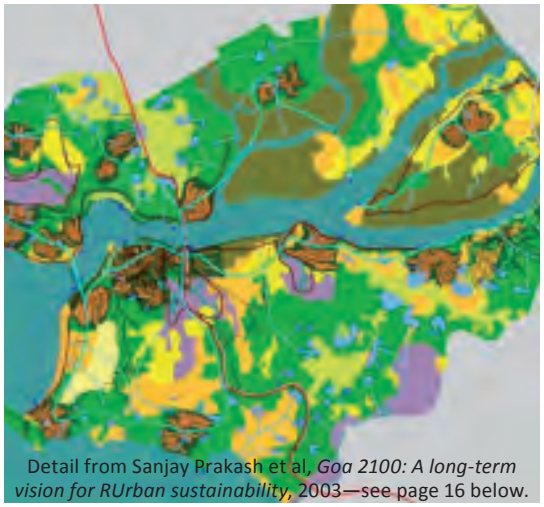
Livable cities in a rapidly urbanizing world

Urban Planning Advisory Team (UPAT) of the
International Society of City and Regional Planners (ISOCARP)
*For the **Philips Center of Health and Well-being***
Singapore July 25-31, 2010

ISOCARP



Detail from Sanjay Prakash et al, *Goa 2100: A long-term vision for RUrban sustainability*, 2003—see page 16 below.

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Philips Center for Health and Well-Being Think Tank identifies Framework for Livable Cities

The Philips Center for Health and Well-being is a knowledge-sharing forum that provides a focal point to raise the level of discussion on what matters most to citizens and communities. The Center will bring together experts for dialogue and debate aimed at overcoming barriers and identifying possible solutions for meaningful change that can improve people's overall health and well-being.

The Philips Center for Health and Well-being recognizes that the importance of good health and staying free from illness is understood by everyone. Well-being refers to a general sense of enjoying life and feeling fulfilled, safe and secure. Well-being also refers to the sense of comfort, safety and security people feel in their environment – at home, at work, when out in the city or on the road. Global themes and issues that the Center will address include studying the impact of societal and demographic trends on healthcare systems, and investigating how cities will change and develop with the rapid urbanization of many parts of the world.

The Philips Index is a global research project being conducted by The Philips Center for Health and Well-being. Its aims to identify what citizens find important concerning their health and well-being. The research examines the mega-trends that shape each nation's healthcare, lifestyle and who we are as a society, with a focus on what aspects of health and well-being are most important, how satisfied people are with these aspects, and the role that technology plays in helping society maintain better health and well-being. To date, research results have been obtained and analyzed from the U.S., United Kingdom, China and Brazil, The Netherlands, Belgium, Spain, France – and over 25 countries will be researched during 2010.

For more information on The Philips Center for Health and Well-being, visit www.philips-thecenter.org or our Linked In Group on Livable Healthy Cities http://partner.linkedin.com/creatinghealthylivablecities or follow us on Twitter @philipscenter.

Livable Cities Think Tank

More than half of the world's population is living in cities and the urban population is predicted to grow at an unprecedented rate. The scale of growth in cities presents new social, economic and environmental challenges for those who live, work and do business in them. The livability of cities is essential to improving a city's identity and values, making it attractive to inhabitants, visitors, talents, as well as businesses, developers and investors.

Over a period of 24 months, starting in June 2010, the Philips Center of Health and Well-being Livable Cities Think Tank aims to address key questions on urbanization such as the vital elements that are required to construct a livable city for its people and identifying the parties that need to get together and collaborate to achieve this. Members of the Think Tank are:

- Reon Brand, Senior Director, Strategic Futures, Philips Design
- Dr Freek Colombijn, A/Professor and Head of Department of Social and Cultural Anthropology, VU University Amsterdam
- Peter Head OBE, Chairman of Global Planning, ARUP
- Dan Hoornweg, Lead Urban Specialist, Cities and Climate Change, Urban Development, World Bank
- Jaime Lerner, President, Instituto Jaime Lerner
- Dr Shipra Narang, International Urban Consultant Associate, PRDU and ISOCARP
- Olivier Piccolin, Senior Vice President & General Manager Asia Commercial Lighting, Philips
- Sanjay Prakash, Sanjay Prakash and Associates & Indian Institute for Human Settlements
- Darko Radovic, Professor of Architecture and Urban Design, Keio University, Tokyo
- Simon Tay, Chairman, Singapore Institute of International Affairs (facilitator).

Values for Livable Cities

As a stimulus for the discussions in the Livable Cities Think Tank, the Philips Center for Health and Well-being issued the inspiration paper 'Values for Livable Cities'. This paper emphasizes that very complex challenge of making cities livable is closely related to the values and efforts in making cities more sustainable, inclusive and competitive. Combining these values and efforts is a key success factor for cities of the future. Lessons from the past centuries show that towns and cities have to be flexible. Changes throughout time and changes in identity and functions are necessary to retain the vitality, competitiveness and livability of towns and cities. Today's and tomorrow's challenges for transforming urbanized areas into livable and resilient cities require a constant focus. It cannot be achieved without the help and the support of their communities and inhabitants.

Resilience, inclusion, authenticity and diversity

In the first meeting of the think tank in Singapore, June 2010, the Think Tank outlined important factors such as safety and security, access to public healthcare, a sense of belonging, cultural diversity and inclusiveness and efficient consumption of energy that contribute to urban citizens' health and well-being across cities around the world. Underlying all this is a need for rapid and fundamental change in how we view and lead cities worldwide. The Think Tank concurred that livable cities can be constructed around the three aspects resilience, inclusion and authenticity. Diversity is a fourth dimension of livable cities, embodied in attributes which contribute to resilience, inclusion and authenticity.

The Think Tank unlocked several other issues for discussion such as existing livability indicators and how they can be improved, the engagement of civil society in addition to government and business efforts for sustainable solutions, the contentious quality of authenticity in cities and the need for leadership in maintaining social harmony, diversity and inclusiveness. The Think Tank hopes to define the three/four aspects of livable cities, address some of the issues raised and propose policy recommendations.

The ISOCARP UPAT Team

The UPAT team comprises a total of seven senior and younger planners, selected on the basis of their relevant experience and their ideas on livable cities. Team Leader Jeremy Dawkins provided guidance to the team in Singapore and chaired the discussions. Vice President UPAT Program Francisco Perez participates in and supervises the quality of the process and the results of the UPAT workshop. UPAT Rapporteur Martin Dubbeling prepared the UPAT and wrote the Terms of Reference. Jeremy Dawkins and Martin Dubbeling edited this UPAT Report.

The first Philips Think Tank discussed directions for the UPAT team and the UPAT Report. This UPAT Report was input for the second think tank meeting. UPAT Rapporteur Martin Dubbeling attended the first meeting of the Philips Think Tank in Singapore, 23 June 2010. He introduced the UPAT to the members of the Think Tank and, with Jeremy Dawkins, presented the results of the UPAT report to the second meeting of the Think Tank in Shanghai on the 3 September 2010. The team members were:

- Jeremy Dawkins, UPAT Team leader, Australia
- Martin Dubbeling, UPAT Raporteur, Netherlands
- Antonia Cornaro, Team member, Austria/USA
- Nadya Nilina, Team member, Russia/USA/Netherlands
- Francisco Pérez, Vice President UPAT Program, Mexico
- Dr Awais Piracha, Team member, Australia
- Luc Vrolijks, Team member, Netherlands/USA.

From the Vice President

We are living in a globalized and competitive world which is being shaped by the rapid urbanization of mega agglomerations. In this trend there are a number of environmental and social challenges that have to be faced. In ISOCARP, the International Society of City and Regional Planners, we aim to shape cities and regions in a way that they are environmentally sustainable, socially just and economically competitive, to make them more livable. In this context, the Urban Planning Advisory Team (UPAT) program is a means for ISOCARP membership to translate reflections into practice, to share our knowledge, to improve our professional skills and, in the end, to contribute with others to developing better cities and regions for a better world. In the last six years, ISOCARP had a number of UPATs in different parts of the world. Each of them has been different and challenging. This is a concrete way we contribute to developing livable cities and regions for a better world.

Francisco Pérez, ISOCARP Vice President UPAT Program

From the UPAT team

The first Think Tank meeting concluded that livable cities are resilient, inclusive, diverse and authentic. The UPAT team was asked if these four criteria for success can be measured, reviewed and recommended, and was asked to reflect on the findings of the first think tank meeting and assess first hand case studies in Singapore. The UPAT team was also asked to think 'out of the box', and to develop practical and original solutions that improve the quality of peoples' lives and communities in sustainable cities, focusing on South East Asia.

The team gathered in Singapore on 25 July 2010, keen to contribute to one of the most pressing challenges of our times: how will it be possible, in a low-carbon world of finite resources, with nature under great pressure, to fulfill the aspirations of the majority of humanity to live in good cities? We worked intensively, we met experts (see page 22), we learned about the Singapore experience, we worked through complex issues and of course we brought together the expertise of a team of planners from different parts of the world with practical experience in very different settings. This document presents our findings.

In part, we tell a cautionary tale: rapid urbanization accelerates the consumption of fossil fuels, the depletion of natural capital, the loss of fertile land and the widening of social inequalities.

At the same time, the dynamism and potential for innovation in rapidly urbanizing regions, particularly in South East and East Asia, promises new solutions. For this reason, we have focused on what we have described as "non-city rapidly urbanizing regions" of the kind that an additional two billion people could be living in by 2050.

This approach has not ignored those cities, particularly in Europe and North America, which are mature and growing only slowly, if at all. We believe that the transformations that they will also have to undertake, to ensure that urban life is both fulfilling and sustainable, may well be pioneered in the kinds of non-city rapidly urbanizing regions which are the focus of our story.

Key points

From our findings, we have distilled nine key points that capture our understanding about livable cities and urban environments—places which are resilient, inclusive and authentic, with high levels of diversity.

Many, perhaps most, new urban environments are not likely to be recognizable (or manageable) as familiar, structured, bounded, hierarchical 'cities' but will be rapidly urbanizing regions with tens of millions of residents. We investigate this phenomenon at different scales. We explore the new kinds of planning and governance that this urbanization will demand. With these radical transformations in mind, we propose ten 'practical solutions' which can be implemented now, and which might be subjects for investigation by the Philips Center or one or both of the Think Tanks (listed on pages 18 and 19).

1. Rapid and widespread urbanization could destroy life as we know it. If it is to continue – if the urban environment, with all its opportunities for fulfillment, is to become the habitat of nearly all humanity – it must take a radically different form (see page 14).
2. Urbanization will not take the form of hundreds of new separate, traditionally-ordered cities. A new phenomenom – already apparent in urbanizing regions from the 1970s but not widely recognized – is the *non-city rapidly urbanizing region* (see page 12).
3. Non-city rapidly urbanizing regions need a new style of planning and a new form of governance capable of strong but open and inclusive leadership focused on the whole region and the long term (see page 16).
4. Instead of consuming natural capital at an accelerating rate, urbanization must be re-invented to rebuild natural capital.
5. Urbanization must be reinvented to strengthen natural systems, making the most of locally generated low-carbon energy and closing the loop in flows of resources and materials (see pages 24 and 25).
6. Instead of generating inequality and creating enclaves of social classes from the super rich to the impoverished, urbanization must be re-invented to create communities of social engagement and equality.
7. Non-city rapidly urbanizing regions can provide a rich urban life for ordinary people, and can be livable and sustainable, under certain stringent assumptions (listed on page 12).
8. The dynamism of these rapidly urbanizing regions can pioneer new models for the transformation of the mature cities of fully urbanized countries.
9. In order to explore this scale of urbanization without the wholesale collapse of the climate and ecosystems, we have had to assume that strong global and local measures, outlined on page 12, have been implemented. In short, putting a price on carbon and a value on nature are preconditions for livable urban environments.

The UPAT Team's week in Singapore

Sunday 25 July	0900-1300	Team leader and Rapporteur meet
	1800-2100	Team members meet
Monday 26 July	0900-1400	First working session
	1400-1800	Second working session
	1900-2100	Meeting with Mr Arthur Aw
Tuesday 27 July	0900-1400	Third working session
	1400-1800	URA gallery, field trip Marina Bay
	1900-2100	Meeting with Dr Liu Thai Ker
	2100-2200	Meeting with Mr Larry Ng
Wednesday 28 July	0900-1400	Fourth working session
	1400-1800	Fifth working session
	1900-2100	Meeting with Mr Simon Tay
Thursday 29 July	0900-1400	Sixth working session
	1400-1800	Field trip: Tao Payoh, One North
Friday 30 July	0900-1300	Seventh working session
	1400-1800	Eighth concluding working session
	1900-2200	Meeting with young planners
Saturday 31 July	0930-1200	Editorial team

Learning from an urban world

Better cities, better urbanisation

The livability and sustainability of cities are now recognized as critical issues for the future of the planet. Across the globe, governments, institutions, designers, planners, researchers and corporations are searching for ways to make cities better – using less energy and resources, fostering innovation and stronger communities, and providing populations with the most livable environments.

In the Terms of Reference the UPAT team was asked 'to assess first hand case studies in Singapore and other studies around the region. Note that both best case practices and worst case practices will provide interesting learnings.'

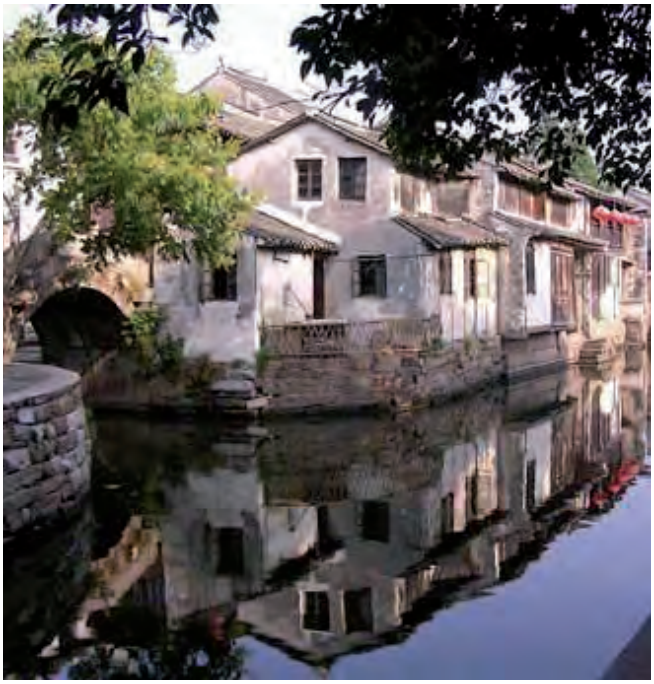
The UPAT team members have direct experience in meeting urban problems and challenges, and are familiar with many programs and projects to make cities more sustainable and more livable. On this page and on the following seven pages are snapshots of some of these many examples of design, planning and governance which point the way to better cities, and which are an inspiration for all those who are working on these critical issues.

Regional coherence in the lowlands

Cities in the lowlands are looking for a new practice of urban planning and design, which will contribute to lively attractive urban centers and to a strong position of the city in the regional context. The cities of Amsterdam, Antwerp and Rotterdam discovered their vacant port areas and turned them into new, special attractive urban waterfronts. The presence of large water-landscape-structures give chance for a new cityscape but also for the need of improved water management due to climate change. These transformations are important opportunities to create new coherences on a regional scale. Yet "regional coherence" not only asks for a spatial concept of a region but it also demands a political consensus in the region itself and a regional identity. Big cities themselves are the only institutions with enough power to take the lead in the planning of a new regional coherence. This development is only possible when the cities promote their expertise and skill in planning and design. NGOs and other civic organizations can contribute to redefining regional identity, the public interest in regional development and to raising extra funds.

