Rockefeller Foundation
Innovation for the Next 100 Years

Transforming cities

Visions of a better future

Summary of a meeting hosted by The Rockefeller Foundation

Corporations realize that the mega-cities of the future are big economic opportunities. The destinies of cities and corporations are intertwined.

Haripasad Hegde, global head of operations, Wipro

With insights from The Economist Intelligence Unit

Foreword

In August 2013, The Rockefeller Foundation hosted "The Future of Transforming Cities," the first in a series of high-level meetings focused on strengthening the Foundation's work toward its dual goals: advancing more equitable growth by expanding opportunity worldwide, and building greater resilience by helping people, communities and institutions prepare for, withstand and emerge stronger from acute shocks and chronic stresses. The Foundation works in four domains to achieve these goals, and those constitute the themes of the meetings: improving cities, ecosystems, health and livelihoods. By bringing together diverse, sometimes clashing perspectives to explore future trends and to develop microscenarios, the organizers hope to fortify humanity's ability to anticipate and adapt to trends and challenges. For more information on the series, please go to www.visionariesunbound.com.

The meeting, held from August 27-30 at the Foundation's Bellagio Conference Center in Italy, was convened by The Rockefeller Foundation and the University of Pennsylvania's Institute for Urban Research. The Economist Intelligence Unit wrote this summary report of the meeting in full, with the exception of the foreword and conclusion, which were written by The Rockefeller Foundation.

Transforming Cities was convened by The Rockefeller Foundation and University of Pennsylvania's Institute for Urban Research with support from The Rockefeller Foundation

Rockefeller Foundation
Innovation for the Next 100 Years

PennIUR
Penn Institute for Urban Research
Understanding Our Cities, Understanding Our World

Malgorzata Kistryn / Shutterstock.com

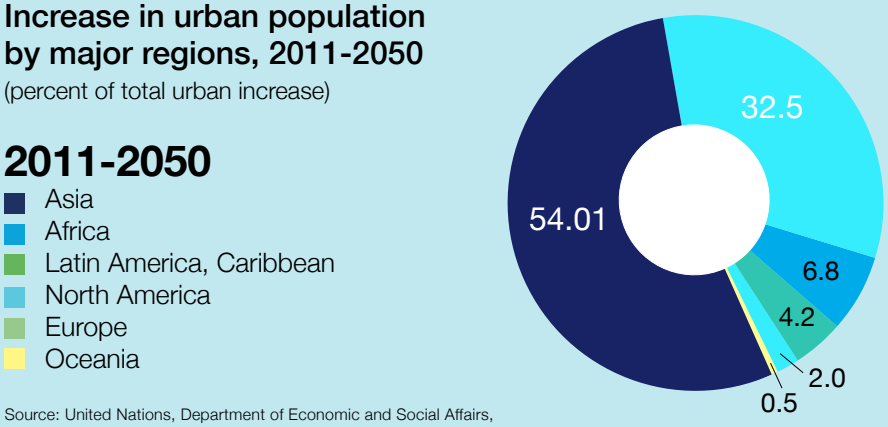
De Visu / Shutterstock.com

Executive Summary

Transforming Cities brought together more than 20 experts to imagine a better urban world.

Cities are fonts of ideas, opportunity, art and political movements. But urban enclaves can also generate inequality, epidemics and pollution. The rapid pace of urbanization in the coming decades brings these and other unprecedented opportunities and challenges to the fore. Will cities lose their vibrant potential if the challenges they face spiral out of control?

Increase in urban population by major regions, 2011-2050
(percent of total urban increase)



Source: United Nations, Department of Economic and Social Affairs, Population Division: World Urbanization Prospects, the 2011 Revision. New York, 2012

Short-termism may not be a bad thing, as long as it's driven by a long-term vision. It allows you to implement, learn and adapt rather than being locked into long-term plans that are inflexible.

Robert Garris, managing director, The Rockefeller Foundation

To explore these questions and spark creative solutions, the discussion progressed from a focus on trends to microscenarios (or mini-versions of the future), to concrete projects.

Cross-cutting takeaways with their focus areas include:

- **URGENCY:** Social tension, climate shocks, a rise in the youth population and urban migration demand action.
- **INCENTIVES:** It is important to identify and align interests across sectors to fix policy and market failures.
- **TIMING:** Short-term adaptable strategies with a long-term vision can best solve complex urban problems.
- **BROAD INVOLVEMENT:** Engaging all stakeholders—including the elite—is necessary for lasting change.
- **EQUITY:** Livelihoods must be addressed, through job creation and pro-entrepreneurship policies.
- **SOCIAL PROTESTS:** Social tension and social movements can be disruptive; they can also bring new opportunities.
- **MARKET FORCES:** Private-sector buy-in and involvement are critical.
- **LEADERSHIP:** Strong leadership is necessary to champion ideas and develop trust and ownership.
- **INNOVATION:** Creativity is critical to spark the unexpected and develop breakthroughs.
- **PLANNING:** Advance design of mass transit, water, sanitation and road networks is generally desirable. But encouraging and responding to organic, community-driven urban growth by retrofitting existing areas can foster urban resiliency.
- **INFORMATION:** New ways to collect and leverage data can empower and enrich local communities. But protecting the privacy and proprietary interests of individuals and businesses is critical.
- **SCALE:** Current solutions can be standardized and scaled up to broaden benefits for all, but only through collaboration and alignment of interests between public, private and civil society organizations.

