplication of services and costs. These amalgamate the dispersed energy and potential of urban centres within a national system or hierarchy of cities and towns. They help coordinate the work of different sectors and tiers of government, establish incentives for more sustainable practices, and provide a basis for the allocation of resources.
- 2) Ensure proper urban legislation. Robust legislation, and its equitable implementation, shapes operational

Urbanisation that promotes compactness, connectivity and walkability is good for climate change mitigation and adaptation. Agglomeration and proximity provide enormous opportunities for energy efficiency.



principles and stabilizes organizational structures, fostering institutional and social relationships that underpin the process of urbanization.

3) Support urban planning and design. Good planning can change a city's internal structure, form and functionality, contributing to a more compact, integrated and connected layout, and leading to sustainable solutions. Densification, social diversity, climate change mitigation and adaptation, the sustainable use of natural resources, and adequate public spaces - including vibrant streets are all results of good urban planning and design.

In 20 years, the

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cent and 37.5 per

cent in developed and

developing countries,

respectively

4) Urbanization must be financed. In order to create employment, urban areas and regions require strong economic growth strategies that take into account regeneration, cluster development and industrial zones. Strengthening municipal finance is about realigning fiscal authority, responsibility and revenue sharing, i.e. achieving the right balance between different levels of government, designing new financial mechanisms, exploring new sources of capital, and improving revenue collection systems and budget management and transparency.

5) Finally, in expanding a city, we must maintain planned city extensions and planned city in-fills. This results in lowered urban energy use and greenhouse gas emissions.

With the adoption of the Paris Agreement and, soon, a New Urban Agenda, there is renewed impetus for action. The New Urban Agenda is an opportunity further to improve the sustainability of our planet. It envisages cities that protect their ecosystems (water, natural habitats, and biodiversity) and minimize their environmental impact by changing to sustainable consumption and production patterns. At Habitat III, participants will have the opportunity to discuss environmental issues through the lens of urbanization: clean energy, sustainable use of land and resources in urban development; sound waste management; digitalization of services; innovative transport technologies; protecting ecosystems and biodiversity; sustainable consumption and production patterns; urban resilience; reducing disaster risks; and mitigating and adapting to climate change.

Let us seize this opportunity and achieve a better urban world for all.

UN Environment at Work Ecosystems for urban resilience

Seeing cities within their ecosystems shows how to adapt them to climate change

→ ities depend on their surrounding bio-phys- Environment recognises that building the These include provisioning services such as food together. The management of urban and surand water; regulating services such as climate rounding peri-urban ecosystems has the tural services such as connecting urban and other pressures. inhabitants to natural values. The health of the

ical landscape, utilising goods and services resilience of urban populations depends on nutrient cycling and crop pollination; and cul- overall resilience of the city to climate change

city influences the health of the city itself. UN Adaptation (EbA) is an adaptation approach

surrounding and within city boundaries, of peri-urban areas and of the broader landscape. For example, the restoration of degraded the regulation of river flows for abstraction attractive landscapes to urban populations.



UN Environment provides costeffective adaptation solutions to cities seeking to maximise ecosystem goods and services while making themselves more resilient to climate change impacts.

Through its urban EbA programme, UN Climate Change Fund under the Global Environment provides cost-effective adaptation Environment Facility. One in Asia is working solutions to cities seeking to maximize ecosystem 🛛 with the cities of Thimphu (Bhutan), Kep goods and services to their populations and (Cambodia), Phongsaly and Oudomxay (Lao strengthen the role of urban institutions, leaving PDR) and Mandalay (Myanmar), delivering cities more resilient to climate change impacts on-the-ground urban EbA activities centred on such as sea level rise, flooding, freshwater and reforestation, urban agriculture and restoration

The goals of the urban EbA programme are The second is in the Latin America and Caribbean

- between ecosystems and cities, including the for current and future urban populations.

urban EbA projects, funded by the Least project seeks to reduce the climate vulnerability Developed Countries Fund and the Special of up to 820,000 people. ▲

of wetlands in urban areas.

is implementing climate-resilient reforestation • Reduced vulnerability of urban populations and conservation agriculture approaches to to climate change impacts by preventing critical restore the degraded Arenal-Monserrat waterecosystem losses under current and future shed; in Kingston (Jamaica), the Hope watershed climate and socio-economic scenarios, and that surrounds the city will be restored to • Strengthened governance, knowledge and at the watershed scale will be undertaken along capacity at national and city level to under- the El Palenquillo stream using native riparian stand the socio-ecological interactions species adapted to regular flooding.

trade-offs between competing land uses; and In addition, UN Environment and the Government able to sustainably manage urban ecosystems EbA project in six of the country's most populated capital Vientiane for funding by the Green Climate UN Environment is executing two regional Fund. Through urban EbA interventions the

- Margaret Chan - Healthy cities

Health should be the "pulse" of the new urban agenda.