China's historic water towns

In ancient times the wetlands around the southern part of the Yangtze River developed a rich agriculture and culture, a lifestyle with 'water' as its centre. In the 11th century it was one of China's richest places with many Venice-like water towns as canals, rivers and lakes provided the main means of transportation. Up to the 19th century there were numerous authentic water towns within this area. Do to rapid social and economic development since the 1980s many old towns have disappeared due to the construction of high-rise buildings, roads and industry. Some towns, like Zhouzhuang, Tongli, Luzhi and Nanxung, were preserved due to their geographical location and appropriate planning. Since 1985 conservation plans were made for these authentic towns which steer renovation and development to conserve historic architecture and meet the requirements of modern life. Lessons learned are: Awareness of the local population for the importance of conservation is needed. Economic development of these towns is needed for a durable renovation. Paying special attention to local culture during planning and building is necessary to preserve local customs. Setting boundaries for the implementation of plans ensures the right results during the long development phase. See Ruan Yisan and Ding Yuan's contribution to '*ISOCARP Review 4, Urban Growth without sprawl, A way towards sustainable urbanization*' (ISOCARP 2009) on pages 118-133.



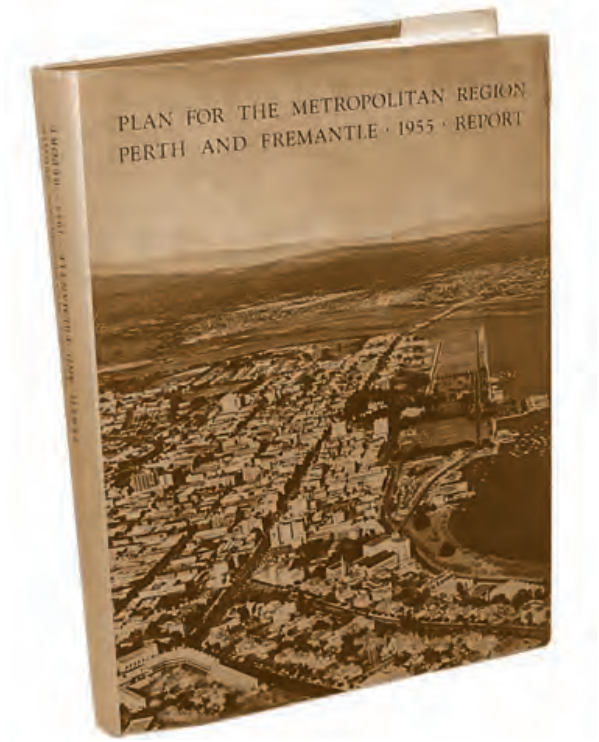
Strategic processes

Long term strategic choices and mechanisms in Curitiba

Contemporary Curitiba owes much to the 1965 master plan. Based on what were then unheard-of premises, the plan markedly changed the direction of urban growth and provided a wider and more flexible support system to the development of the city. The following approaches are notable: the adoption of a linear growth model with structural corridors which protected the center of the city by avoiding it; an integrated planning structure encompassing the road system, mass transport and land use which privileged mass transport over cars; concern for the urban environment and quality of life of the city, for instance by returning the city to pedestrians; and the creation of a permanent urban planning process through the establishment of the Instituto de Pasquisa e Planejamento Urbano de Curitiba charged with developing guidelines and adjusting them to the changes required with time. See Cleon Ricardo dos Santos, 'Curitiba: From ecology to eco technology.' *ISOCARP Review 01: Making spaces for the creative economy.* 2005, pages 84-99.

Singapore's long term strategy for water supply

With the conversion of the ocean-front Marina Bay to a fresh water reservoir, and the completion of new reservoirs at Punggol and Serangoon, Singapore's water catchments have increased from one-half to a remarkable two-thirds of the land surface of Singapore. The Marina reservoir, at the mouth of the Singapore River and draining the CBD and much of the central city, is now in use as a source of potable water. The replacement of sea water by rainwater commenced in April 2009. The Marina reservoir can meet about 10% of Singapore's water needs. With no natural aquifers or lakes as well as little land to collect rainwater, Singapore has pursued a water sustainability strategy for four decades. The 'Four National Taps' are water from natural catchments, imported water, high-grade reclaimed urban stormwater branded as NEWater in Singapore, and desalinated water. This long-term water supply strategy ensures a diversified and sustainable water supply for Singapore in the years to come.



The 'planning dividend' in Western Australia

Western Australia's planning system, stable for over 50 years, has been described as a unique combination of institutional arrangements enjoying bipartisan support: strong and simple legislation; centralised statutory regional planning, subdivision control and facilitation of local planning; dependable funding for metropolitan improvement; a statutory authority to exercise powers, allocate resources and provide advice based on the expert professional support of a department of state. Continuity of support by successive state administrations for over 50 years provides clear evidence of the system's integrity and robust nature. The longer this system is in place the better it gets. Stability is a good thing for long term plans for cities. Stability is good for transparency and for community involvement in planning. Stability is also good for innovation and reform, since a stable base encourages a stream of small improvements and a focus on long term goals. The Western Australian Planning Commission recently quantified some of the direct benefits: see WAPC *The case for retaining the metropolitan region improvement tax*, 2007 and Jeremy Dawkins, 'The difference that planning makes in Western Australia', ISOCARP Review 04, 2009, pages 34-49.

Urban intervention

Singapore's One North

The development of One North is a long-term strategic investment to lead Singapore's economic development towards a knowledge-based economy by establishing a strong R&D base. The project aims to redefine the spatial relationship between research, businesses and urban life. A Steering Committee with members from various key agencies and chaired by a Cabinet Minister was established to give advice and to help streamline the whole development process. One agency plans and leads the developments and provides the 'soft' support services to sustain the developments. The goal is also to encourage continued growth and investment within the new-economy industries over the years, while creating a vibrant dynamic environment for a socially diverse community to "work, live, play, and learn" as early as possible. Essential is that each phase of development stays relevant to the evolving market needs. Growth is shaped and organized through a pattern of seven districts, each characterized by its own distinctive focus on a particular industry or business cluster. The districts are connected to a park zone and the existing urban fabric. Parcels are designated with different degrees of mixed-uses to generate vibrancy. See Arthur Aw and Cindy Koh, 'Singapore, One-North Initiative: where ideas grow.' *ISOCARP Review 01: Making spaces for the creative economy.* 2005, pages 150-167.

Seoul urban renewal

Seoul restored a stream that runs through the centre of Seoul, dividing the city into North and South. For thirty years it was buried under a city highway. In 2003, as part of the Seoul urban renewal project, the highway was demolished and the stream was turned into a beautiful 4 miles long urban park. The Cheonggyecheon (Stream) Restoration Project took two years and cost around 300 million dollars. It has created a gorgeous and convivial green public space in the middle of the city. Nearly three quarters of the demolition material from the old highway was reused for rehabilitation of the stream and construction of the park. Now fish, birds and insects have returned to the urban river, and the area around the park is cooler than other parts of the city. Seoul has also made big strides in transportation planning, rerouting traffic through other corridors and adding more public transportation. Fewer vehicles now enter the city. Bus and subway ridership has expanded. Seoul demonstrates the progress towards sustainability and liveability of cities in Asia.

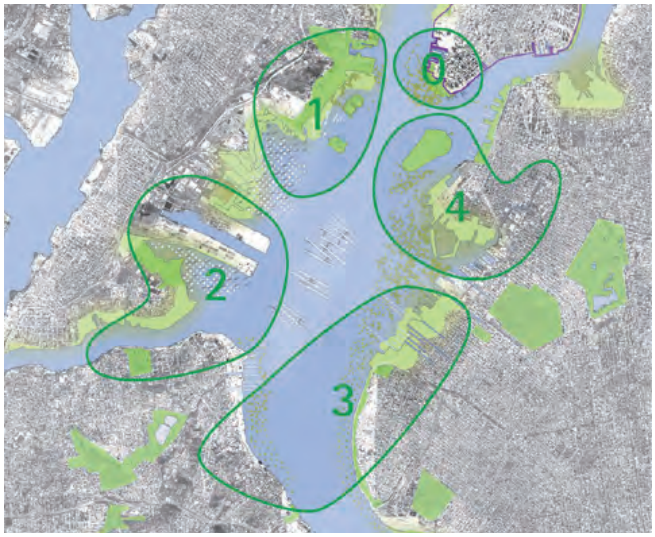
Revival in New York

New York City is in continuous struggle to renew itself in order to inhabit its growing population and to stimulate its creative economy. The only solution is to find older, overlooked neighborhoods and derelict industrial areas and to reuse, re-make and revitalize them into new kinds of communities. In the last few years this search has resulted in New York returning to its roots: the waterfront. The Meatpacking district is one those places which has now become a center for creative economy with different uses and users that shift during the day. The area is defined by its low-rise urbanism, old warehouses, streets with Belgium pavers, distinctive canopies and open views of the river and sky. By maintaining these characteristics the district kept its powerful sense of place. A good example is the grass root project The High Line where a derelict elevated railway is transformed. At street level The High Line will provide retail and restaurants but at the higher level a greenway will connect twenty two blocks of waterfront. See Thomas K. Wright and L. Michael Ronderos, 'Manhattan, Meatpacking districts cool: creativity at the waters' edge.' *ISOCARP Review 01: Making spaces for the creative economy.* 2005, pages 254-271.

Creative urban initiatives

The Guggenheim effect

The case of Bilbao is representative of the challenges and expectations that many European cities are facing. The reindustrialization process of the 1970's presented great social and economic challenges along the Nervión Estuary and the historic centre was deteriorating. Floods in 1983 formed the catalyst for the transformation of the metropolitan region of which the Guggenheim museum became representative. The encounter between Guggenheim and Bilbao is said to be coincidence but it was Bilbao's open attitude for innovation and change that made it possible. A master plan and sector plans were developed, along with regional planning, supra-municipal efforts, public utility and services companies and even planning forums. The capacity for intergovernmental and inter-institutional collaboration through different levels of administration is remarkable. The set-up of the public-public partnership with representatives of various public authorities, Bilbao Ría 2000, could be the key in this. Their role as an effective urban transformational agency can serve as an valuable international example. See Jon Azua and Fundacion Metropoli, 'Bilbao: Bilbao Ria 2000 and the Guggenheim effect.' *ISOCARP Review 01: Making spaces for the creative economy.* 2005, pages 26-45.



Rising Currents: projects for New York's waterfront

The Museum of Modern Art has been successful in creating an atmosphere in which innovation and creativity can thrive. Five 'architect in resident' teams worked for a period of eight weeks at PS1, the Center for Modern Art in Queens. The teams interacted and presented to community groups, but designed their own proposals for allocated areas in New York's Upper Bay. These formed the 2010 *Rising Currents* exhibition at MOMA. The process is new for New York, and has allowed innovative ideas to be shared with a wide audience. The content of the exhibition shows how the city of New York can deal with rising sea levels while achieving new, vibrant neighborhoods, water-cleaning oyster beds, gardens and other investments that help to create livable neighborhoods and attractive city environments. The precedent-setting exhibition helped to change the perspective of the wider audience: making the city safe and making the city better can be achieved together. For the details: http://www.moma.org/explore/inside_out/category/rising-currents.

Plan Abu Dhabi 2030

The Abu Dhabi Urban Planning Council designed and implemented the Urban Structure Framework Plan for the evolution of the city of Abu Dhabi. The council identified a quarter century timeframe plan, spanning the period from 2007 to the year 2030. "Plan Abu Dhabi 2030" is designed to help Abu Dhabi filter and respond to current and future development needs, establish a planning culture and introduce strong guiding principles for new development. It is first and foremost grounded in the cultural and environmental identity of Abu Dhabi. Abu Dhabi is a modern society shaped by an ancient culture. The strategic policies are inspired by this history to provide a way of reversing sometimes inappropriate development trends and of satisfying the needs of a growing population. These policies are grounded by the three basic elements of sustainability: the natural environment, economic development and cultural heritage. Six key directions provide a strong foundation for the future of Abu Dhabi. These key directions are sustainability, the unique environment, evolving culture, identity and opportunity, excellence and livability and connectivity. Source: *Plan Abu Dhabi 2030, Urban Structure Framework Plan*, Abu Dhabi Urban Planning Council (2007).

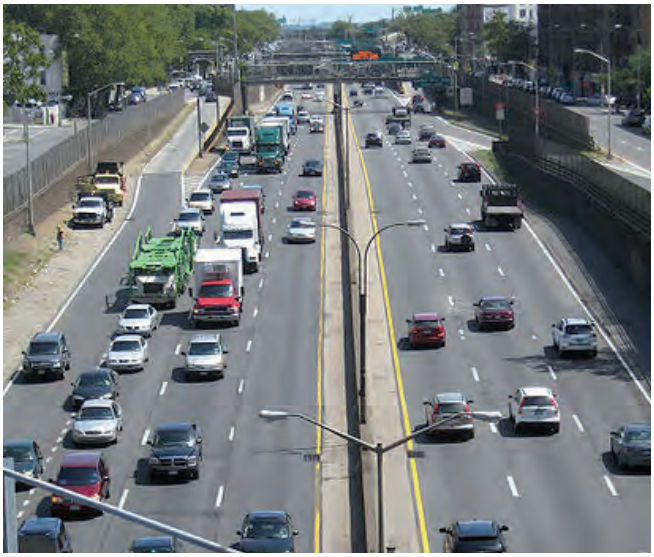
Problems...

Bangkok's failed transit project

These stained concrete fragments are all that remain of the Bangkok Elevated Road and Train System (BERTS) or Hopewell project (1990-1997). They line the old diesel-fuelled railway through northern Bangkok like a modernist Stonehenge. Meanwhile the new international airport has been built at Suvarnabhumi (40 km from the planned destination of BERTS, Don Mueang) and the Suvarnabhumi Airport Link has been completed. A key lesson to be learned, especially for the public sector, is that government needs to work closely with all parties in such mega-projects to insure that public-private actions and investment decisions are coordinated. In particular the public sector must provide, on schedule, its agreed support assets to allow the private sector to remain financially viable during the all important construction period. Transaction transparencies and public-private coordination and follow-through ensure that the many risks to all parties in major infrastructure projects are acceptable and manageable.

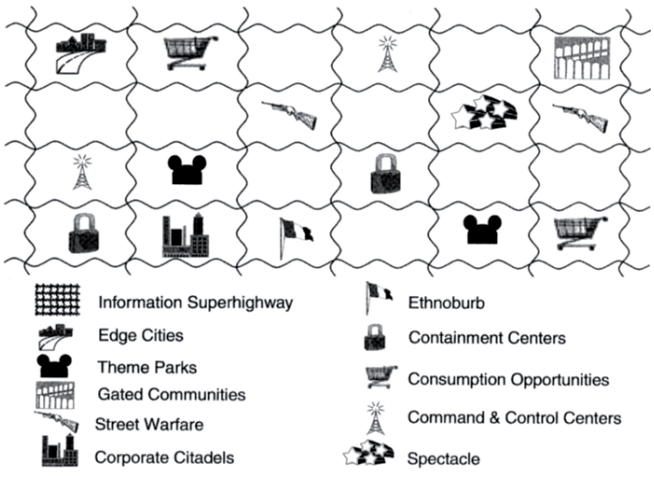
Bronx Expressway's bad legacy

The elevated Bronx Expressway in NYC went through a whole vibrant, healthy neighborhood, cutting off the 'South Bronx', now a crime-ridden area. Wikipedia expresses the general consensus on the project's long term effects, in impoverishing neighborhoods and making other infrastructure projects more difficult to implement: 'Many have blamed the Cross Bronx Expressway for worsening the decay of neighborhoods in the South Bronx, with the prominent example being the neighborhood of Tremont. In Robert Caro's *The Power Broker*, the author argues that [Robert] Moses intentionally directed the expressway through this neighborhood, even though there was a more viable option only one block south. Many of the neighborhoods it runs through have been continually poor since before its construction, primarily due to the lowered property value caused by the expressway. This is partially responsible for the public opposition to many other planned expressways in New York City that were later cancelled – in particular, the Lower Manhattan Expressway' http://en.wikipedia.org/wiki/Cross_Bronx_Expressway.