Trends, microscenarios and future solutions

Participants first explored seven overlapping trends they believed will most influence cities in the coming 15 years, as well as their causes and effects, and deep interconnections. For example, **poor planning and short-termism** often cause a failure of governments to address long-term issues, increasing **vulnerability to climate shocks**. **Decentralization and grassroots action** and **division within the city** were both often caused by a combination of shrinking livelihood options, growing income inequality, and poor public service provision. Finally, while the trends of rapidly expanding **access to information technology** and **big data** will enable new and improved public service delivery and a more active citizenry, an abundance of data will also lead to privacy and ownership issues – ultimately leading to yet another trend — **social protest.**

Small groups next developed three microscenarios, or mini-versions of the future around three of the most prominent trends – Division within the city, poor planning and short-termism, and vulnerability to climate shocks. **Division within the city** pointed to the lack of shared vision, insecure livelihoods, rising land prices, the privatization of public spaces and services, and a weak public will to address these issues as causes. **Poor planning and short-termism** explored how scarce resources, unpredictable impacts from climate change, and mass migration into cities will overwhelm urban planners. **Vulnerability to climate shocks** predicted more extreme weather, disruptive events, displaced people, rising insurance costs, food insecurity, urban migration and water scarcity as likely future consequences – and on the positive side, the birth of an urban resilience industry.

Finally, participants collaborated on group projects to help cities prepare for future trends. For example, the **decentralization of public services** through projects such as rainwater harvesting, urban farming or portable toilets can empower and enrich informal settlements. Access to **public data** about the consumption of basic public goods in slums can help city managers, entrepreneurs and communities make informed decisions. Using **rooftops** for galleries, greenhouses, playgrounds and artists' studios can help solve the land shortage problem. Finally, using **land for the public good** to create more green space and to maximize the efficiency of a dense and unplanned inner-city is critical for the success of the pilot city of Lusaka.

The future of transforming cities

Meeting participants

Left to right, top: *Haripasad Hegde, James Goodman, Jonathon Porritt, Stephanie Draper, Ashvin Dayal, Sameh Wahba, Jinsong Du, Yu Gao, Alan Mabin and Amy Montgomery*

Middle row: *Steven Koonin, Karin Ireton, Twarath Sutabutr, Danny Zulu, Vijay Vaitheeswaran, Alexander Keating and Solomon Prakash*

Bottom row: *Albert Chan, Robert Garris, Joan Clos, Eugénie Birch, Sheela Patel, Susan Wachter, Carolyn Whelan, Ferdous Jahan, Riva Froymovich, Claudia Juech and Nicholas K. Banda*

Andrey Gontarev / Shutterstock.com

Transforming Cities:

Visions of a better future

An inclusive and resilient city makes economic sense. Increased stresses on the system bring about increasingly creative responses. These help local governments develop policies that address divides and halt urban decline.

Sameh Wahba,
sector manager,
Urban Development
and Resilience Unit,
World Bank

Introduction from The Rockefeller Foundation

For more than 50 years, The Rockefeller Foundation's conference center in Bellagio, Italy, has sparked innovations that have helped avert major global crises. The Green Revolution, which developed new ways to boost agricultural production in poorer nations, was expanded to Asia over several Bellagio meetings in the 1960s and '70s. The International AIDS Vaccine Initiative, which incentivized research to develop a vaccine, was born at a 1994 meeting.

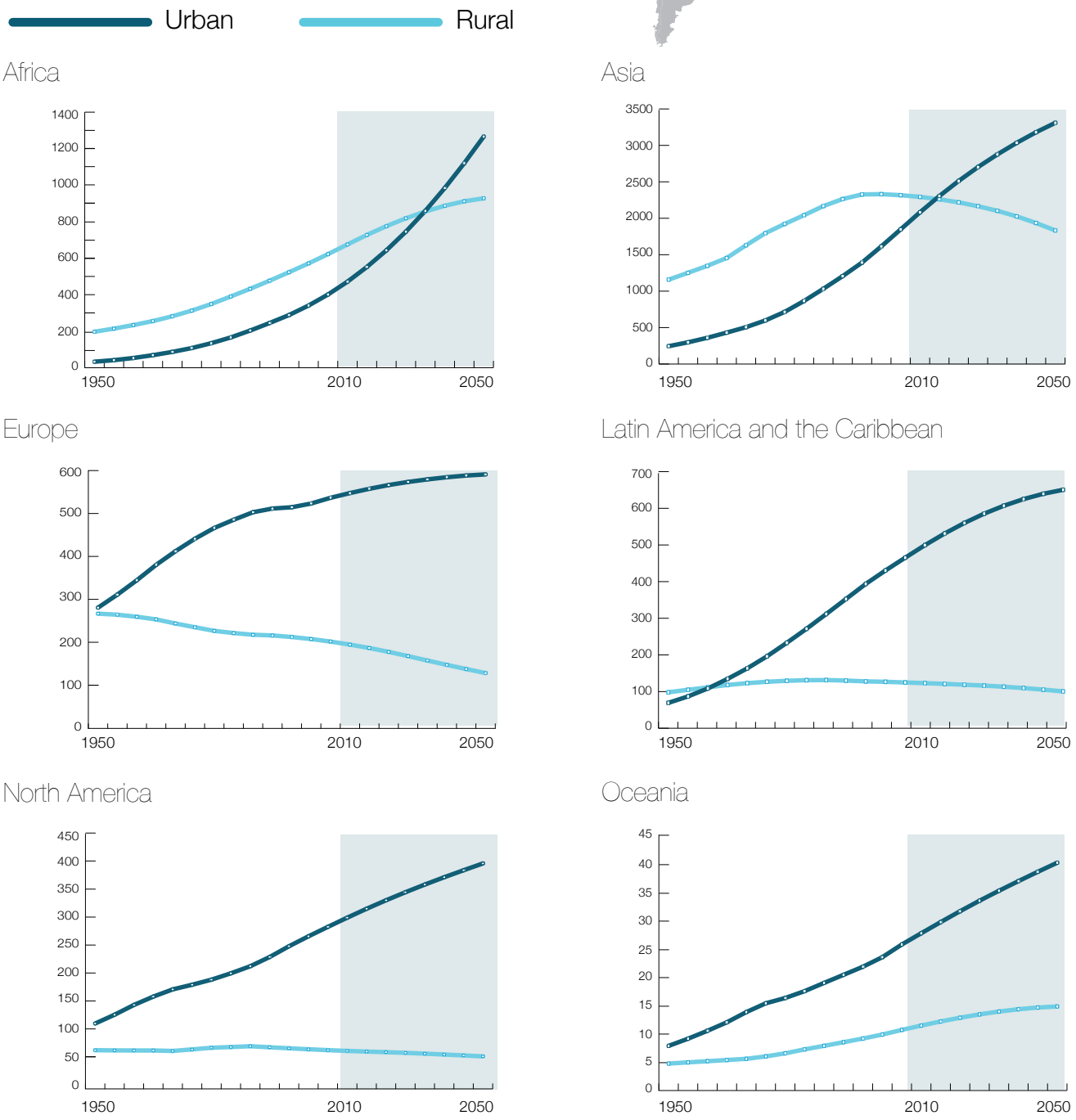
In August 2013, The Rockefeller Foundation hosted "The Future of Transforming Cities," the first in a series of high-level meetings devoted to strengthening the Foundation's work toward its dual goals: advancing more equitable growth by expanding opportunity worldwide, and building greater resilience by helping people, communities and institutions prepare for, withstand and emerge stronger from acute shocks and chronic stresses. The Foundation works in four domains to achieve these goals, and those constitute the themes of the series of meetings: transforming cities, revaluing ecosystems, advancing health and securing livelihoods. By bringing together eclectic, sometimes clashing perspectives to explore future trends and to develop microscenarios, the organizers hope to expand humanity's ability to anticipate and adapt to trends and challenges. For more information on the series, please go to www.visionariesunbound.com.