Margaret Chan

Director-General, World Health Organization

ealth needs to be an integral part of Habitat III, the Third UN Conference on Housing and Sustainable Urban Development, and of its outcome.

The New Urban Agenda, the outcome document, will guide policies on cities at a time when urban growth will have a defining role in the future of climate and environment, and on our ways of doing business, on our lifestyles, and on our health.

Twenty years ago, at the time of Habitat II, most of the

- are emerging. Transmission is exacerbated by poor water and waste management and broader trends of globalization and changing weather. Slum conditions are breeding grounds for other infectious diseases, like childhood pneumonia, diarrhoea, and tuberculosis.

Meanwhile, soaring levels of urban outdoor air pollution, sedentary lifestyles, unhealthy diets, and road traffic injuries are contributing to the global pandemic of noncommunicable diseases.

According to the latest World Health Organization (WHO) data, as many as one-quarter of deaths from heart disease, and one-third or more of deaths from stroke, lung cancer and chronic respiratory illness result from exposures to outdoor and household air pollution. The greatest exposures to outdoor air pollution are often in and around cities.

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The same sources of urban a pollution are drivers of other health threats - and inequi

often located near the busiest highways and dirtiest industries, for instance. Pedestrians, many of them children and teens, are often most at risk of traffic injury and other environmental health hazards.

Air pollution levels are

still 25-50 percent

above WHO air quality

auidelines in manv

wealthy cities of Europe,

and much higher than tha

in lower-income ones.

Cities also consume two-thirds of primary energy resources, and are a driver of climate change. Sustainable urbanization is thus critical to limiting global average temperature rise to 1.5 °C.

The good news is that strategies are available for making cities healthier and more vibrant places to live, work and raise families. Many cities, both rich and poor, have well-documented successes in transport, housing, air quality and waste management. Safe rapid transit systems and pedestrian and bike routes can reduce long term health risks from air pollution - as well as the very immediate, and catastrophic effects of traffic injury - while supporting healthy physical activity as cities grow and develop.

Urban green spaces for community gardens and urban design policies that foster fresh food markets and other basic services within walking distance of residential neighbourhoods can help improve access to healthier foods.

Healthy planning of compact walkable neighbourhoods is also more equitable, as it ensures access by the poor and carless to jobs, education and basic health services. It can also reduce energy consumption and pollutant emissions.

Linking health to the New Urban Agenda can help make the difference to the future of cities, our health and our environment. WHO is doing its part to advance this kind of vision at Habitat III, advocating for health as a cross-cutting theme and for an urban air quality target that can mobilize action. It Let's make this vision a reality, block by city block.



is also collaborating with the Climate and Clean Air Coalition (CCAC) to Reduce Short-lived Climate Pollutants, hosted by UN Environment, to foster new examples of urban health initiatives that cut both air pollution and climate emissions, and position the health sector as an advocate of change.

Public awareness is critical. The WHO/CCAC BreatheLife campaign (www.breathelife.org), announced at the Second Global Climate and Health Conference in July 2016, is helping raise awareness of air pollution and climate among the urban public, using digital media in innovative ways and urging urban leaders to "breathe life" into their cities by committing to reduce air pollution to WHO guideline levels.

Thanks to WHO's global Air Quality and Health platform, detailed data are available on air pollution trends and health impacts for 3000 cities. Research institutions and other UN agencies, including UN Environment, are collaborating to improve data generation and assessments.

All of these actions are underpinned by a new World Health Assembly Air Pollution resolution, approved in 2015, followed by an implementation "Road Map" in 2016. Both reflect the growing commitment of the health community to address today's biggest environmental risk to health.

We know that health can be a powerful catalyst to help address complex subjects ranging from poverty to climate change. Focusing our efforts on the New Urban Agenda, we can build on the promises of the 2015 Paris Climate Agreement through comprehensive urban actions. As I said at the Paris conference last December, "healthy people and a healthy planet" are two sides of the same coin. The New Urban Agenda has the opportunity to advance both.