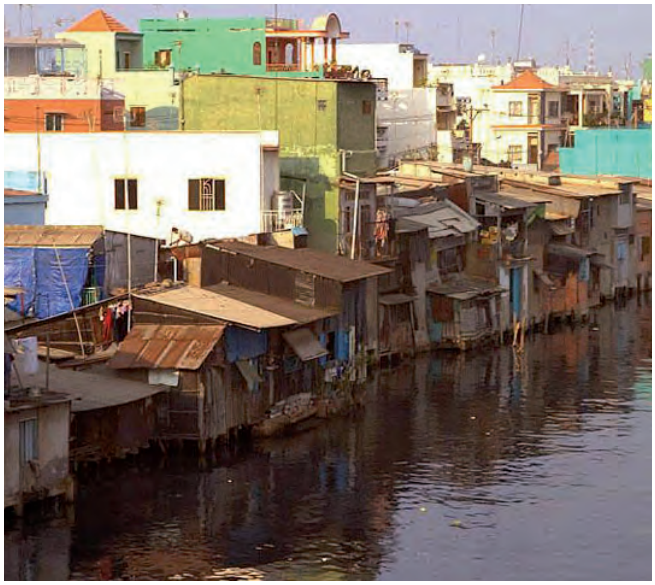
LA's consumption landscapes

Traditional Western city-structure models of concentric zones, pizza slice sectors and multiple nuclei have no relation to the massive urban regions developing in Asia. Dear and Flusty's LA School "gaming board" model however has some resemblance with the new Asian Urbanity. The LA School has recognized that the assumption of the traditional concepts of urban structure of existence of a central core is not valid for urban development in LA. A corporate-dominated connectivity prevails over individual-centred agency. The evolutionists urban paradigm has been replaced by a chaotic process in this new form. The following quote from Dear (2002, pp24-25) further explains the "gaming board" model. "Urbanization is occurring at a quasi-random field of opportunities, in which each space is equally available.... Capital touches down as if by chance .... thus sparking the urban development. The relationship between development ....and non-development is disjointed seemingly unrelated affair. Conventional city form is sacrificed in favour of a non-contiguous collage of consumption oriented landscapes devoid of conventional centres".



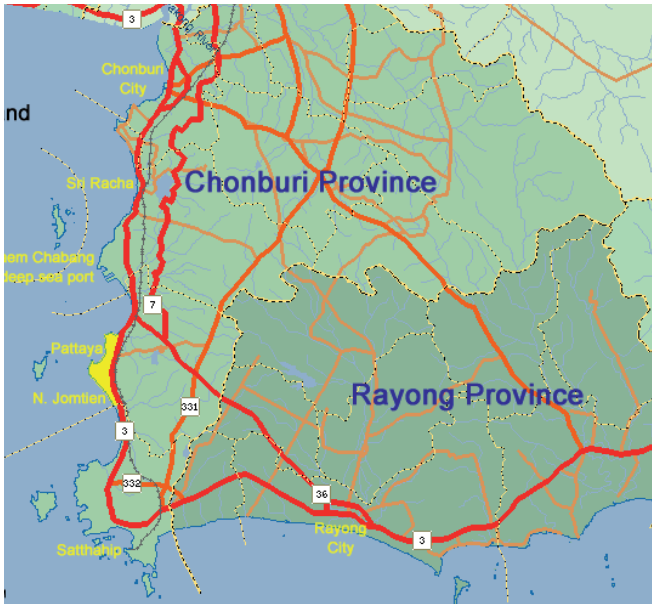
Dear and Flusty's L.A. School "gaming board" diagram. Source: Dear, Michael and Steven Flusty. 2002 "Los Angeles as Postmodern Urbanism" in Michael J. Dear (ed.), From Chicago to La, Sage Publications, p.80., Fig. 3.4, "Keno capitalism: a model of postmodern urban structure."

...and solutions



New life in Ho Chi Minh City

Rapid urbanization in Ho Chi Minh City results in slums and environmental degradation. Pilot projects were set up in Tan Hoa Lo Gom, which has the most polluted canal of the city, and District Binh Tan. The pilot projects did not stem from the city's approved master plan but from the identification of interrelated problems. One project simultaneously addressed the main problems of the inner city – canal pollution, flood management, slum eviction and rehabilitation – while considering the canal as the backbone for the renewal of the area. The objective of the other project was, through the provision of some of the lacking infrastructure, to structure part of the periphery that was undergoing fast and chaotic urbanization. Both projects included socio-economic and community participation initiatives. This approach has been now applied in the larger Vietnam Urban Upgrading project funded by the World Bank. To prevent the loss of expertise at the conclusion of projects, there need to be incentives to continue to utilize project staff, together with a comprehensive institutional strengthening and capacity building program for existing agencies. See http://www.isocarp.net/Data/case_studies/1028.pdf



Bangkok's peri-urban resilience

Douglas Webster has analyzed Bangkok's urban development and its resilience in economic downturns. He divides Bangkok into three distinct parts of the core (BMA), the suburban areas that surround the core and the peri-urban development of the Eastern Seaboard. The population in the core is culturally diverse (with large number of expatriate workers and managers), educationally advanced and economically reliant on services and growing ICT sector. The suburban region has traditional and low tech industries like clothes and footwear manufacturing that employs low-skill laborer migrants from rural areas. The peri-urban areas of the Eastern Seaboard have petrochemical and auto industries as well as the sea ports primarily used for export purposes. Webster discovered that during the 1997 Asian Economic Crisis, the suburban areas with traditional industries were the most affected. The core and the peri-urban areas came out of crisis less affected. Webster attributes the resilience of the peri-urban areas to their economic and urban structures. See 'Bangkok: evolution and adaptation under stress' by Douglas Webster in *World cities beyond the West: globalization, development and inequality* edited by Josef Gugler (Cambridge University Press,2004).

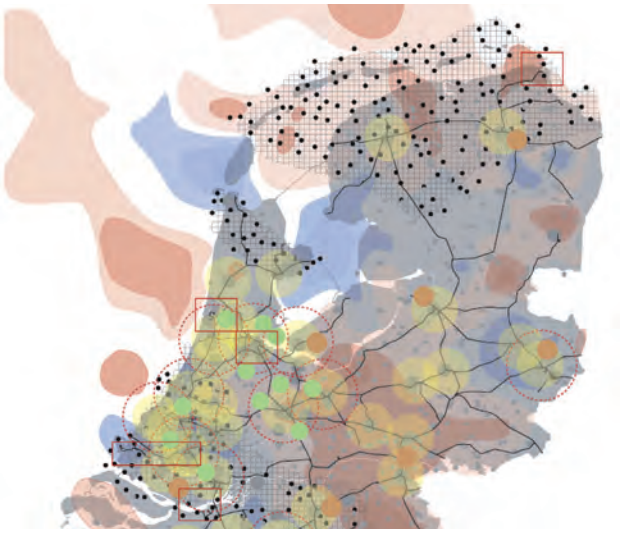
Changxindian low carbon community (500 ha, mixed use)

'The current Chinese statutory planning system focuses on site specific development parameters such as density, plot ratios and setback requirements, which are not fully relevant to low carbon planning objectives in energy reduction, water recycling and waste management. This makes implementing low carbon plans a key challenge for planners in China... The project adopted a holistic, comprehensive sustainability framework and a set of twenty quantifiable indicators. The SPeAR® diagram, a design tool developed by Arup, was used to build stakeholder consensus. Arup prepared sustainable guidelines as well as a set of low carbon zoning codes to guide design requirements for site planning, engineering, buildings, landscape ecology, water, waste and energy. Arup's innovation was highly praised by the Beijing authorities as the city's first planning proposal driven by sustainability objectives and indicators'—http://www.arup.com/Projects/Changxindian_Low_Carbon_Community/Details.aspx.

Environmental priorities

The Netherlands CO2040

In 2009, consultants Posad and Except published their report on a study commissioned by the Ministry of Housing, Spatial Planning and the Environment (VROM) called 'CO2040', which investigated how the Netherlands could become CO2 neutral by 2040. The study indicates that the Netherlands will have to take radical measures to become CO2 neutral within thirty years. The first task is to clarify exactly how much energy is consumed in the Netherlands and how much CO2 that generates. The consultants state that the serious objective of achieving a CO2 neutral built environment will require far more than merely the application of standard measures and technologies. Spatial planning and the distribution of land uses and buildings must be geared to a far more intensive and intelligent use of residual heat and geothermal energy in urban areas. The study also calls for a revolution in public transport. Source: CO2040, Posad and Exept (2009) and The Netherlands 2020, Boundless Policies towards Low Carbon Regions and Cities, in *ISOCARP Review 05 Low Carbon Cities*, pages 64 and 65.



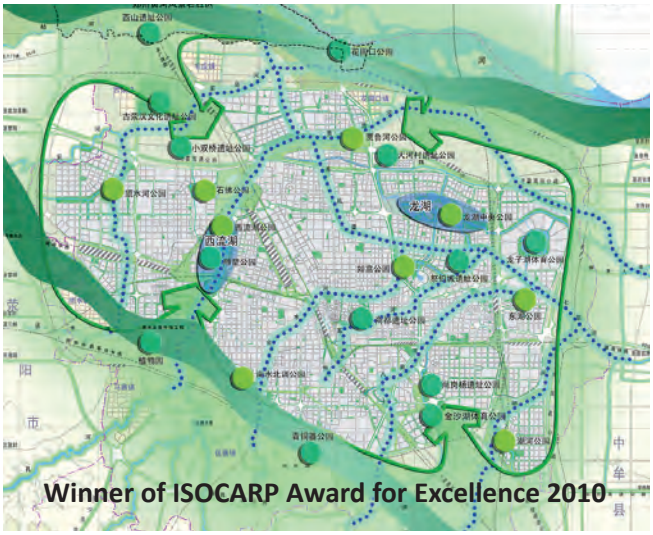
The sustainable future of Kunshan

Kunshan is located in the central area of the Yangtze River Delta, near Shanghai. Kunshan is famous for its authenticity and cultural and scenic heritage in the form of lakes and historic water towns. At the beginning of the 1980s, Kunshan was a small town with a population of less than 80 000. Today, Kunshan is a manufacturing city with 1.2 million inhabitants and modern services and is well connected with Shanghai by high-speed rail. This rapid progress coincided with developments in science, technology, education, culture and sports. The rapid urbanization also has negative effects. The land resources are running out, the quality of water and air is receding and Kunshan's energy supply depends heavily on imports from other areas. The master plan for Kunshan City (2009-2030) is a comprehensive document for the sustainable future of Kunshan. This master plan guides Kunshan towards a green and resilient economy with the utilization of renewable energy, and with transport-orientated land use in order to save land resources for agriculture and ecology and to promote public transport. See Zhang Quan, 'Low Carbon Kunshan: towards a sustainable future', I*SOCARP Review 06 Sustainable City – Developing World*, pages 142-164 (2010).

Rebuilding the City of Long Beach

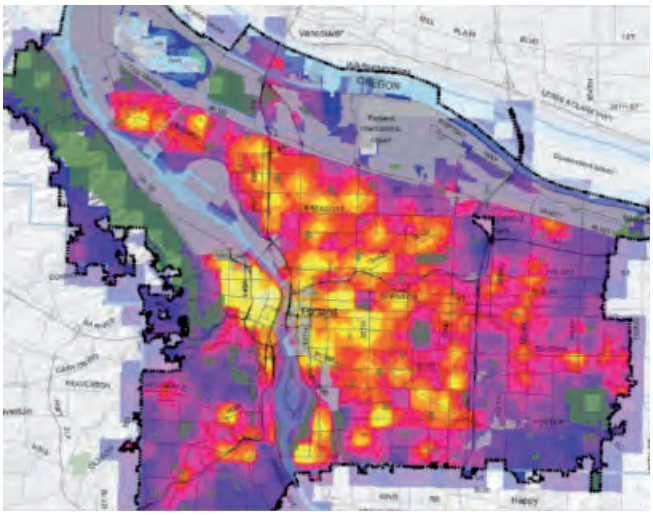
Hurricane Katrina devastated in 2005 not only New Orleans but also other gulf coast cities like Long Beach. Governor Haley Barbour organized the Governor's Commission on Recovery, Rebuilding and Renewal. This commission engaged in a partnership with the Congress for the New Urbanism. This is an advocacy organization promoting walkable, mixed-use neighborhood development, sustainable communities and healthier living conditions. The Congress for the New Urbanism marshaled a hundred experienced designers and planners from the USA to join forces with a like number of Mississippi based architects and planners. During a week the two hundred volunteers participated in the Mississippi Rebuilding Forum, a participatory public workshop. In this meeting designers pooled with local officials, citizens and stakeholders and discussed ideas and brainstormed solutions for rebuilding eleven coastal cities. Each community was provided with a master plan that incorporated the local authenticity of the cities and that will make the cities more compact, connected, complete, green and therefore resilient, sustainable, inclusive and livable than they ever were before. See Dhiru Thadani, 'Rebuilding after a natural disaster: Using the opportunity to be "better than ever", *ISOCARP Review 06 Sustainable City – Developing World*, pages 192-211 (2010).

Livability in the face of challenges



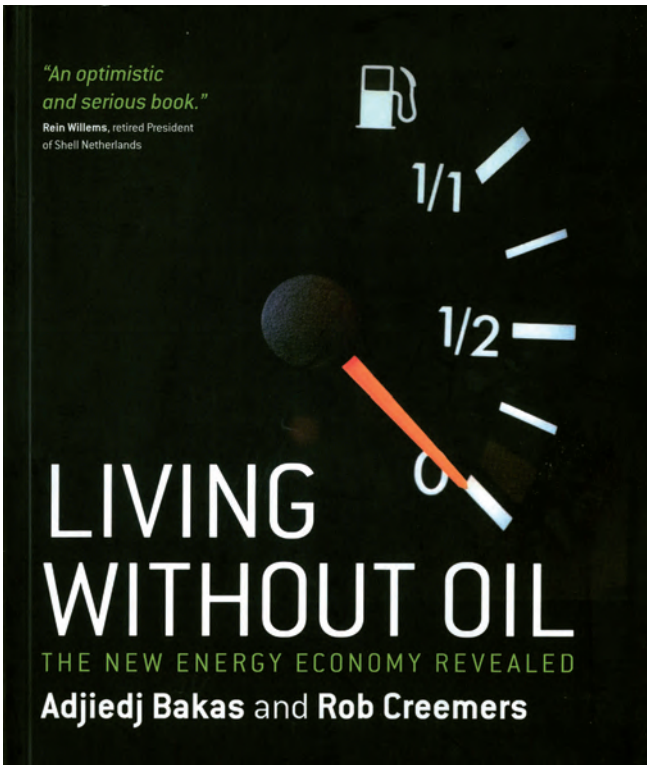
Zhengbian New District Plan

The 2,100 km2 Zhengbian New District, adjoining Zhengzhou City in central China, comprises towns, villages, farm land and environmentally sensitive water resources protection areas. Arup was invited to prepare a regional development strategy (an urban-rural systems concept plan) to guide the rapid urbanisation of the area from 2010 to 2020 and beyond. 'In developing the regional plan, comprehensive planning strategies reflecting sustainable and low carbon targets covering energy demand and supply management, water resources, waste management, landscape ecology, green transport, etc. were adopted in this study to tackle issues related to climate change and the rapid pace of urbanization... The Jurors were particularly impressed by the originality of the planning tool, using the Carbon Dioxide Emission Audit Framework to select land use options in order to manage urbanization and steer the urban-rural development towards a low carbon future'—Jury citation for the 2010 Green Building Awards of the Hong Kong Green Building Council and the Professional Green Building Council.