Transforming Cities

Cities are fonts of potential: They are laboratories of fresh ideas, dynamic markets generating wealth and opportunity, places where music and the arts flourish, and safe havens for persecuted people. But urban enclaves can also sow inequality, blight, epidemics, panic and pollution. The rapid pace of urbanization in the coming decades will bring these and other unprecedented challenges—and opportunities—to the fore. Will cities lose their vibrant potential if the challenges they face spiral out of control?

Steep city growth

Urban and rural population by major regions, 1950-2050 (millions)



Source: United Nations, Department of Economic and Social Affairs, "Population Division: World Urbanization Prospects, the 2011 Revision". New York, 2012

Let's transform the paradigm. Don't be driven by the current context. Be playful and analytic.

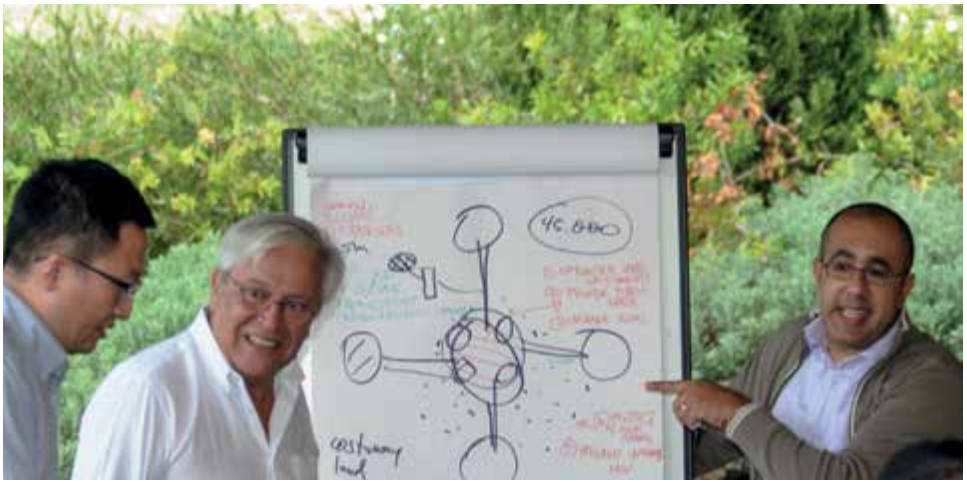
Judith Rodin, president, The Rockefeller Foundation

This is an issue requiring urgent resolution. For most of human history, the world has been overwhelmingly rural. But the population balance tipped toward cities just five years ago. Now the urban population in developing economies is slated to jump to 5.1 billion by 2050 from 2.7 million in 2011. Upwardly spiraling population growth will exacerbate existing urban problems and create a host of new ones.

Without profound and lasting solutions to these problems, the world's great cities—and others on the cusp of greatness—are likely to decline. That decline could end the promise of the game-changing intellectual, economic, technological and social solutions historically born in cities. The very foundation of social progress is at risk.

"As we add 2 billion more people to the world, urban centers are swelling at the seams," warned Judith Rodin, The Rockefeller Foundation's president, at the meeting's opening. "This presents enormous opportunities. But urban trends are accelerating inequality and urban degradation. We need to reimagine neighborhoods, public spaces, transit, governance and pro-poor housing so that they are more resilient to shocks and stresses. We need a refreshed model."

The more than 20 experts from government, industry, academia and activist groups who gathered in Bellagio arrived eager to explore future trends, to lay the groundwork for more equitable and resilient cities in the future. The rich mix of participants included Sheela Patel, founder of India's Society for the Promotion of Area Resource Centers (SPARC); Albert Chan, an architect and director of planning and development at Shui on Land with deep experience developing China's eco-cities; Karin Ireton, a South African affordable-housing innovator and director of sustainability at Standard Bank; Professor Steven Koonin, an urban big data expert and director for the Center of Urban Science and Progress at New York University; and Dr. Joan Clos, executive director of UN-Habitat and former mayor of Barcelona. (See a full list of participants at the end of the report.)