Portland's 'complete neighborhoods'

Despite thoughtful land-use planning and quality transportation options, residents of Portland, and the rest of Multnomah County in Oregon are more dependent on automobiles than are the residents of more compact cities on the East Coast of the USA and in much of the rest of the world. The Climate Action Plan of Portland and Multnomah County aims to change that. It introduces the concept of 'complete neighborhoods'. The plan outlines how the city will create vibrant neighborhoods where 90 percent of Portland residents and 80 percent of Multnomah County residents can walk or bicycle to meet all basic daily, non-work needs and have safe pedestrian or bicycle access to transit. This is seen as a critical and basic step to reduce automobile dependence but will also contribute to a livable city, enabling residents to live in '20-minute neighborhoods', meaning that they can comfortably fulfill their daily needs within a 20-minute walk from home.



Living without oil

When the world's economy takes off again, we can expect the price of oil to soar. It's not a matter of "the end of oil" but rather not enough capacity to feed this hungry world, with a population that is growing by 6 million per month. In the next twenty years we will experience the transition to a new energy economy. This new-energy economy is developing, whether we like it or not, and will become dominant much sooner than many current people currently expect. Next to this we will most likely also experience a dramatic change in world-climate - a transition which will not be painless. In the book the trendwatchers Adjiedj Bakas and Rob Creemers present the megatrends in the field of energy and climate. These trends are:

- Towards new energy policies
- Towards the greening of industry
- Towards the greening of consumers
- Towards new transport innovations
- Towards increasing pressure on the aviation sector
- Towards innovations in energy supply
- Towards new concepts of life and work

Source: Bakas, A. & Creemers, R., 2010. *Living without oil*. Oxford: Infinite Ideas Limited.

The challenge of rapid urbanization

Already, more people live in urban than in rural environments – roughly 3 billion in each. The consensus of forecasts is that sometime after mid century the proportions will be about 5.5 billion in urban environments and about 3.5 in rural environments. If that is correct, another 2 billion of the world's people will be living in newly urbanized areas.[1]

This unprecedented transformation of the human habitat – and transformation of the world as we know it – has been expressed in a variety of ways.

- The rapid urbanization of rural and non-urban land to accommodate up to two billion people.
- The construction of more than all the buildings and structures in America, every decade.
- In China, the building of 400 entirely new 'cities'.
- It is true that urban regions in many countries are mature and relatively stable, and that some urban regions have shrinking populations. At the same time, rapid urbanization is taking place in most parts of the world, including in parts of the US and Europe as well as Asia, Africa and Latin America.

The settlement patterns and landscapes resulting from the most rapid form of urbanization, particularly in Asia, Africa and Latin America, are creating entirely new kinds of urban environments, generally with the following characteristics.

- Dense, diverse, uneven and fragmented nodes and corridors of industrial complexes, commercial clusters, urban services and housing estates, associated with ports and highways, poorly connected by retro-fitted arterial roads and railways...
- ...driven spontaneously by export opportunities, rapidly increasing domestic consumption and the aspirations of the rural population...
- ...resulting in economic growth and rapidly rising standards of living, accompanied by loss of habitat and natural resources, rapid consumption of natural capital, pollution, congestion, inequalities, inefficiencies, corruption and exploitation.

Equally, the **quality of life** in these new urban regions could, at one end of the spectrum, condemn ordinary people to deprivation and exclusion, or, at the other end, foster fulfillment of human potential – depending on how these regions are planned, managed and governed. This is the challenge we have taken on: to (i) describe **how these new urbanizing regions can provide people with the most humane and sustainable environments for urban living**, so that we can (ii) **imagine the new forms of planning and governance essential to achieve these goals** and (iii) design **ten practical solutions** as first steps.

Critical assumptions regarding global and local action

If urbanization continues in anything like the present patterns, we will need the resources of four or five planets by mid century. To make this project meaningful, we must assume that drastic changes will have been forced on the world through the collapse of ecosystems, and that strong global action will have taken place. Our assumptions include the following.

- Strong global action to establish a high price on carbon.
- Strong global action to price natural capital at its real value (see 'Consuming the planet' on page 25).
- Therefore we assume that rapidly urbanizing regions are powered by low-carbon energy and that natural capital and environmental services are accurately valued and managed conservatively as capital assets.
- We assume that urban development has become 'light-weight', in that the extremely resource-demanding construction of the present is replaced with durable but light-weight and adaptable structures using recycled materials to the maximum, and that heavy industry moves from carbon (heat) processes to hydrogen (electrical/chemical) processes, both transformations having been driven by accurate values being attributed to natural capital.[2]
- We assume that there are high levels of social mobility, openness and transparency in a fully digital world.
- We must also assume that strong and enlightened leadership provides holistic, long-term strategies and science-based policies for urbanizing regions (see page 16).

These assumptions become the preconditions for livable, sustainable urban environments.

A new planning paradigm: The non-city rapidly urbanizing region

In terms of population, rate of growth, environmental impact and other measures, urban growth in traditional forms is likely to play only a small role in accommodating the next two billion people in urban environments. These people will be living in 'the city', but not in planned, incremental extensions of existing cities nor in newly planned cities.

1 **This figure of two billion is not a forecast**. It is essentially symbolic of the scale of change facing the world. We have to hope that the figure is wrong, that population growth slows, and that a higher proportion of people remain in or move back to rural environments. Under any assumptions, however, it appears that over one billion people will be living in newly urbanized regions within the lifetime of today's young adults.

2 For an examination of trends in the use of fewer resources, see *The weightless world* by Diane Coyle (Capstone, 1997). Coyle points out that, despite real incomes in most industrialized countries increasing twenty times from the beginning of the twentieth century, such was the reduction in the use of materials that the weight of all that was produced was much the same at the end of the century as it was at the beginning. On the other hand, this greater efficiency may be overwhelmed by increases in consumption. Take the single example of the metal copper. 'We need more copper in the next 20 years [600 million tons] than was mined in the last 110 years [585 million tons],' Ivanhoe Mines Ltd Chairman Robert Friedland said today at the Diggers and Dealers conference in Kalgoorlie, Western Australia (quoted from www.bloomberg.com/news/2010-08-04; see also www.businessday.com.au). And that is not counting the demand for copper to make electric cars. 'Cars are going to be electric,' said Mr Friedland, and 80% of the weight of a lithium battery is copper – 200-300 kg per car, wanted by half a billion people in the next decade or two.

Rapid urbanization, following transport routes and coalescing around the extraction of natural resources, ports, airports and urban clusters, will be less structured, more dynamic and in some ways more innovative than more familiar forms of urban growth.

If familiar models are applied to these 'non-city' rapidly urbanizing regions they are likely to fail in both diagnosis and prescription and—more importantly—are likely to fail to capitalize on the potential of these regions to generate new models, new approaches and new solutions.

Some of the characteristics of the new urban regions can already be seen in the older example of rapid post-war urbanization around Tokyo – for instance multiple nodes and corridors of development, generated by expanding industrial complexes and/or by lines of communication, sometimes retrofitted with highways and rapid transit – and even in ex-urban development in the US. The full form of this kind of urbanization, however, is seen in the examples of Shenzhen in China and the Eastern Seaboard in Thailand. It is this form of urbanization which is most likely to take place over vast areas in China and India and parts of SE Asia, Africa and Latin America.

These new urbanizing regions look like 'cities' and are referred to as cities. In fact they are not 'cities' in anything like the classical sense of the word. Whereas the traditional image of the city, in all cultures, reflects some form of monarchical power – a single centre of wealth and authority, a centre of advantage and accessibility at the crossroads of the city – the rapidly urbanizing regions do not form into contained cities with concentric structures and with networks radiating from a centre. It could therefore be a serious impediment to the effective management of these regions if the planners and administrators imagine that they are building 'cities'.

The rapidly urbanizing regions extend dynamically, and even unpredictably, across large areas, ignoring all levels of governmental boundaries. They are discontinuous, leapfrogging over constraints and responding to dispersed opportunities in the landscape including, for instance, pre-existing settlements, major infrastructure such as ports, emerging industries and natural resources. They are segregated: land uses are typically separated into estates and districts at both the local and regional scales, and people are typically separated into sectors by income and occupation; neighborhoods and quarters are typically separated by transport corridors and other forms of infrastructure. They are poorly connected, making many journeys long, uncomfortable and/or expensive. They are seldom governed as a whole, and when they are there is little or no opportunity for citizen participation at the local level.

All of these characteristics are a result of large movements of people, rapid economic growth and rapid urbanization, overlain on existing natural, social and administrative landscapes. We believe that the dynamism of these rapidly urbanizing regions can produce a human environment which is not only livable and sustainable, but which will provide models for the transformations which will also be required in the mature cities of fully urbanized countries.

The final statement of the ISOCARP World Congress in 2009 **('Towards low carbon cities',** on page 24**)** sets out seven ingredients for sustainable and livable cities. The challenges in rapidly urbanizing regions are even greater, but are likely to create new styles and techniques of urban management which can be reverse-engineered for existing cities and even shrinking cities.

The non-city rapidly urbanizing region of the future

The central question for the livability of cities is whether the two billion people, on present estimates, who will be living in newly urbanized regions by mid century will be living under peaceful, life-enhancing conditions or under conditions of conflict and impoverishment resulting from climate change and resource depletion.[3] To address this crucial question, the UPAT team chose to focus on rapidly urbanizing regions, primarily in SE and East Asia, but with reference to the rapidly urbanizing regions of the rest of the world. At the same time, we are confident that the findings from this project can be applied to existing mature cities, including those which are shrinking rather than growing, by working back from that possible future – which would be a form of retrofitting or reverse engineering. To understand the future of non-city rapidly urbanizing regions, it is necessary to think far ahead, and to think big. These regions can stretch 100 or 200 km or more. (In the case of the Beijing-Shanghai corridor, the dense rapidly urbanizing region stretches some 1500 km.[4]) If such regions have a chance to be livable and sustainable, it is also necessary to adopt some strong assumptions **(see 'Critical assumptions regarding global and local action'** on page 12**)**.

While governments and planners talk about 'new cities', and refer to scattered, discontinuous peri-urban development as an extension of the parent 'city', the reality is very different. These rapidly urbanizing regions do not become part of the structure of a parent city any more than they become free-standing 'cities'. Urban development occurs at multiple nodes across the landscape, as towns and villages expand, as ports, airports, rivers and transport corridors attract development, as major industries are established and attract satellite activities, as favorable locations are developed, as informal settlements appear, all of it fragmented by topography, land ownership, land use and accessibility.

The result is a kaleidoscopic mosaic of fragments and corridors, with the same growth patterns and 'daily urban systems' tending to be reproduced at all scales, from the crossroads and the village right up to the whole region. These areas are flexible and dynamic, and can be more resilient than traditional cities **(see 'Bangkok's peri-urban resilience'** on page 9**)**. On the other hand, they are wasteful and inefficient in the use of resources, excessively damaging to the environment, and respond to short term and local interests rather than strategic and regional priorities.

Rapidly urbanizing regions, like new and old cities, need intensive planning, management and governance. If they are to be livable, sustainable and equitable, they need a new style of planning, just as they are ushering in a new paradigm of place.

If the planning and management of these regions is based on familiar notions of the classical city, policies and plans are likely to be unhelpful and counterproductive. Analogies with the city are not likely to work: old paradigms may need to be abandoned, traditional concepts rethought, and planning tools reinvented if we are to understand and make the most of these new kinds of rapidly urbanizing regions. Equipped with new concepts and tools – and assuming that not only has there been strong global action on climate change and biodiversity but that the rapidly urbanizing region is governed by an enlightened commission with an open mandate – what could these regions be like, in a generation or two?

3 As noted in footnote 1, **this figure of two billion is not a forecast**. We have to hope that the figure is wrong, that population growth slows, and that a higher proportion of people remain in or move back to rural environments. We use the figure, however, to reflect the potential scale and urgency of the problem.

4 The analysis and proposals developed during the UPAT team's five days in Singapore appear to be strongly supported by the empirical evidence presented in a remarkable book on urbanisation in China. *The Chinese dream: a society under construction* by Neville Mars and Adrian Hornsby, with the Dynamic City Foundation in Beijing, was published by the leading Dutch architectural publishers, 010 Publishers, in 2008.

The scale of rapidly urbanizing regions

A non-city rapidly urbanizing region represents a newly recognized phenomenom. To explore its characteristics, the UPAT team investigated the following three scales.

10x100: the 10 km by 100 km 'slice' or transect This is a large area of 1000 square kilometers (1000 km^2), and therefore indicative of the scale at which rapid urbanization takes place, with towns, industrial areas, ports and transport corridors expanding from one end to the other. It reflects the often linear nature of rapid urbanization. It may ultimately accommodate 10 million people. (By way of comparison, Singapore with its islands has an area of about 700 km^2, with a population of 5.2 million.) This is the scale at which natural resources, major transport corridors, transit systems and major infrastructure such as ports and airports are planned.

10x10: the 10 km by 10 km subregion This area of 100 km^2 could in classical terms be seen as a city of one million people. The urban elements associated with Singapore's achievements in creating a livable city – public housing, public transport, traffic management, water management, major commercial and recreational precincts – are largely planned and implemented at this scale.

1x1: the one-square-kilometer *urban living area* This is the scale of communities and urban life in all its shapes and forms. Each *1x1 urban living area* will be different, but most will have dwellings for a population of around 20 000-40 000 people, together with natural areas, open space, water bodies, small scale agriculture, industry, storage, offices, shops, schools, health services, transport interchanges and civic and cultural facilities. This is the scale at which China is seeking to apply European models of urban planning and design. While these models can act as inspirations, well-designed templates and standards will be required rather than a series of individual, one-off designs (see Non-city rapid urbanization in China, page 23).

These three scales, admittedly abstractions and simplifications, enable the focus to move from the whole region to the subregion to the neighborhood (while also recognizing that many of the challenges may well be at the intermediate scales). One thousand *1x1 urban living areas* do not add up to an urban region, just as the region cannot be divided into ten *10x10 subregions*; across the *1x1 urban living areas*, land uses come in many sizes and may be distributed very unevenly. Nevertheless:

- there should be a fine grain of mixed land uses within a walking catchment of a few square kilometers;
- natural resources, activities and infrastructure should be integrated at the subregional scale; and
- the rebuilding of natural capital, the optimization of local energy potential and the social fairness of the urban environment all have to be safeguarded at the regional scale or larger.