Robert Garris, managing director of the Foundation's Bellagio Programs, is leading the event series. Eugénie Birch and Susan Wachter, professors and co-directors at the University of Pennsylvania's Institute for Urban Research, directed the first meeting on cities. The Economist Intelligence Unit contributed a special anthology of reprinted articles on urbanization from *The Economist* newspaper, and Vijay Vaitheeswaran, the publication's China business editor, led a wrap-up session. Finally, Stephanie Draper, James Goodman and Jonathon Porritt, of Forum for the Future (FFF), an organization with future visioning and scenario development expertise, conducted valuable pre-meeting research, shaped the agenda and facilitated the sessions. Midway through the meeting, a lunch with participants from a joint project between the Bellagio Center and online innovators community PopTech injected a fresh dose of energy with information about many big data projects they are pursuing.

The participants identified and explored complex, interlinked trends to better understand the trajectories of city and informal settlement development. They examined the issues and opportunities in microscenarios, with an eye to shifting urban trajectories for the better, and developed a number of new insights that pushed forward thinking and action in urban planning and other fields. Participants came up with four compelling projects to test and perhaps implement in the months ahead. They also developed stronger relationships with other leaders that could help them work toward enduring solutions for urban problems associated with rising affluence, climate change and population growth.


efeller Foundation
ckefeller Fo


BANGALORE
DATA
EXCHANGE
water
network
Common
platform
Creating data
for public good
Water example
1) Map city
2) Entrepreneurs
Rooftop
Ghos
Planned


2025:
Land unlocked for public good:
New Collaborations:
New Tools for Bending Trends


Challenges
Engaging Partners/ stakeholders
Leverage
Power to the people!
Local communities managing assets
Assets that are physically & financially sustainable
Empowered people
Combine + technology + finance
What works
Future Solutions
water
waste
Energy
Increase the value of community assets
5 yrs
Lusaka Bangalore + 3 other target cities
Scaling
Seed funding
Technology
Pilots
Viability
Big urban design
Evaluated phases:
ADAPTABLE
innovation
USP
data
$
Use analytics
Identify the land
LL4ALL
How replicable is it?
Have political will in Lusaka
Tools for trend bending
let's make

The conversation

Cities are a complex and dynamic mix of infrastructure, governing bodies, ecosystems, processes and people. What will they be like in 2025, and what can we do to shape them?

To tease out the problems and inspire fresh thinking about cities, Forum for the Future proposed a series of three discussions: Trends (momentous, trackable shifts), Microscenarios (mini-versions of the future), and Future Solutions (aspirational, concrete projects that apply new insights).

1
TRENDS

1. TRENDS

For a sense of how cities might evolve by 2025, participants first discussed the most powerful urban trends—positive and negative. This vision, they believed, would help identify future regulatory, financial, technological or human interventions that might shift the urbanization trajectory.

Organizers started with 300 trends identified in pre-meeting interviews with participants and narrowed them down to the 80 most oft-cited ones. Futurescaper, an analytical tool developed at the Massachusetts Institute of Technology, helped measure trends for frequency and correlation with other trends. The link between food prices and social protest is one such example.

Clustered trends were then mapped for a visual sense of the intertwined and linked drivers of urban problems, and their likely unintended consequences. Participants next voted on and discussed their forecasts for the most powerful trends, and their causes and effects. Their final selection and key insights follow in their perceived order of impact.


装城
339
54
9

1. Poor planning/short-termism

In a resource-stretched and politically volatile world, governments will most likely make decisions that solve urgent problems but fail to address long-term issues. Causes will include rapid urbanization and poor governance. Effects will include increased pressure on services and dysfunctional cities and housing markets.

2. Vulnerability to climate shocks

The Asian tsunami in 2004 and Hurricane Sandy in 2012 made visible the impact of climate change on coastal cities. As the planet's temperatures further rise, so will the frequency and intensity of storms, floods, drought and heat waves. Among the causes of cities' vulnerability will be poor planning, short-term governance time horizons and increased exposure as coastal urban populations grow. Effects include infrastructure breakdown, business disruption and the marginalization of the poor in increasingly vulnerable neighborhoods.

3. Decentralization and grassroots action

Many cities will provide insufficient or poor quality citywide public services. As a response, affluent communities will meet their own security, water, energy, and transportation needs through private sources. But, increasingly, poor urban dwellers will do the same, as a response to public service failure. They will create their own private alternatives to solve urban problems. The potentially positive side effects of such local action will include more resilience and localism, and better local governance. But weaker central planning may also be a consequence.

4. Division within the city

Many poor city dwellers will have few livelihood options. The flow of scarce municipal resources to more affluent areas also means basic public services will rarely reach those most in need. The response will often be unrest in underserved areas and ambivalence in fenced-off pockets of affluence. This vicious cycle will diminish the quality of public services such as mass transit and vital water, waste-collection and power-provision services.

5. ICT/Access to information/Big data

Planners will increasingly harness data and analytics to fine-tune or deliver new services. Insights gleaned may also fuel profound change through campaigns or protests. Effects will include a more active citizenry, better local governance, greater individualism, more opportunity for creative entrepreneurial activity, and social protests. However, data will also present issues linked to ownership, privacy, undesirable use of data and compensation for its use.

6. Social protest

Mass demonstrations in Brazil and Iran are just two recent examples of groups harnessing an upswell of frustration through social media to push for change. The causes are complex and varied. They include insecure livelihoods, autocratic leaders, rising food prices, the poor quality of infrastructure and insufficient schools. These movements may grow along with their key drivers. In response, new forms of governance will emerge.