Overlapping mosaics

The actual urban pattern that might emerge in the *10x100 region* depends on local conditions and many complexities. Unfortunately, urbanizing regions are often those richest in agricultural resources, with the densest rural populations. Otherwise, their rapid urbanization is driven by such factors as proximity to major centers, the presence of natural resources or opportunities for major infrastructure. All of this in turn is strongly influenced by topography, rivers and lakes, coastlines, fertility of the soil, forests, etc. It is therefore essential that all of these factors be understood and *mapped* before urbanization takes over. The following factors can be considered to be layers of opportunities and constraints, forming overlapping *mosaics* across the region:

- the landscape which sustains *ecological diversity* and delivers access to resources, recreation and nature;
- the distribution of *ecological communities* and habitats, including critical areas and corridors;
- the *hydrological* component of the landscape, crucially important for managing local water sources and building resilience;
- the potential for *renewable energy sources* (wind, water, ocean, solar, agricultural and aquacultural, biomass, geothermal, heat storage, energy storage, kinetic potential, etc);
- the suitability of the *topography and soils* for different productive, built and natural purposes;
- climate and environmental *risks*;
- the *cultural landscape*, including cities, towns, villages, historic areas, places of cultural significance and meaning, visual landscapes, natural heritage areas, etc;
- the potential *arterial routes* for all modes of the transport network.

As mapping and analysis moves to strategic planning and design, layers are continually added for the large-scale components of the *10x100 region*, including ports, airports, commercial centers, regional hospitals and educational campuses, heavy industry, agriculture, aquaculture, mining, forests and natural areas, regional parks, transport corridors, energy resources, etc. Some of these uses require land to be irrevocably committed while for others the land allocation can be contingent and responsive to how development unfolds. In every case, the regional strategy must be both explicit and capable of being implemented in many ways. Decisions on elements of the regional structure should be made as soon as necessary, *and* as late as possible, to be informed by the best information and the latest patterns of development. In addition, land allocation should be based on smart combinations and multiple uses, for instance locating a highway so that it serves as a flood protection barrier, and creating recreational areas on new offshore islands that protect the coast from erosion and storm surge.

If the *10x100 region* is made up of 1000 one-square-kilometer segments, it is apparent that these segments are highly varied, with many being mono-functional and comprising elements such as airports, ports, road and rail infrastructure, heavy industry, forest, natural areas, water bodies, farms and regional parks. Others will be a complex combination of, for instance, commercial centers, health facilities, educational campuses and sports grounds. About one third of the one-square-kilometer segments—say, 350 of the 1000—will be areas where most of the population live, work, shop, study, play sport, etc. Within each of these *1x1 urban living areas* there should be many opportunities:

- for a choice of lifestyle, employment, expression
- for growth, development, prosperity
- for living and working in healthy buildings and enjoying space, light, fresh air
- for child care, education, health and community services, parks, nature
- for variety—quiet, active, dense, loose, high, low, upper and lower social groups
- for influencing community decisions
- for belonging, contact with the earth, a connected social environment

The *1x1 urban living areas* will be fine grained, often with land uses tiered at different levels of tall buildings, and allowing people of diverse occupations and incomes to live and work in the same neighborhoods, to shop in the same centers and to send their children to the same schools. Again, land planning should be based on smart combinations and multiple uses, for instance green roofs to cool down buildings, to retain rain water, and to provide opportunities for local parks and food gardens; street trees that provide shade, produce food and retain rain water; and a park on top of a highway, filtering the air, reducing noise and providing amenity for residents.

Overlapping networks

Threading through and connecting these overlapping mosaics will be many networks, including wildlife corridors, green wedges, parkways, waterways, roads, railways, light rail, cycle paths and infrastructure corridors. In a traditional metropolitan strategy, these elements are the bones or skeleton of the region and tend to be fixed once the initial planning has been completed. In theory the same approach is applied to non-city rapidly urbanizing regions, but in practice the planning of these networks tends to follow rather than lead development, and is then too static to accommodate the dynamic changes that take place under conditions of rapid urbanization. The result can be highly inefficient, and expensive or impossible to correct.

The new paradigm for these networks in the new kind of non-city urban region is the **fishnet**. Loose networks, representing roads, transit, green corridors, pipes, wires, parkways, etc, can be laid over the regional mosaics. They approximate a series of grid systems, but they have more connections, have redundancy, and are adaptive. This approach responds to the uncertainties of rapidly urbanizing regions – uncertainties which it is desirable not to try to prevent, since this is also the source of the region's innovations and resilience.

The design of networks early in the process of urbanization is intended to reflect the main structures and protect connections for later development. It is this which gives the networks the character of fishnets: stretched in some places, dense in others, linear, square, multidirectional, but always connected. The design of the 'fishnets' is based on likely development scenarios, natural conditions, the protection of streams and waterways and a host of other considerations. A 'fishnet' has to be robust in its main shape yet allow nodes to develop in quite different ways, so it is a network that can absorb a large degree of uncertainty. A fishnet is a finer network than is ultimately required. Some of the links in the network will be strengthened and 'promoted', other links will never be implemented: the course of dynamic development will determine which is which.

As in the case of major elements of the regional mosaics, some of the links in a 'fishnet' (of roads or green corridors, for instance) will need to be irrevocably committed while others can remain indicative or strategic, their final form responding to the way in which development unfolds. The fishnet is another instance of the principle that the best regional planning is strategically certain, and tactically flexible.

Landscape and nature

In the rapidly urbanizing regions, the landscape is under tremendous pressure. Natural resources rapidly disappear, watersheds become polluted, streams are reduced to drains, trees disappear and the green pattern gets more and more fragmented. All experiences indicate that 'once it is gone, it is gone', and it is very difficult to remake landscape in a dense urban area. This means that early protection and landscape development are needed to maintain and nurture a landscape framework that enables and supports a livable city.

At the level of the *10x100 region*, the landscape is already a mosaic. It is a collection of fragments with differing characteristics and ecological values and qualities. Watersheds, mangrove swamps, forested hills, agricultural production sites and many other pieces of the puzzle are there. Connection of the fragments is needed for biodiversity and will contribute to the livability by enhancing human access and providing landscape quality. A landscape ecology approach to the design of the landscape framework will support the diverse ecologies of an area. That is a complex exercise, but creates an asset for the urban region that is very valuable for its livability.

How to do that? Some lessons can be learned from new town developments around the world. One of those is the city of Almere, made on reclaimed polder land in the Netherlands. The first activity undertaken was to plant and develop a main framework of 'forest-strips' to provide all inhabitants easy access to nature. Over 30 years, this resource has grown into one of the key assets of the city. While the scale is completely different, a similar strategy can be successful at the 10x100 level: early identification of a landscape ecological framework – protecting and enhancing it – and providing access for the people.

Agriculture in the mosaic

In the livable city of the future, food production should be a visible layer of the city. Producing food is partly an industrial activity, but it also something that inhabitants do. Food production is an activity that will take place in different shapes and forms. It varies from high-tech hydroponic glasshouses on the roofs and facades of office buildings to collective kibbutzim to provide high quality slow-food.

Many communities provide some form of community based local production. This provides an attractive social activity, allows children to understand the production of food, provides a sense of belonging and can help to provide some of the special quality foods that will be in demand in the livable city of the future. This kind of food production is linked to the metabolism of the city, since it recycles organic waste and provides high quality resources for the inhabitants. Ideally, it is a balanced system, where the food production is in tune with the available resources, including sunlight, water, organic waste, etc.

Despite all these public benefits and positive externalities, agriculture cannot compete for urban land. It can be a significant activity in the public landscape framework, and it can be an interim use on infrastructure reservations and other land banks. Its more complete integration with the urban environment requires a high level of control, in which a public authority is able to allocate land on the basis of more than monetary consideration.

The potential of hydroponic and other less land-based forms of food production is uncertain and depends on environmental quality requirements like air quality and technological development. Many 'smart combinations' are possible, including glass houses on industrial buildings (providing insulation to the building and using CO^2 produced in the building), green facades that are not only attractive but also productive, and other technologically advanced approaches.

The presence of food growing in the everyday urban environment creates an understanding of the quality of food and enables people to be in contact with their environment. Introducing a wide variety of urban agriculture will enhance personal well-being and livability. This would include small scale agriculture, such as community farms and allotment gardens, as part of the landscape framework. Over time more urban forms will develop, such as hydroponic green growing facades, roof farms and fruit bearing street trees. Over time, urban agriculture will become fully integrated with the metabolism of the city, using grey water and composted nutritious soils.

Transport

People move to cities for opportunities, including greater mobility. The transport systems of non-city rapidly urbanizing regions, including footpaths and cycle paths as well as cars and transit, will continue to offer the population very high levels of mobility (powered entirely by renewable energy). Transport requires hierarchy – from local to international – with a seamless integration of all modes, each doing what it does best. The rapidly urbanizing region needs to avoid dependence on cars, even though in the early stages of urbanization large roads are cheaper and easier to build than mass transit. These regions therefore need to deliver fast, frequent and comfortable public transport services as early as possible, integrated with all other modes from the outset. It is essential that land use patterns and densities be designed and programmed to achieve this outcome.

A concern, even at this scale of the *10x100 region*, is how the transportation system maintains a human scale. Corridors should be wide enough to accommodate various means of transport, but they should not become insurmountable barriers. A key design strategy in this respect is to allow space for trees, even in main corridors, and to combine different modes of transportation, even at the cost of making some corridors a little wider (see 'Nodes for all modes' and 'The bike is back' on page 21).

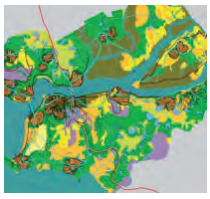
Working around dysfunctional boundaries, layers of governments

Administrative boundaries in city regions can seriously impede desirable policy making – for instance when a city's growth occurs beyond its boundaries; when the distribution of the population and the location of major destinations are determined by the exercise of local powers irrespective of (or in opposition to) natural resources, trade areas and transport services; when competing transport agencies refuse to work to regional objectives; when responsibilities for watersheds and catchments are randomly divided; or when revenues and responsibilities are vertically and spatially distorted.

All of these impediments to effective urban management are much greater in non-city rapidly urbanizing regions, where there will be layers of local, rural, municipal and regional governments and special-purpose agencies and districts already in place. **Do rapidly urbanizing regions need a new form of government? Should a new regional government replace all the existing governments, sweeping aside all these boundaries?**

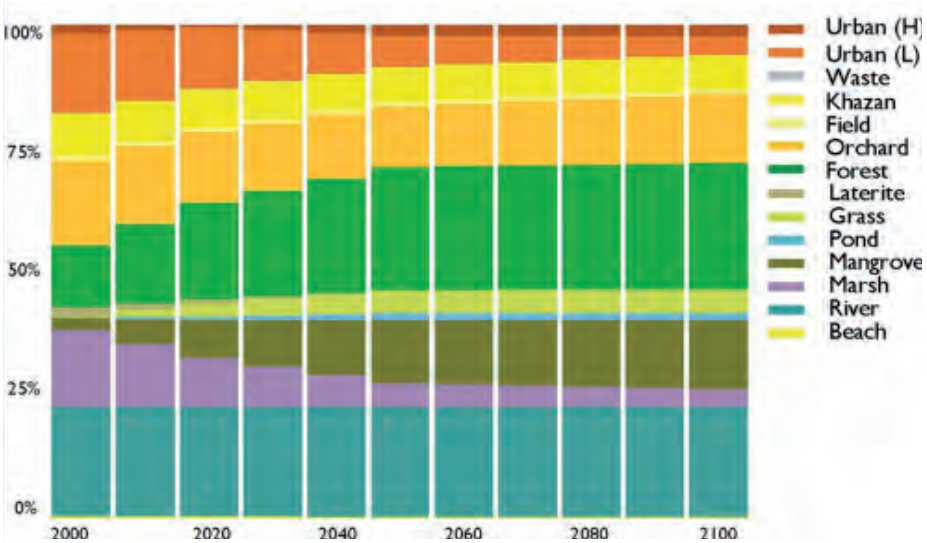
The UPAT team believes it is best to leave most or all of these government structures in place – they all have expertise, local knowledge and essential functions to perform, and will be needed to implement regional strategic plans and policies. And as a matter of practical reality, to attempt structural reform on such a scale would create enormous problems of conflict, re-integration and adjustment, lasting for years.

Instead, we recommend the superimposition of a **regional commission with an open mandate**, able to exercise persuasive moral authority derived not from legal powers and resources wrested from other levels of government but from its standing as a small, stable group of wise and experienced men and women operating transparently and guided by community engagement, excellent science, and a strategic focus on the long term interests of the whole region.



Cover illustration

The diagram on the cover—which predates this report by seven or eight years—illustrates the kinds of patterns we have called 'mosaics' and 'fishnets'. Equally illuminating is this chart of 'Sustainability transition' showing possible urban ecological succession over 100 years if Greater Panjim, the capital of Goa, is to become sustainable. The authors suggest that the transition can be largely completed within the first fifty years (Sanjay Prakash et al, *Goa 2100: A long-term vision for RUrban sustainability*, 2003). This projection of land use and land cover can be compared with our estimates of desirable relative areas on page 20.



Practical pathways to livability

The objective given to the Urban Planning and Advisory Team was "to think 'out of the box' and to develop simple, practical and original solutions that improve the quality of peoples' lives and communities in sustainable cities in South East Asia. These solutions must be implementable and translated into reality within a few years and replicated in communities worldwide."

The team regarded this as an exciting and very challenging assignment: to first identify the 'big picture' long-term transformations which are required of cities and urbanizing regions —described in the preceding pages— and then to imagine the first practical steps towards those goals. The 'practical solutions' would need to be relatively simple and capable of immediate implementation everywhere, yet at the same time be both original and real drivers towards the urban environments of the future.

As examples, the team developed ten such practical solutions. Each has a name, such as 'Regional leaders', 'Landscape first' and 'Map the energy', as listed below.

Each of the ten practical solutions relates to a specific ingredient of livable cities, listed in the first column of the table over the page. For instance, the first three principles, which the team sees as amongst the essential ingredients of livable cities, are 'Strong regional governance', 'Natural capital' and 'Local energy'. The second column of the table on the next page describes how each principle applies to rapidly urbanizing regions.

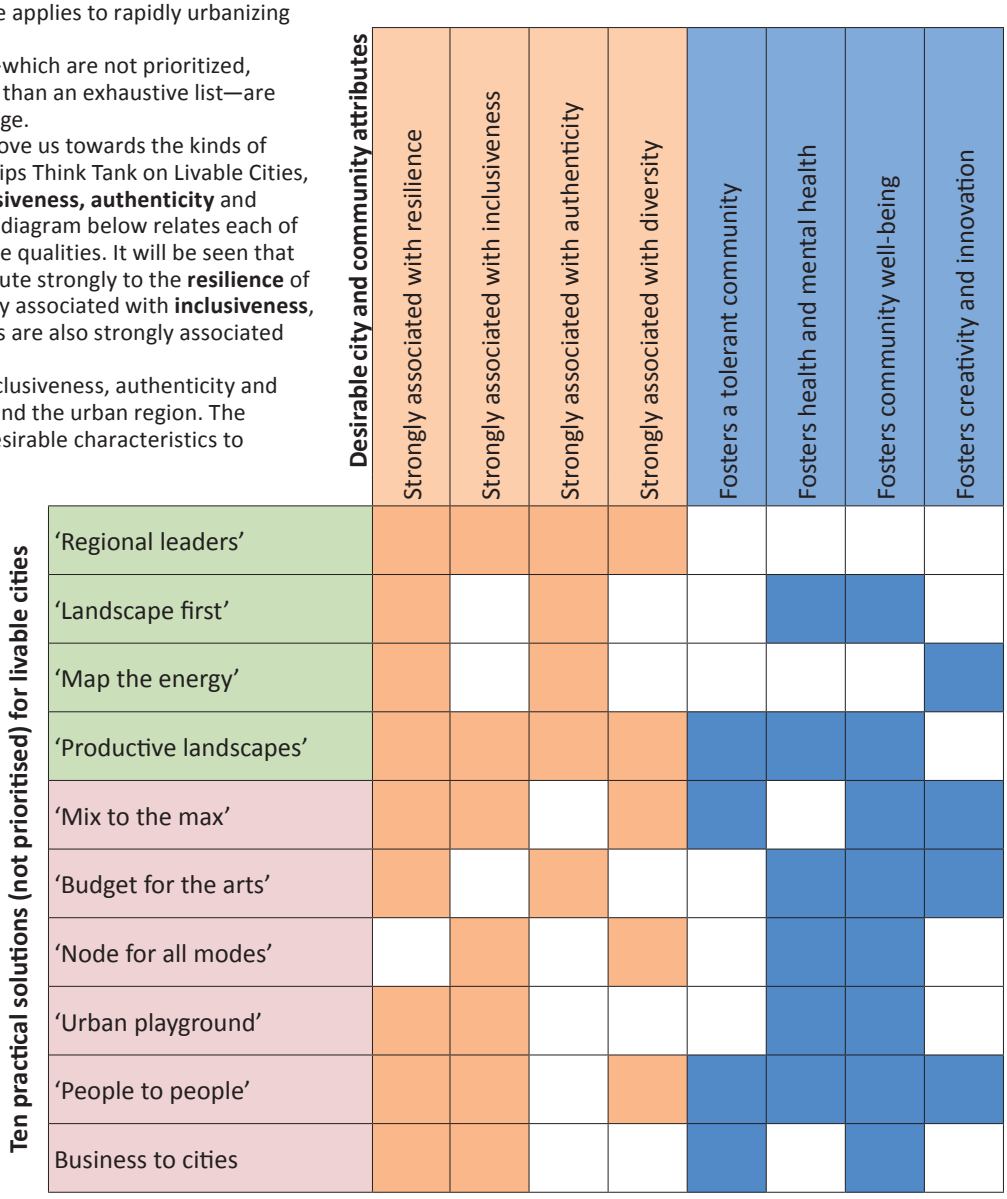
These ten practical solutions—which are not prioritized, and are selected examples rather than an exhaustive list—are described in the table over the page.

Do these practical solutions move us towards the kinds of livable cities identified by the Philips Think Tank on Livable Cities, characterized by **resilience, inclusiveness, authenticity** and **diversity**? We believe so, and the diagram below relates each of the ten practical solutions to those qualities. It will be seen that nearly all (nine out of ten) contribute strongly to the **resilience** of an urban region. Most are strongly associated with **inclusiveness**, and at least half of these solutions are also strongly associated with **authenticity** and **diversity**.

The attributes of resilience, inclusiveness, authenticity and diversity apply to the whole city and the urban region. The team also considered the most desirable characteristics to support in the community, at the scale of individuals, including **tolerance**, **health** including **mental health**, the **well-being of the community** as a whole, and the essential human attributes of **creativity** and innovation. Do the ten practical solutions support those characteristics of human communities? Again, we believe they do. Eight of the ten practical solutions strongly foster **community well-being**, and six directly foster **health** and **mental health**.

The two practical solutions most strongly associated with nearly all of the attributes – both those like **resilience** applying the nature of the urban region, and those like **tolerance** applying to its citizens – are 'Productive landscapes' and 'People to people'. It is not surprising that a pathway to integrating the city with the land, and a pathway to a more equal, engaged community, should have strong connections with most aspects of livability.

Most of the ten practical solutions make a contribution to most of aspects of livability. They can be implemented now, in small ways and more comprehensively. It is essential that solutions such as these be trialed, included in pilot projects, built into planning, and adopted as policy, because they are a necessary part of any response to perhaps the biggest challenge facing the global community.



Ten selected ingredients of livable cities,

There are many principles that must apply to future urban environments, many ingredients of livable cities, and many 'practical solutions'. The ten original ideas described in the table are practical steps towards major transformations, but of course they are not the only ones, and may not be the most important steps. They are responses to the challenge to "to think 'out of the box' and to develop simple, practical and original solutions that improve the quality of peoples' lives and communities in sustainable cities in South East Asia...implementable within a few years".

Principle	Application to rapidly urbanizing regions
Strong regional governance Stable, credible, passionate regional leadership is essential to take responsibility for the whole region and the long term.	Regional leadership must have sufficient legitimacy and credibility to transcend fragmented layers of government, short term and parochial priorities, competing interests and a lack of strategic responsibility for a rapidly urbanizing region.
Natural capital It is imperative that in future the natural resources of a region are understood, conserved and recovered as urbanization proceeds.	Maximising biodiversity in a rapidly urbanizing region requires a landscape framework to be designed based on excellent science, before indiscriminate development takes over.
Local energy Urban areas should maximize the local generation of low-carbon energy, through the efficient use of local energy resources.	All rapidly urbanizing regions have a unique endowment of potential energy resources distributed unevenly across the region, which can be fully employed only if researched, mapped and protected ahead of development.
Urban agriculture Food production, and agriculture generally, should be integrated throughout the urban environment.	Minimizing the separation between food production and urban living reduces energy use, improves urban metabolism, enriches daily life and improves well-being
Strategically certain, and tactically flexible Livable cities need strong strategies for the large scale patterns and networks, with greater creativity, flexibility and responsiveness at the smaller scale.	The planning of rapidly urbanizing regions is often typified by weak strategic regional frameworks but detailed local plans and rules, which are often used to simplify or standardize local development, usually by segregating land uses which might have negative impacts.
The more urban, the more innovation Cities generate innovation, through the intensity of interaction, the rate of change, and the market for creativity and art.	Rapidly urbanizing regions need to support the arts and enrich the cultural landscape, in order to create environments which attract and foster creativity and build stronger communities.
Mobility at all scales From local high-quality pedestrian spaces to international bullet trains, livable cities provide high mobility without compromising equity or environmental quality.	In the *1x1 urban living areas* of rapidly urbanizing regions, the quality of the pedestrian environment should come first, with all other modes, including private cars, performing their optimal role and interconnecting effortlessly.
Actively engaged citizens Livable cities foster health and community connectedness by providing multiple destinations and opportunities within walking and cycling distance of where people live, work and play.	To counter the tendency in rapidly urbanizing regions for important urban functions to be segregated and even inaccessible, the many destinations of 'daily life' should be co-located, and where possible integrated, in places of high accessibility.
Equity and social mix Livable cities improve life chances, health status and well-being by minimizing social division, exclusion and income inequality.	Whatever the level of inequality in income and opportunity in society, well-planned social mix in rapidly urbanizing regions can improve levels of trust and well-being.
Corporate citizenship Large corporations can play an increasingly creative role – through their products, their operations and their partnerships with governments and communities – to help make cities livable.	In rapidly urbanizing regions, corporations can be instrumental in driving innovation and raising standards, through their own developments and through direct relationships established with a local community for mutual benefit.

and ten ‘first steps’ to ‘practical solutions’

The first four practical solutions, on the green background, relate primarily to the scale of the ‘10x100’ region. The next six practical solutions, on the pink background, relate primarily to the ‘10x10’ subregion and the ‘1x1’ urban areas. All ten practical solutions may be most likely to emerge in the dynamic and innovative conditions of rapidly urbanizing regions. They are equally applicable to mature cities, rapidly expanding cities and even shrinking cities, since these and similar ‘practical solutions’ are likely to be essential ingredients in responses to great global challenges.

Practical solution	Action
‘Regional leaders’	Without attempting to remove or restructure layers of governments, the highest level of government appoints a small leadership council or regional commission comprising wise, expert and highly respected people who have the moral authority, and scientific resources, to define strategic regional priorities, to plan patterns of development and to persuade and educate the decision makers and the public. The Philips Think Tank on Livable Cities is an example of leadership through expertise and moral authority. The 1989-99 International Building Exhibition Emscher Park was an example of transformative regional leadership without changing existing governance structures. For information see http://www.iba-emscherpark.de/pageID_2507086.html
‘Landscape first’	Define the regional landscape framework and plant it prior to urbanization, to protect and recover biodiversity. Thirty years ago the Dutch city of Almere planted the landscape framework first: it is now one of the city’s greatest assets.
‘Map the energy’	First map the potential wind, wave, hydro, solar, biomass, geothermal and other energy resources, to prevent their sterilization and to ensure that urbanization makes the most of these resources. Relevant techniques were described in the ISOCARP 2009 Congress paper ‘Estimation of energy sustainability on the local scale’ by Daniele Vettorato and Pietro Zambelli, available at www.isocarp.net.
‘Productive landscapes’	Use food plants for urban landscapes, public gardens, street trees and interim uses of land banks.
‘Mix to the max’	Planning controls should be based not on land use but on effects or performance, to encourage innovation and to allow every kind of low-impact use to become part of a rich urban living ecology. ‘Mix to the max’ is a possible subject for a master class or discussion paper by the Think Tank on Livable Cities.
‘Budget for the arts’	A significant share of the urban budget allocated to the arts will enable artists to be engaged on all major project teams, and enable off-beat spaces to be made available for artists’ studios and for other cultural production.
‘Node for all modes’	All modes connect seamlessly in a purpose-built interchange integrated into the heart of *1x1 urban living areas* - see the diagram on page 21.
‘Urban playground’	Plan the new retail centers to fully integrate commercial activities with public areas, social spaces, entertainment, sports and active recreation - see the diagram on page 21.
‘People to people’	Intervene in many ways to ensure that each *1x1 urban living area* has the broadest mix of employment types, income levels and cultural backgrounds, so that the area reasonably reflects the demographics of the whole region. The leading work on this subject is *The spirit level. Why equality is better for everyone* by Richard Wilkinson and Kate Pickett, Penguin Books, 2010. Given the strong correlation between urban structure and public health, ‘People to people’ could be the perfect subject for a joint master class or discussion paper by the two Philips Think Tanks.
Business to cities	Corporations and large agencies each form a close relationship with a community by ‘adopting’ a *1x1 urban living area* to better understand rapid urbanization, to gain insight into daily life, to test innovations and to assist the local community. ‘Sustainable cities and successful commerce are interdependent. Companies must be ... invited to participate in city planning and assume responsibility for urban sustainability.’ Ten principles for future sustainable governance – see page 26.

Overall land allocation and densities

This project presented the team with a profound technical challenge: to quantify patterns of land use which might be consistent with all the aspects of livability and sustainability explored in the preceding pages. Can broad generic patterns of desirable/essential land allocation be predicted, while still acknowledging the dynamism and relative spontaneity of rapidly urbanizing regions?

Is it possible to predict and specify land allocation while recognizing and advocating place-based responses to the unique local characteristics of different urbanizing regions?

Can strong regional leadership and planning, to safeguard nature, resources and networks, and to preserve options for the future, co-exist with the responsiveness, flexibility and innovation needed in rapidly urbanizing regions?

The team is confident that this is not only possible, but essential. Only strong regional leadership, exercising moral authority and applying the principle of 'Strategically certain, and tactically flexible' (see Mix to the max, above) has a chance of achieving livability, sustainability and fairness in rapidly urbanizing regions. Just as importantly, that leadership must be informed by an understanding of existing mosaics and 'fishnets', by aspirations for achievable patterns of land use and networks, and by quantifiable models and benchmarks against which to assess change as it happens. It is in that spirit that the team offers the following overall patterns of land use and density in the diverse, and radically different, cities and urban regions of the future.

Land allocation benchmarks at different scales

The **10x100 region** might have the following characteristics. The figures are not precise prescriptions or predictions, simply indicative of the broad shape of the possible future non-city rapidly urbanizing region. (A density expressed as 'people per regional hectare' [people/regional ha] is the population divided by the area, in hectares, of the region, while 'people/urban living area ha' is the population divided by the area of the 1x1 urban living area [which excludes regional infrastructure and other major elements] and 'people/site ha' is the population divided by the area of the actual residential site(s) [which excludes local roads, etc].)

Population	10 million people
Density	10 000 people/km² = 100 people/regional ha = 40 dwellings/regional ha
Area	1000 km²
Area of 1000 km² *allocated as follows:*	
Nature and broadacre open space	25% (250 km²)
Large scale commerce and exchange	10% (100 km²)
Large scale production and storage	10% (100 km²)
Large transport infrastructure	15% (150 km²)
Water and waste processing	5% (50 km²)
1x1 urban living areas	35% (350 km²)

The **1x1 urban living areas**, as indicated in the above table, comprise 35% of the area of the region. While there will be a great deal of variation between the 1x1 urban living areas, the typical or average 1x1 urban living area might have the following characteristics.

Population	30 000 people	
Density	30 000 people/km² = 300 people/urban living area ha 600 people/site ha = 120 dwellings/urban living area ha	
Area	1 km² (100 ha, 1 000 000 m²)	
Area of 1 km² *allocated as follows:*		
Nature, water, agriculture, etc	15 ha footprint	15%
Parks and active recreation	10 ha footprint	10%
Roads and transport infrastructure	25 ha footprint	20%
Housing for 30 000 (12 000 dwellings)	1 000 000 m² floorspace) }	
Employment areas (10 000 jobs)	200 000 m² floorspace) }	45%
Civic, educations, retail and services	300 000 m² floorspace) }	
Landscaping around housing, etc	10 ha footprint	10%

In the 1x1 urban living areas, a notional 1.5 million square meters of floorspace is built on 55% of the land (55 ha or 0.55 million square meters), giving an average ratio of floorspace to site (including landscaping) of about 3:1.

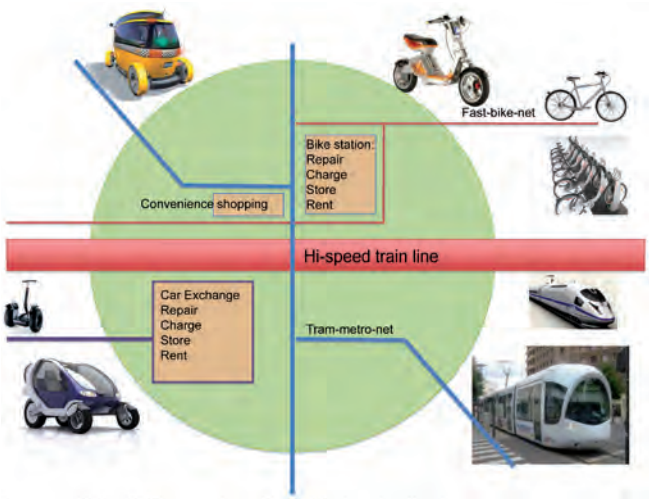
When the land was allocated at the regional scale, in the first table above, the 1x1 urban living areas were treated as a single land use, occupying 35% of the whole area. In fact, the 1x1 urban living areas include roads and parks and other the non-residential uses already listed in for the region. If these local land uses are reallocated to the regional scale, the characteristics of the region are as follows.

Nature, water, agriculture, local parks	33%
Large scale commerce and exchange	10%
Large scale production and storage	10%
Urban buildings and associated landscaping	20%
Transport infrastructure including local roads	22%
Water and waste processing	5%

It will be noted that this pattern of land uses is nothing like current land allocations in rapidly urbanizing regions, where much less land is allocated to nature, agriculture and open space, and where much more land is unallocated, idle or derelict. It will also be noted that densities (and social classes) are much more fairly and evenly spread in the non-city rapidly urbanizing region of the future than in those regions at present.

It is necessary to add that there are other fundamental distinctions lying behind these differences. As noted above, we need to make the **assumptions** that *global action* has applied a high price to carbon and properly valued environmental services/natural capital, that *local energy resources* are employed, that urban development is *'light weight'* and that strategic plans and policies are successfully promoted by a **regional commission** with great moral authority and an open mandate.