2

MICROSCENARIOS

2. MICROSCENARIOS

To incubate ideas, participants transitioned into small-group microscenario discussions. Developing these mini-visions of the future allowed participants to analyze what works in cities today and to imagine what might materially improve them if current trends intensify, wane or converge with powerful emerging trends. Microscenarios also help inspire interventions to reshape urban environments. Participants were urged to think creatively about ways to design adaptable solutions, align stakeholder interests and leverage cross-sectoral expertise and resources. These three microscenarios took shape by blending overlapping elements from the seven trends first explored.

1. Division within the city:

KEY INSIGHT: Affluent and poor communities pursuing their own needs through privatization and protests could create a tipping point around governance and unleash greater entrepreneurial activity.

Eugénie Birch of UPenn noted the loss of a shared vision and the lack of a public will to address common issues as causes of a growing urban divide. Joan Clos of UN-Habitat added insecure livelihoods as a cause, and forecast more social unrest as a consequence. Solomon Prakash, founder, Maya Organic and LabourNet pointed to rising land prices and slum growth as effects; others anticipated more urban fragmentation, migration, density and climate change vulnerability in poor areas. Ashvin Dayal of The Rockefeller Foundation projected a further crumbling of public services "because the elite will no longer be stakeholders in these services."

The group expected the divide to grow in scope and intensity by 2025. They recommended that planners focus on public service provision to reverse or reduce the trend toward city division. Sameh Wahba of the World Bank said: "[Sufficient] land, housing, transportation and economic opportunities will be major determinants of how cities function in the future. In the Middle East, it's about access to jobs, political voice and participation. In downturns, these divisions will be more acute. Brazilian cities exploded despite 10 years of stellar poverty reduction."

To address income gaps caused by insecure livelihoods, participants proposed urban job development programs and cottage industry. To more efficiently target water and power pricing in poorer neighborhoods, they recommended devices such as smart meters. To help resolve social inequalities, participants proposed multi-sectoral collaboration on common "pain points" such as skills shortages and poor health-services provision. In this regard, Mr Prakash highlighted industry associations joining forces to address poor sanitary conditions. "'If it's good for business, it's good for us,' they say," he said, of poor sanitary conditions linked to street vendors, which are often beyond government control.

Cities are not the problem—they are the pressure cooker. Unrest in an urban area has the potential to be disruptive to a whole lot of people.

Karin Ireton,
Standard Bank

Affluent and poor communities pursuing their own needs through privatization and protests could create a tipping point around governance and unleash greater entrepreneurial activity. Mr Dayal concluded: “My optimistic view is that we reach such a tipping point that the vision of the city changes.”

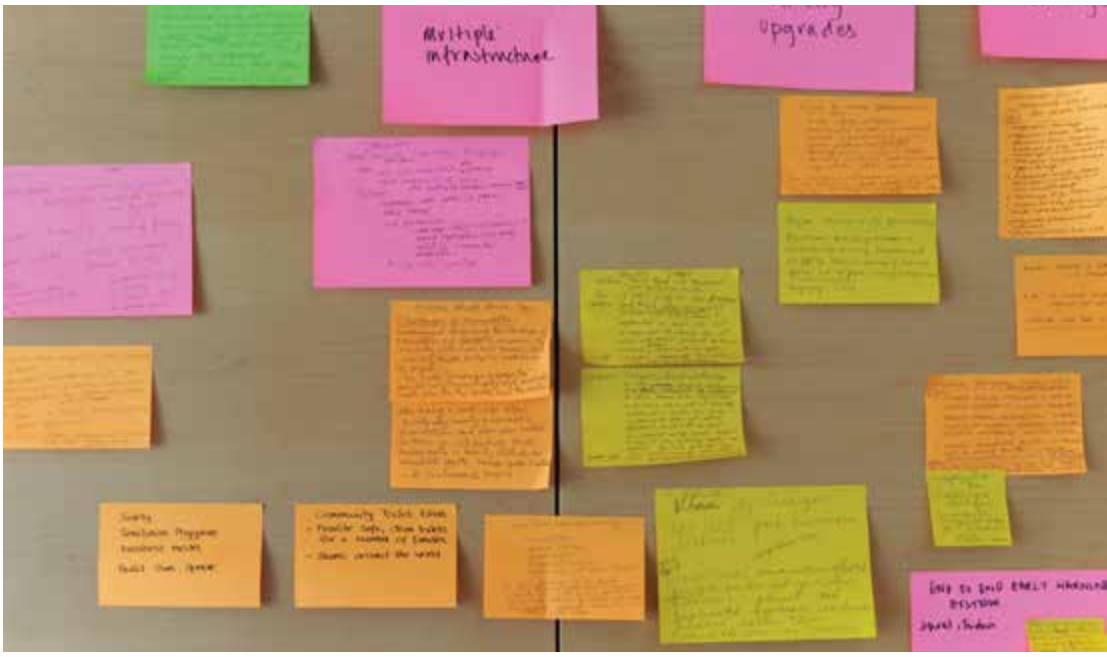
2. Poor planning/short-termism:

KEY INSIGHT: Scarce resources, unknowns such as climate change and mass migrations into cities will overwhelm existing city planning capacity.

This will result in urban sprawl, socio-economic segregation, environmental degradation, anti-government sentiment and poor public services. Barriers to longer-term planning will include complex and costly processes, entrenched interests, and short election/political cycles. Other obstacles will include insufficient data about citywide access to and consumption of basic public services to help planners meet and anticipate needs.

To help counter a future of poor planning, the group proposed a number of possible solutions. These included public data forums to collect, analyze and distribute relevant urban data about the availability, cost and use of public services.

Such data could be used by independent think tanks to provide planning guidance. New data would also help fairly price new or improved services – perhaps in a decentralized manner or on a smaller scale – for informal settlements. Participants also suggested innovative tax schemes, similar to a carbon tax, to manage and appropriately price the use of water, vehicles and electricity based on demand and consumption levels.



3. Climate shocks:

KEY INSIGHT: Effects could include a growing social divide, more crime, unrest, and competition for safe land, but climate change might also spark technological innovation and a new urban-resilience industry.