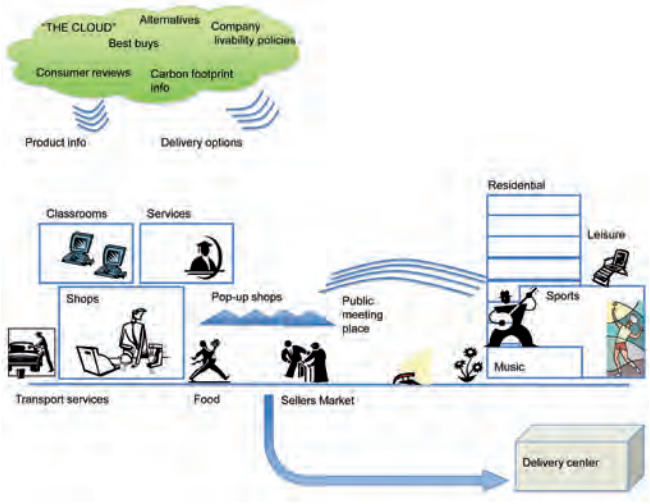
Practical solutions illustrated



Node for all modes

The future of transportation depends on the seamless transition between modes of transport. New forms of individual transport are emerging, blurring borders between walking, biking and driving. Taxis will become buses, and buses will modify their routes on-demand. The key for the livable city of the future is to have strategic nodes of exchange in the transportation network.

The practical solution of a 'Node for all modes' is an interchange, fully integrated into most if not all of the *1x1 urban living areas*, where transport modes intersect, and where people can transfer from foot to bike, from bus to train, and between all other combinations.



Urban playground

The overlapping mosaics of land uses and the overlapping movement networks go together with new forms of working, recreation and exchange. Entirely new forms of central places and shopping centers emerge with the integration of physical and digital shopping – the web becomes the custom advisor for real time shopping and real time shopping a showroom for web purchases. Shopping centers serve as meeting places, service centers, cooking classes, music halls, leisure hubs, sports facilities and more. Shopping centers become community facilities, also catering for health services, buying and selling, classroom teaching and space for temporary shops and activities.

The bike is back

The concept of the self-service bike has been developed in France on a large scale in 15 cities. In doing so it is helping these cities develop in a sustainable direction. In 2005 the first large scale experiment with bike hire for inhabitants took place in Lyon. In total 4000 bikes in 350 stations were successfully stationed in the city with over 50.000 subscribers. Two years later 20.600 bikes were placed in 1451 stations in Paris. The bikes are mainly used by former bus users and pedestrians but also former car users. The self-service bike demands space in the city (i.e. bike lanes) but helps to reduce pollution, and CO_2 emissions, stimulates safer traffic and promotes the image of a modern sustainable European city. See Jean-François Guet in ISOCARP Review 04, Urban growth without sprawl, A way towards sustainable urbanization', 2009, pages 66 -79.

A conversation with Dr Liu Thai Ker and Larry Ng

The UPAT team was fortunate to discuss some of the key urban development trends with Dr Liu Thai Ker, director of RSP Planners, Architects and Engineers. Dr Liu is noted for his influence on Singapore's urban landscape as previous head of the Housing Development Board (HDB) and Urban Redevelopment Authority (URA). Trained as an architect, Dr Liu's keen sense of the arts was derived from his father, a local pioneer painter, Liu Kang. Dr Liu also held distinguished positions in the field of local arts, urban planning and architecture. Dr Liu chairs the Centre for Livable Cities that was recently established in Singapore. He has been a director at RSP Architects, Planners and Engineers since 1992.

The success of Singapore Dr Liu described his close involvement in the inception and initial stages of the development of Singapore, both through the Housing Development Board and through the Urban Redevelopment Authority. The key success of Singapore is the provision of public housing, and that success was made possible by the standardization of the production of well-designed housing and gradual improvement of the designs on the basis of scientific information. The HDB's effort to make 'a good Volkswagen' rather than 'a custom-made car' was crucial in the success of Singapore.

Asia versus Europe Dr Liu sees a big difference between the urban challenges in Asia and Europe. He emphasized the sheer amount of construction development that is necessary in the urbanization process, in particular China and India. According to Dr Liu's estimates, both countries combined will need to construct all the buildings in 'six new Americas' – 'OK, if I'm wrong, let's say four Americas' – for an urban population six times America's. By contrast, he visited Dessau in Germany, where the main role of the construction industry is to demolish vacant buildings – that would be hard to comprehend for those involved in facilitating the growth of the urban population in Asia.

Singapore as a model for urban development Singapore's experiences with rapid urban growth can provide valuable lessons for rapid urbanization in China, India and elsewhere. Dr Liu reads the challenge of urbanization much in the same terms as the challenges that Singapore faced several decades ago. He thinks that the urban government will have to take the lead in city development, including, in particular, public housing, infrastructure and education. In his perspective, China is starting to move in this direction, and the country is keen to apply the lessons of Singapore. The situation in India and Africa worries Dr Liu, as he sees no signs of the level of governance needed to guide the urban growth.

Working in China Dr Liu and his company are working on large urban development projects around China. He considers the size of Singapore to be quite ideal for rapid urban growth. Larger urban regions are in his view best understood (and developed) as a series of Singapore-sized cities. Other key considerations of his work are the planning of central business districts, the need to realize high density in urban development, and the need to standardize solutions, in particular in public housing.

The UPAT Team also discussed the achievements and successes of public housing in Singapore, and the export of knowledge and experience to South East Asian cities, with Larry Ng. Mr Ng is the URA's Director of Architecture and Urban Design Excellence. He formerly worked with Dr Liu Thai Ker at the HDB

Design standards Mr Ng designed several housing schemes during his work with the HDB. He stressed that design standards are very high. This is thanks to the HDB's two staged "two envelope" selection process. This means that in the first stage of the process the focus is on the design. The top 5 entries get asked to do a further entry with a price. Only then is cost involved and the winning design gets selected. This way a high design standard can be ensured and maintained. Mr Ng stressed the variety of units and floor plans, with studio apartments, one bedroom to five bedroom apartments in public housing in Singapore. He mentioned great work and development opportunities in China. He is currently involved in preparing an urban summit, taking place in Shanghai. He stressed the great cooperation between Singapore and other SE-Asian cities. It is in Singapore's interest that all other Asian cities progress as well, he stated. He is convinced that Asia is experiencing continuous growth over the next decade, not only population wise, but economically too. Mr Ng called the coming decade the "time for Asia".

Mr Larry Ng and the UPAT team were guests at at dinner hosted by Dr Liu Thai Ker. From left: Mr Ng, Mr Dubbeling, Ms Nilina, Mr Dawkins, Dr Liu, Mr Vrolijks, Dr Piracha and Ms Cornaro.

Non-city rapid urbanization in China

The analysis and proposals developed during the UPAT team's five days in Singapore appear to be strongly supported by the empirical evidence presented in a remarkable book on urbanization in China. *The Chinese dream: a society under construction* was written by Neville Mars and Adrian Hornsby, with the Dynamic City Foundation in Beijing, and was published by the leading Dutch architectural publishers, 010 Publishers, in 2008.

The authors say that their research was prompted by the stated ambition of the Chinese government, from 2001, to build 400 new cities with an average of one million inhabitants each by 2020. 'What we instead observed', they write, 'was the emergence of a single megalopolis of over 400 million inhabitants.'

The book sounds a very strong warning for rapid urbanization everywhere. Given that urbanization in China is more intense but also occurring under conditions of greater prosperity and much greater government control, the lessons for urbanization in other developing countries are very stark. Some of the book's key findings follow.

'Movement into the cities is mostly temporary: rollover migration leads to sprawl clusters and city form becomes scattered and discontinuous. Much of this can be traced back to policies. Development is pushed all the way back to the village. Both city and village are expanding simultaneously. The result is that all parts of society are building upwards and outwards at the same time.

'But a concentration exists nevertheless. We look at where the expansion is occurring and see that megacities, cities, townships, towns and villages are all concentrated in a minority of the country. There is a specific region in the east where this development is in all forms taking place. Separate it from the rest of China and you get: the 'People's Urbanity of China'!

'Considered as a country in its own right the People's Urbanity of China (PUC) is much smaller and denser than you think. In area the USA is three times PUC. Eurozone is five times PUC. And yet PUC's population in 2020 will be more than 1.5 times both combined. This makes for an average density of over 400 people per square kilometre (400 people/km^2). Only India is comparable.

'A continuous tissue of density lies over China's most cultivated land. Arable PUC is under pressure in the exact places where it is urbanising fastest. Will PUC be able to feed itself? The shape of these new cities is critical. Dense architectural typologies alone will not save land. Car-dependent urban expansion could account for one third of PUC by 2020. Spread this as a loose network over available land and PUC is consumed completely. As forest and farmland gives way to PUC's changing spatial configuration, lifestyle choices, consumption behaviour and mobility patterns, the rest of the world will shift too. Impact on global food markets will be huge. Impact on global ecology will be even bigger.

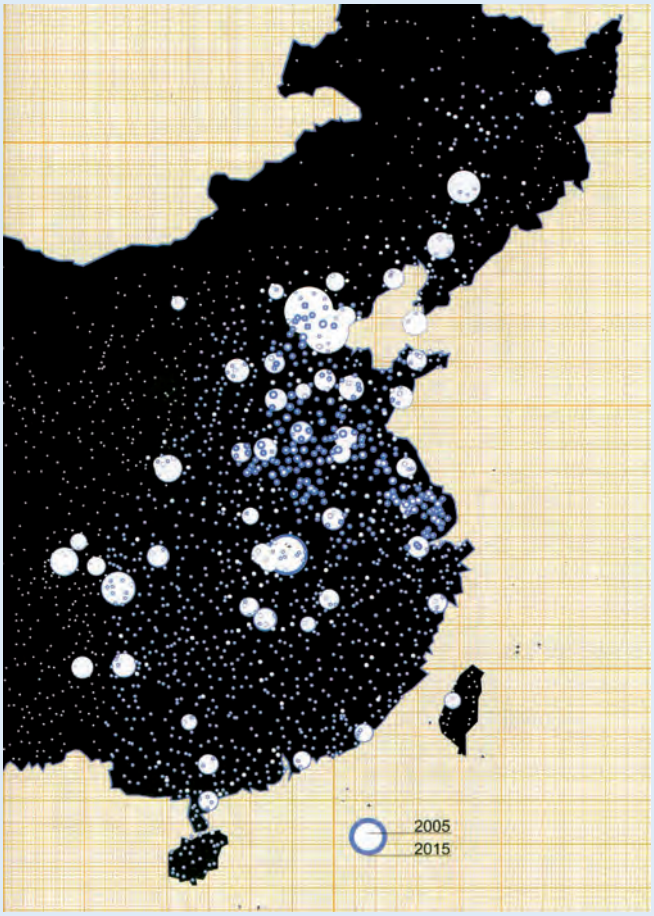
'Dispersions and concentrations of economy and population within PUC will define its future. Development is dotted yet production is focused. Superimposing high yield areas of industry, agriculture and GDP reveals the thriving heart: 'Jinghu', the 'capital' of PUC, a concentration in a concentration.

''Jinghu's' population in 2005: 385 million, at a density of 794 people/km^2. Its population in 2020: 474 million, at a density of 978 people/km^2.

'The 'capital of PUC' is a continuous urban region of 485 000 km^2 connecting Beijing, Zhangzhou and Shanghai. Current densities can be separated into two areas: an urban ridge of 944 people/km^2 and a suburban basin of 590 people/km^2. Agriculture and urban forms nestle amongst each other to create a self-replicating urbanised grain. As you zoom in scattered developmental patterns reproduce themselves at each level of magnitude down to individual villages, each expanding outwards. Distances of separation drop to less than 500 m. The network is at once loose-knit and tight-spaced.

'As Jinghu's inhabitants come to enjoy the benefits of China's economic growth they motorise, they meat-eat, they move outwards, they produce more waste. The potential consequences for space and sustainability lead to the envisioning of a doom scenario. A different outcome can equally be imagined – a dream of more compact urban structures, an efficient road-rail-air backbone, consolidation of fertile land..'.

Neville Mars, Adrian Hornsby and the Dynamic City Foundation, *The Chinese dream: a society under construction*, 010 Publishers, 2008. The extracts are from the pdf slideshow from the book, which can be accessed at http://burb.tv/view/Book_-_THE_CHINESE_DREAM.



Towards low carbon cities

ISOCARP's Congress on Low Carbon Cities (45th ISOCARP World Congress, Porto, Portugal, 18-23 October 2009) generated many rich ideas, distilled into Seven Ingredients which indicate a possible 'route map' towards the low carbon cities of the future.

1. Urgency, leadership and vision
Given the compelling scientific evidence about rising greenhouse gas emissions and the acute dangers to our future of continuing on the present path, this requires:
- A clear lead and direction from the world leaders attending Copenhagen COP15;
- Arising from that lead, commitment and concerted action in all world regions and at all levels to move towards a low carbon future in which the well being and security of the human and other species are optimized;
- At the practical level, the identification and the sharing of knowledge about low carbon and adaptation approaches that have been shown to work, building upon these as the mainstream for tomorrow;
- A recognition that the move towards a low carbon future must begin very soon, and that it will need to endure for decades, even generations, requiring a long term vision.

2. Strategies that are tailored to reflect the particular responsibilities and needs of countries in the developed and the developing world *This means:*
- For the developed nations, a commitment to secure, by defined stages, reductions of at least 80% in greenhouse gas emissions by 2050;
- For the fast industrializing developing countries, a commitment to progressively greater energy efficiency and to low and zero carbon development;
- For the poorer developing countries, an emphasis on new planning approaches, including adaptation to protect the vulnerable;
- An avoidance everywhere of carbon intensive developments.

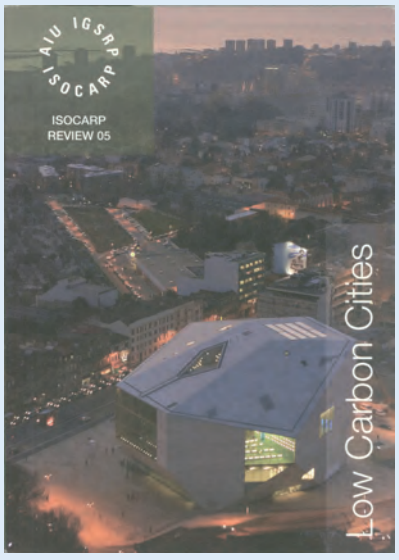
3. A three strand approach embracing public policy, changing behavior, and technological innovation – a key stimulus in each case being carbon pricing *This means:*
- In terms of public policy, setting the framework for action at the various levels, in terms of targets and monitoring, carbon pricing, and other fiscal and regulatory measures including spatial planning;
- Changing behavior on the part of individuals and organizations through raising awareness and the setting of an appropriate price for carbon sufficient to stimulate a market for low carbon goods and services;
- Technological innovation, through increased investment in research and development and stimulated by carbon pricing.

4. Public policy development at all levels - from the international down to the level of the city neighborhood and individual project *This means:*
- At the higher levels, the setting of frameworks for strategic action, including targets and monitoring methodology;
- At the city and regional levels, a new emphasis on effective spatial planning and development control.

5. Integrated, inclusive planning – of cities, regions, and human settlements generally *This means:*
- Spatial planning policies that integrate land use, transport, energy and waste planning, that take into account biodiversity and species conservation concerns as well as the efficient management of water resources, and that embrace all three aspects of sustainability, the social, the environmental and the economic;
- Planning strategies that seek to secure reductions in greenhouse gases reflecting the commitments that are agreed nationally and internationally, and that embrace adaptation measures appropriate to the local needs and circumstances;
- An emphasis on the compact city embracing higher densities (but not necessarily high rise), mixed uses, a structure that embeds efficient, integrated public transport, a defined and protected system of open space, and a defined urban edge to prevent sprawl;
- Planning strategies for cities that are in the context of those for the wider region and extend to the rural hinterland;
- As part of a move away from wasteful, centralized energy generation, a new emphasis on energy planning at the city and neighborhood scale.