Participants anticipated little progress in reducing carbon-dioxide levels within a decade. They expected more extreme weather, natural disasters, disruptive events and displaced people as a consequence. The group pointed to rising insurance costs, flooding, food insecurity, urban migration and water scarcity as likely impacts, which would vary by region and income level. The developing world would bear most human costs. “Recurring climate shocks may prevent developing cities from catching up,” cautioned Vijay Vaitheeswaran of *The Economist*.

The secondary effects could include a growing social divide, more crime, unrest and competition for safe land. But climate change might also spark technological innovation and a new urban-resilience industry.

To prepare for and adapt to the inevitable changes wrought by climate change, participants recommended better coordination between city, state and regional officials before, during and after major weather-related incidents. To share ideas about what worked in one region that might be applicable to another they proposed global city networks. To minimize climate change’s impact on buildings and neighborhoods, participants recommended better climate-resilient building codes. Finally, to help solve water scarcity, which is already under way due to warmer temperatures, they proposed rainwater harvesting.

3

FUTURE SOLUTIONS

3. FUTURE SOLUTIONS

Groundbreaking solutions emerge from crises. By describing the contours of a concrete problem, articulating current obstacles and efforts to overcome them, and setting precise goals to achieve them, participants hoped to generate creative ideas that might help solve problems today and serve as a launchpad for powerful solutions tomorrow.

In the third portion of the event, participants formed small working groups to brainstorm a solution to a specific problem, as a way to prepare for the future scenarios they had sketched out earlier. They were urged to seek transformative solutions that were material, multi-sectoral, replicable, scalable and systemic, and that would "bend the trend." After brainstorming, participants were also asked to produce an action plan, with potential solutions, a road map and a timeline.

The four projects aim to involve local communities and city and state authorities in their implementation. They also make use of new data collection and analysis methods, and seek alternatives to failed policy and market initiatives.

The impact of the informal economy is extraordinary. It isn't just large companies that are providing community-sourced solutions.

Judith Rodin,
The Rockefeller Foundation

Resilience is about enabling local communities to respond to shocks. They are usually the first to lose power and to suffer from extreme weather

Sheela Patel, founder director, India's Society for the Promotion of Area Resource Centers

1. Power to the people:

Decentralized services for slums

Informal settlements suffer from poor access to basic services such as clean water, sanitation and electricity. Governments struggle to supply services to these areas because they are perceived to be poorly planned, impenetrable and costly places in which to install such services. This project, spearheaded by Sheela Patel of SPARC, seeks to empower local communities through the decentralized delivery of market-based technologies such as rainwater harvesting, urban farming and portable toilets. It harnesses locally collected data, aggregated purchasing power and innovative micro-finance schemes to provide affordable, accessible and ecofriendly services to many informal settlements.

Phase 1 will focus on encouraging communities to map their surroundings, collect data and develop a viable business model with the help of utilities, governments and foundations. The success of the project will be measured by the number of new services provided, the prices paid for them, and carbon footprints.

Test sites in Lusaka, Bangalore, Bangladesh and Bangkok have been proposed. Work has begun on measuring the amount of existing urban agriculture on slum dwellers' roofs across SPARC's global informal settlement network.

SUCCESSFUL URBAN PROJECTS

Innovation is often viewed as an evolution, rather than a revolution. Many systems, technologies, processes or approaches that help solve problems in one city today may profoundly improve lives in other urban enclaves if transferred, in culturally sensitive and appropriate ways that meet the needs of local communities. To identify high-potential solutions and inspire fresh thinking for others, participants next singled out exisiting projects in their own sphere. Many of these solutions, participants observed, succeeded because they involved deep collaboration between several sectors:

- Slum mapping in India as an advocacy and investment tool.
- Chinese farmers using rooftop solar panels to heat their water and save energy costs. Poor dwelling owners could earn additional income through a rooftop leasing program.
- Community toilet blocks for slums, which improve sanitation, health and safety, especially for women and the vulnerable.
- A World Bank—backed integrated land-use project in Rio de Janeiro, involving the transportation, water, housing and environmental ministries, with innovative incentives for local workers to use public transport, to limit growth on the periphery.

iShacks:

Lighting Up a South African Township

Wood is a popular energy for cooking, heating and lighting in many informal settlements. But the use of wood, brush, dung and other biomass materials as fuel in traditional cookstoves causes more deaths globally than either malaria or AIDS, according to the United Nations. The iShack may provide an innovative alternative. The product is a complete shack built in part from locally discarded materials such as cardboard and Tetra Pak boxes. Solar panels grace the roof, supplying power for up to three lights, an outdoor motion director and a cell-phone charger. The iShack was developed by researchers at South Africa's Stellenbosch University's Sustainability Institute. In 2011, the Bill & Melinda Gates Foundation awarded the group a grant to build 100 such homes in a township outside Stellenbosch. Developers believe this type of small-scale innovation can bring big returns to the more than 60% of Sub-Saharan Africa's urban residents in informal settlements.

3

FUTURE SOLUTIONS

A lot of innovations are happening based on the survival strategies of poor people in cities. The bottom 40% is excluded. We need to change our management mindset and systems delivery. There are scalable opportunities for hundreds of millions of people.

Haripasad Hegde, global head of operations, Wipro

2. Public data forum for informal settlements

Citywide data exchange portal

Timely information about the cost, price, availability, consumption and reliability of supply of basic public goods helps city managers, entrepreneurs and communities make informed investment and implementation decisions. But the dearth of data about rapidly growing slums in Africa and Asia means that they are often overlooked and underserved. This project strives to create a centralized, city-level data portal with information about public electricity, water, sanitation and healthcare services in informal settlements. Through this, stakeholders can share dynamic and real-time data and develop new policies, applications, services and innovative business models.

Project backers include the Penn Institute for Urban Research, Wipro and other Bangalore-based partners. Efforts are under way to form a consortium of businesses, technology experts, local organizations and government officials. They hope to expand the application of currently available data, and to identify data gaps.

Portal work will begin immediately in Bangalore via a project managed by Haripasad Hegde, Wipro's global head of operations. "This project is about giving people and organizations the information they need to build resilience and equity, and the entrepreneurs the information they need to build solutions," said Robert Garris of The Rockefeller Foundation.

Steven Koonin of NYU added that the data needs to be "accessible, relevant, transparent, timely, aggregated and granular." He believes the right data can improve planning, policies and opportunities in the informal sector, and lead to new services, products and more citizen engagement.

3. Rooftop Cities

Maximizing productive capacity of rooftops

More urban residents and rising spending power among the affluent in developing cities have made urban land scarcer. Rooftops may be one of the solutions to expand space within crowded cities, in particular in low-rise neighborhoods like informal settlements.

For centuries, dense cities have used rooftops to gather, to garden and to store goods; rooftops now host satellite dishes, solar panels and cisterns for rainwater collection. Other possibilities include cafes, galleries, greenhouses, playgrounds and artists' studios.

The group aspires to increase space and livelihood opportunities by enabling city-wide uptake and direction for rooftop development. Many rooftop projects could be funded with the help of innovative financing schemes such as carbon offsets.

The team also wants to develop pro-rooftop policies that encourage landlords and tenants to team up with local entrepreneurs.

"The way land is developed in many African cities is very wasteful," said rooftop enthusiast Karin Ireton of South Africa's Standard Bank. "Sprawl should go up, not out." Ms. Ireton is leading the project with Albert Chan of Shui on Land and Mr. Dayal of The Rockefeller Foundation. Potential pilot project locations include Bangkok, Lusaka, Ho Chin Minh City and Guangzhou. Several proofs of concept already exist, including the Rizhao solar city in China (see below).

The team is also exploring ways to work with the United Nations Environment Program and the finance and insurance industries to use rooftop development to help cities become more resilient. The group also seeks "champions" pioneering unconventional rooftop use, and is studying ways to collect relevant data for baseline studies of existing rooftop use, and examining city tax, fiscal and special-use zone codes.

Rizhao:
China's solar city

Few places have captured the sun's power more effectively than the coastal Chinese city of Rizhao, which means "City of Sunshine." More than a decade ago, city officials set a goal of becoming carbon neutral by generating electricity from rooftop and wall solar collectors rather than coal-fired plants. Today, with the help of local photovoltaic makers and academics, the city of 3 million, in Northern China, has nearly attained that goal. More than 99% of households have solar-powered heaters and almost all traffic signals and streetlights are powered by photovoltaic cells. By 2007, the city had cut its energy consumption by 30%, saving an estimated 52,860 tons of carbon emissions annually. Rizhao has become one of the top 10 Chinese cities in air quality. A massive public-education campaign was key to Rizhao's success. Now all new buildings must include solar heaters. Subsidies were also channeled to research and development rather than to end users, helping cut the price of solar heaters to match that of conventional heaters. Foreign investment in the city is up substantially, too; businesses now flock to Rizhao for cleantech insight.

Integrated land planning in Rio:
Keeping informal settlement at bay

How do you encourage people to live in formal homes instead of in informal settlements? Rio de Janeiro, Brazil, is attempting to do just that with an integrated territorial development project that gives some help to its poorer residents. One part of the solution is linked to the Bilhete Unico, an unlimited ticket for buses, subways, suburban trains and ferries. A state subsidy caps prices for poor households on the city's periphery. By encouraging residents to remain in formal homes with good access to transportation, jobs and basic services, the government hopes to decrease the likelihood of slum growth in the city center. The project is supported by a $485 million loan from the World Bank.

4. Land for the public good

Optimizing land use decisions for stronger communities

Business is booming in Zambia, thanks to healthy demand for copper and other metals. But that has led to rapid growth and overcrowding in the capital city of Lusaka. The all-too-predictable result: urban sprawl, unmanageable congestion and slums with few basic services and poor or nonexistent streets. Greater Lusaka supports a population of 3.5 million around a city center designed for 8,000.

Through this project, urban experts helped guide Lusaka city officials at the meeting toward extending the developed edges of the city to satellite cities, to create more

green space and to maximize the efficiency of the dense and unplanned inner-city. Intense discussion about what works and doesn't work in developing cities helped yield ideas for new roads and other infrastructure, with suggestions on how to start or improve water and sanitation services before residents arrive. Challenges they face and explored in the conversation include preserving the rights of existing landowners on the city's periphery and developing mutually beneficial partnerships with tribal communities. Strong leadership will help drive a solution in Lusaka since the political will for change is high.

This project aims to unlock the city's inefficient land market and to revise land management policies to create more jobs, better forms of shelter and stronger communities. Initial work will focus on mapping the city, collecting household data, modernizing the property land registration process, forming community groups, and improving local finances, creditworthiness and the ability to access capital markets. The Lusaka municipal government and the National Ministry for Local Government and Housing are overseeing this project, with likely assistance from the World Bank and UN-Habitat.

Conclusion

Thought leaders assembled at The Rockefeller Foundation's Bellagio Center by the Foundation, UPenn IUR, the Economist Intelligence Unit and Forum for the Future were tasked with envisioning a different kind of urbanization. This future can accommodate the estimated 2 billion people who will move to cities in the coming decades, and do so in ways that build resilience and expand opportunities for their most vulnerable residents.

As outlined in this report, powerful trends will shape cities over the next 15 years. These include a diminishing long-term goal setting capacity, growing climate change vulnerability, and sharper gaps between public and private goods delivery.