6. Carbon conscious design *This means:*
- Energy efficient, resource conscious cities, neighborhoods and individual buildings;
- Moves towards new development that is energy generating, and that can export low carbon power to other local areas;
- Climatic design that borrows, where appropriate, from regional and local traditions and the lessons that can be learned from historic urban patterns, traditional architecture and the focus on making use of trees in public spaces;
- Places that are well connected and accessible, as appropriate by public transport, by bicycle and on foot and that have reduced dependence upon the car;
- Places that are biodiverse, and where networks of open space and landscaping, and opportunities for food growing, are fully integrated with the built environment.

7. Delivering low carbon cities *This means:*
- A commitment to climate change adaptation and mitigation policies, energy efficiency measures and greenhouse gas reduction becoming an integral part of land use, economic, housing and transport policies at all levels of governance;
- A commitment to the implementation of spatial planning and other laws and by-laws at the local level;
- The establishment of innovative organizational and funding arrangements to deliver and manage the necessary action programs;
- The fostering of regional co-operation (formal or informal) between municipalities in terms of spatial planning and other programs;
- The training of planners and other officials in the techniques of incorporating low carbon policies into spatial plans and other sectoral policies, and improving the awareness of local politicians concerning these issues.



Consuming the planet

The study called **The Economics of Ecosystems and Biodiversity (TEEB)** led by top economist and senior banker **Pavan Sukhdev** is calculating the value of the earth's natural capital, and calling for 'free' environmental services to be paid for, as the only way to prevent humanity from consuming the planet. The TEEB website, with resources, information and publications, is www.teebweb.org.

The TEEB project is hosted by the **United Nations Environment Program** and supported by the European Commission; the German Federal Environment Ministry; UK Department for Environment, Food and Rural Affairs; UK Department for International Development; Norway's Ministry for Foreign Affairs; The Netherlands Interministerial Program Biodiversity; and the Swedish International Development Cooperation Agency.

An overview of TEEB is given in the following newspaper article extract. Dr Columbine also refers to this subject in his contribution to the first think tank.

Economic report into biodiversity crisis reveals price of consuming the planet. By Juliette Jowit, The Guardian, Friday 21 May 2010

In 2007, just months after the British government made global waves with the biggest ever report on the economics of climate change by Lord Stern, that world governments met in Potsdam, in Germany, and asked the leading economist and senior banker **Pavan Sukhdev** to do the same for the natural world.

The study is called **The Economics of Ecosystems and Biodiversity (TEEB)**... Based on a host of academic and expert studies, the TEEB report is expected to say that the ratio of costs of conserving ecosystems or biodiversity to the benefits of doing so range from 1:10 to 1:100. 'Our studies found ranges of 1:10, 1:25, 1:60 and 1 to almost 100 in the case of protected areas,' said Sukhdev. 'The point is they are all big ratios: I'd do business on those ratios... I'm fine with 1:10.'

One report estimated the cost of building and maintaining a more comprehensive network of global protected areas – increasing it from the current 12.5%-14% to 15% of all land and from 1% to 30% of the seas – would be $45bn a year, while the benefits of preserving the species richness within these zones would be worth $4-5tn a year. Another unpublished report for the UN by UK-based consultants Trucost claimed the combined cost of damage to the environment by the world's 3,000 biggest companies was $2.2tn in 2008.

Echoing Lord Stern's famous description of climate change as 'the greatest and widest-ranging market failure ever', Sukhdev – who supports action on climate change as well – said the destruction of the natural world was 'a landscape of market failures', because the services of nature were nearly always provided for free, and so not valued until they were gone.

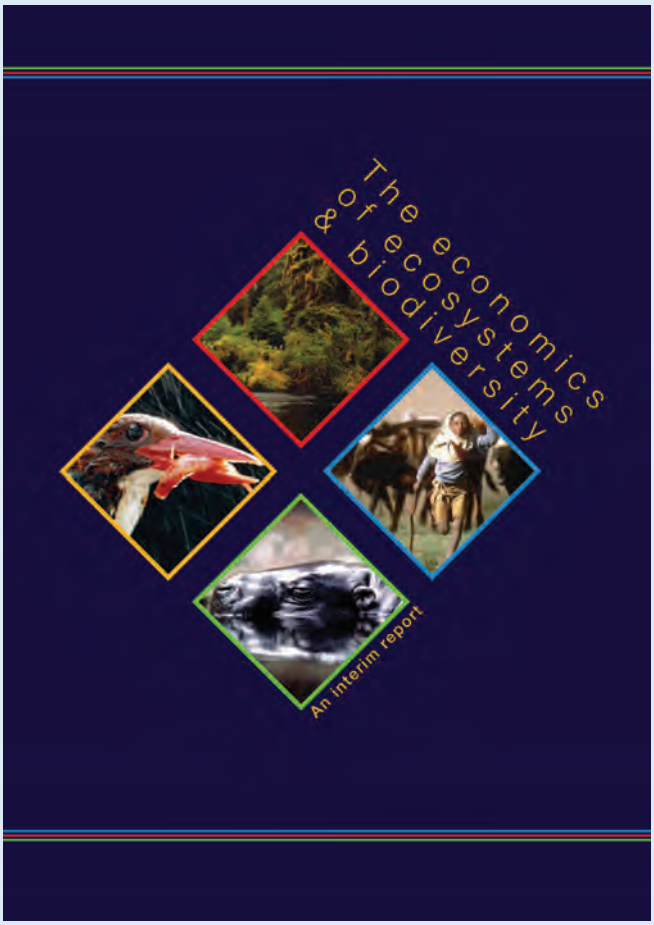
'The earth and its thin surface is our only home, and there's a lot that comes to us from biodiversity and ecosystems: we get food, fuel, fibre; we get the ability to have clean air and fresh water; we get a stable micro-climate where we live; if we wander into forests and wildernesses we get enjoyment, we get recreation, we get spiritual sustenance; all kinds of things – which in many cases are received free, and I think that's perhaps the nub of the problem,' said Sukhdev.

'We fail to recognise the extent to which we are dependent on natural ecosystems, and not just for goods and services, but also for the stability of the environment in which we survive - there's an element of resilience that's been built into our lives, the ability of our environment to withstand the shocks to which we expose it...the more we lose, the less resilience there is to these shocks, and therefore we increase the risk to society and risk to life and livelihoods and the economy,' he added. Sukhdev is a senior banker at Deutsche Bank and adviser to the UN Environment Programme. He also owns a rainforest restoration and eco-tourism project in Australia and an organic farm in south India.

The final reports, in five sections covering the economic methods and advice to policy makers, administrators, businesses and citizens, will make a series of recommendations for how to use economic values for different parts of nature, such as particular forests, wetlands, ocean habitats like coral reefs or individual species (one example given is paying farmers to tolerate geese wintering in Scotland), into ways to protect them.

One of the most immediate changes could be reform of direct and indirect subsidies, such as tax exemptions... 'Particularly worrying' are about $300bn of subsidies to agriculture and fishing, $500bn for energy, $238-$306bn for transport and $67bn for water companies. Although the report is likely to argue some subsidies should be reformed rather than axed, an example of the huge potential impact was given by Sukhdev when he told a meeting in New York this week that to stop the **global collapse** of fish stocks, more than 20 million people employed in the industry may need to be taken out of service and retrained over the next 40 years...

Sukhdev's team also wants companies and **countries** to adopt new accounting systems so alongside their financial accounts of income, spending, profits and capital, they also publish figures showing their combined impact on environmental or natural capital, and also social capital, such as improvements in workers' skills or national education levels. 'We're in a society where more is better, where we tend to reward more production and more consumption... GDP tends to get associated with progress, and that's not necessarily the case.



Ten principles for future sustainable governance

[Extracted from *Copenhagen agenda for sustainable cities: ten principles for future sustainable governance*]

Our cities are the key to a sustainable future. For this reason, the Danish foundation Realdania asked the Scandinavian think tank Monday Morning to create the initiative Copenhagen Agenda for Sustainable Cities. The initiative is supported by the Danish Minister of the Environment, Connie Hedegaard, who sees this as a good opportunity for putting cities on top of the global environmental agenda.

Over half the world's population – more than 3 billion people – now live in urban environments, making out cities the key to a sustainable future. This demands new approaches to how we understand, plan, build and use our cities, so that we can give city users better access to a sustainable life style. To learn more about what this involves, we have asked 48 of the world's most influential urban experts to share their thoughts about the key challenges facing urban leaders and to suggest a way forward.

Representing all parts of the world and a wide range of disciplines, these experts agree that to make our cities sustainable, we need a radical change of mindset, new planning strategies and new methods of governance to support development and foster a new generation of urban leadership. The ten principles for sustainable urban governance presented in this publication are the result of their considerations.

REDISCOVER THE CITY We need a radical change of mindset: A city is much more than a consumption exhaust. It must become a self-sustaining organism – complementary to nature, rather than hostile opposition.

REDEFINE CITY VALUE A sustainable city depends on the attitude and behavior of each urban individual and user. We must encourage a sense of citizenship and individual responsibility towards sustainable values rather than plain consumerism.

INVOLVE EVERYDAY EXPERTS Sustainable cities are participatory cities. We must encourage user-driven self-governance. Through new partnerships between city users, a common understanding of the sustainable city must be developed and initiatives agreed upon.

BREAK DOWN SILOS Sustainable city planning is inherently multidisciplinary. Therefore, old administrative structures should be abandoned in favor of innovative, cross-sector cooperation.

REDISTRIBUTE URBAN DECISION-MAKING Environmental changes do not respect city borders. Vertical cooperation between local, national and international public institutions is crucial to sustainable city planning.

DE-DESIGN URBAN PLANNING City planning should be people centered, rather than design centered. A city is a constantly evolving organism, and city planning must take a broader perspective than the design of individual buildings.

PROMOTE CORPORATE URBAN RESPONSIBILITY Sustainable cities and successful commerce are interdependent. Companies must be considered stakeholders, invited to participate in city planning and assume responsibility for urban sustainability.

GO GLOBAL Climate change is a global challenge. Global cooperation on the development of environmental technologies is essential, and a joint effort to solve the massive problems of the developing world's cities is urgently required.

EMBRACE CHAOS, CRISIS AND CHANGE A sustainable city must be adaptable to unexpected change. The ability to both fight current and future climate change is crucial. Flexible governance and an innovative mindset to overcome crisis is vital.

ENCOURAGE PASSION IN URBAN LEADERSHIP More will be expected of urban leaders of the future. They must be able to manage the complex interconnectedness of new institutions and partnerships. A mix of business management, political leadership and creativity is demanded from the future generation of urban leaders.

The document *Copenhagen agenda for sustainable cities: ten principles of for future sustainable governance* is available from the think tank Huset Mandag Morgen, whose contact details are Valkendorfsgade 13, postboks 1127, DK 1009 København K, Tlf. +45 3393 9323, Fax +45 3314 1394, mm@mm.dk, www.mm.dk.

About ISOCARP

The International Society of City and Regional Planners (ISOCARP) is a global association of experienced professional planners. It was founded in 1965 in a bid to bring together recognized and highly-qualified planners in an international network. The ISOCARP network brings together individual and institutional members from more than 70 countries worldwide. As a non-governmental organization ISOCARP is recognized by the UN, UNHCS and the Council of Europe. The Society also has a formal consultative status with UNESCO. Although ISOCARP members work in many different fields they share a common interest in the spatial and environmental dimensions of urbanization. They advise key decision-makers, proposing and supporting projects for intervention in a spatial context through general or specific actions.

The objectives of ISOCARP include the improvement of planning practice through the creation of a global and active network of practitioners. ISOCARP encourages the exchange of professional knowledge between planners, promotes the planning profession in all its forms, stimulates and improves planning research, training and education and enhances public awareness and understanding of major planning issues at a global level. The association's main event is the annual World Congress, which focuses on a globally-significant planning theme and which takes place in a different country each year. Prior to the congress Young Planning Professional Workshops are organized. This YPP programme seeks to bring together emerging young planning professionals from all over the world to tackle 'real-world' planning projects. Smaller-scale events such as seminars and working groups are also organized. All ISOCARP activities are covered in publications such as the ISOCARP Review, the International Manual of Planning Practice (IMPP), Congress proceedings and special project reports. ISOCARP recognizes excellence through the Society's award programme.

ISOCARP EXECUTIVE COMMITTEE 2009-2010

- Ismael Fernández, Mexico, President (2009-2012)
- Pablo Vaggione, Spain, Secretary General (2007-2010)
- Alex McGregor, UK, Secretary General (2010-2013)

Vice-Presidents:

- Dirk Engelke, Germany, Awards and Communication
- Manfred Schrenk, Austria, Events and Treasurer
- Chris Gossop, UK, Publications
- Jim Colman, Australia, Technical Assistance
- Francisco Pérez, Mexico, Urban Planning Advisory Teams
- Zeynep Merey Enlil, Turkey, Young Planning Professionals

THE ISOCARP REVIEW

In the last six years, ISOCARP has published thematic reviews that complement the research efforts prepared for the annual ISOCARP Congresses. The ISOCARP review is aimed not only at planning professionals and city officials, but also at the general public interested in urban issues.

- Review 06 Sustainable City - Developing World (Nairobi, 2010)
- Review 05 Low Carbon Cities (Porto, 2009)
- Review 04 Urban Growth Without Sprawl (Dalian, 2008)
- Review 03 Urban Trialogues (Antwerp, 2007)
- Review 02 Cities between Integration and Disintegration (Istanbul, 2006)
- Review 01 Making Spaces for the Creative Economy (Bilbao, 2005)

About UPATs

The objective of an ISOCARP Urban Planning Advisory Team (UPAT) is to offer the extensive planning experience and expertise of ISOCARP members on international planning projects, programs and policies, to help local and regional authorities and communities at large, providing expert and independent advice on demanding planning issues. UPATs are organized with a fast response team, specifically tailored with ISOCARP planners, experts on the particular related matter. In a one week workshop, sponsored by local or regional authorities or stakeholders, the team interacts with the local actors and, out of an intensive working process, generates a public presentation and a technical report, with proposals and recommendations tackling the selected topic. More information is available at upat@isocarp.org. UPATs hosted so far:

2010	Sitges, Spain (V) - Railway system transformations and their impact at the Garraf County
2010	The Philips Center for Health and Well-being, Singapore - Livable Cities
2009	Sitges, Spain (IV) - El Garraf Natural Park
2009	Szczecin, Poland - Prospects for the Metropolitan Area
2008	Zurich, Switzerland - Regional Plan
2008	Guadalajara, México - 2011 Pan American Games Urban Legacy
2008	Lincoln City, USA - City Master Plan
2008	Cuenca, Spain - Upgrading and Mobility for the Historic Centre
2007	Sitges, Spain (III) - El Garraf Regional Plan
2007	Schwechat - Airport area Master Plan
2007	Rijswijk - New functions for an Urban Hub
2006	Sitges, Spain (II) - Upgrading and Mobility for the Historic Centre
2006	Schiphol Region, The Netherlands - Ideas for the Master Plan
2006	Cancun, Mexico - Disaster Management
2005	Sitges, Spain (I) - Urban Regeneration
2004	La Rioja, Spain - Regional, Social and Economic Development

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Livable cities in a rapidly urbanizing world

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Urban Planning Advisory Team (UPAT) of the
International Society of City and Regional Planners (ISOCARP)
For the Philips Center for Health and Well-being
Singapore, July 25-31, 2010