A new and innovative urban resiliency, shaped by long-term inspirational visions, but drawing on decentralized, short-term, adaptable data-informed action with overlapping collaboration between the public, business and civil society sectors is not only possible, but critical. The conference generated actionable plans to improve land use policies in Zambia, create urban data sharing hubs in India, and beyond as the trends and scenarios are applied to cities throughout the world.

The microsite "Visionaries Unbound" (www.visionariesunbound.com) allows for broad dissemination and discussion of the trends outlined in this report – and will generate a diversity of opinions from a wide audience. Transforming cities – from New York to Mumbai, from Dakar to Rio – will take diverse and innovative leadership as we chart a course toward an ever more urban global community.

Rockefeller Foundation
Innovation for the Next 100 Years

Transforming Cities

Meeting participants

1. Hon. Nicholas K. Banda, MP
Deputy Minister of Local Government and Housing, Zambia

2. Eugénie Birch
Professor, Department of City and Regional Planning, School of Design; Co-Director, Penn Institute for Urban Research; University of Pennsylvania

3. Albert Chan
Director of Planning and Development, Shui on Land

4. Joan Clos
Undersecretary and Executive Director, United Nations Human Settlement Programme (UN-HABITAT)

5. Ashvin Dayal
Managing Director, The Rockefeller Foundation

6. Jinsong Du
Managing Director, Head of Real Estate Research, Credit Suisse

7. Yu Gao
China Country Director, Landesa Rural Development Institute

8. Robert Garris
Managing Director, The Rockefeller Foundation

9. Haripasad Hegde
Global Head, Operations
Wipro Ltd.

10. Karin Ireton
Director, Sustainability, The Standard Bank South Africa Ltd.

11. Ferdous Jahan
Associate Professor of Public Administration, University of Dhaka
Academic Coordinator, BRAC University Development Institute

12. Claudia Juech
Managing Director, The Rockefeller Foundation

13. Steven Koonin
Professor of Information, Operations and Management Sciences, Leonard N. Stern School of Business; Director, Center for Urban Science and Progress, New York University

14. Alan Mabin
Professor of Urbanism, School of Architecture and Planning, Director, The City Institute, University of the Witwatersrand

15. Sheela Patel
Founder Director, Society for the Promotion of Area Resource Centers, Mumbai

16. Jonathon Porritt
Founder Director and Trustee, Forum for the Future

17. Solomon Prakash
Founder, Maya Organic and LabourNet

18. Judith Rodin
President, The Rockefeller Foundation

19. Twarath Sutabutr
Deputy Director General, Department of Alternative Energy, Ministry of Energy, Bangkok, Thailand

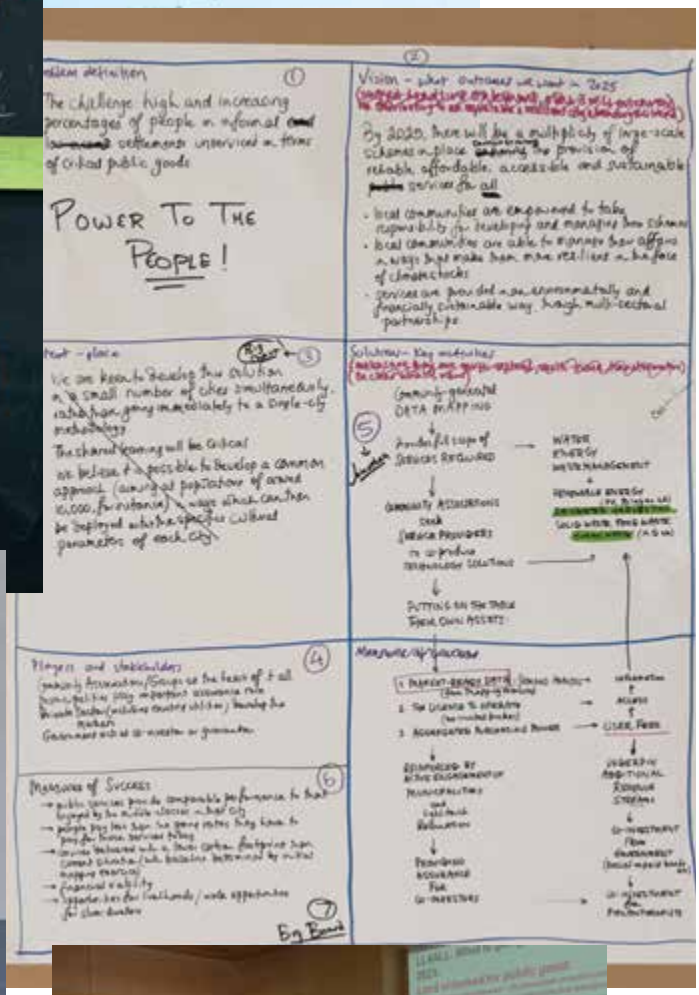
20. Vijay Vaitheeswaran
China Business Editor, *The Economist*

21. Susan Wachter
Professor of Financial Management, Real Estate and Finance, The Wharton School; Co-Director, Penn Institute for Urban Research, University of Pennsylvania

22. Sameh Wahba
Sector Manager, Urban Development and Resilience Unit, World Bank

23. Danny Zulu
Principal economist, Ministry of Local Government and Housing, Zambia


Vision
goal
unlocking land
aligning
aggregate solutions
$
energy
sharing
collaborate


Problem definition
The challenge: high and increasing percentages of people in informal settlements unserviced in terms of critical public goods
POWER TO THE PEOPLE!
Vision – what outcomes we want in 2025
By 2025, there will be a multiplicity of large-scale schemes in place delivering the provision of reliable, affordable, accessible and sustainable services for all
Solutions – key activities
Measures of Success


BANGALORE DATA EXCHANGE
QUALITY
NITRATE


Rockefeller Foundation
Innovation for the Next 100 Years