

Urban planet: Designing critical urbanisation processes to heal the world

Foreword

The fate of the planet seems to hang on how well mass urbanisation is planned and managed over the next few decades. An ISOCARP Urban Planning and Advisory Team (UPAT), meeting in Singapore from 23 to 31 July 2010, developed a fresh analysis of rapid urbanisation and proposed radically new approaches to achieving sustainable urban regions.

The team was commissioned by the Philips Center for Health and Well-Being, which has established a Livable Cities Think Tank to identify the pathway to livable cities. The generous support of the Philips Center for Health and Well-Being is gratefully acknowledged. The members of the team were Jeremy Dawkins (Team Leader), Martin Dubbeling (UPAT Rapporteur), Antonia Cornaro, Nadya Nilina, Francisco Pérez, Dr Awais Piracha and Luc Vrolijk. Tragically, Luc suffered a fatal stroke on 1 August 2011, depriving us of a highly valued friend and colleague, Yvette of a generous and loving partner, and the world of a gifted planner and urban designer. We express our condolences to his family and friends and to all of the ISOCARP community who knew him.

The full Livable Cities UPAT report, *Livable cities in a rapidly urbanizing world* (ISOCARP 2010), is available at: http://www.isocarp.org/fileadmin/user_upload/network/ISOCARP_UPAT_final_20110114.pdf.

Introduction

An 'urban' life – a life of personal, social and economic opportunity – is ultimately the right of everyone. But does it require continued rapid *urbanisation*? If so, can the world survive a doubling of the *urban* population in the next half century?

Rapid urbanisation – in its current forms – entails the further widening of social inequalities, the wholesale loss of fertile land, massive increases in the consumption of fossil fuels and accelerating depletion of 'natural capital' (shorthand for the stock of environmental goods and services and the natural systems on which life depends). To envisage a doubling of the urban population – from three billion out of a global population of six billion today to six billion out of a global population of nine billion some time after mid century – is to contemplate irreversible climate change and the collapse of humanity's life-support systems.

One way to avoid global collapse might be to halt or even reverse urbanisation by equalising access to educational, cultural, technological and economic resources across all urban and rural areas. Since, however, rapid urbanisation seems unstoppable wherever populations and economies are growing rapidly, we are left with the challenge of totally transforming the processes of urbanisation and the kinds of urban areas that result. In future, rapidly urbanising regions must:

- create (rather than destroy) natural capital
- generate (rather than deplete) energy
- increase (rather than reduce) fairness and equality of opportunity
- entrench (rather than preclude) open and inclusive self-government.

What radically new forms of planning and governance would be needed to achieve these outcomes? This paper outlines the answers to this question produced by the Livable Cities UPAT, including the likely patterns of land use in sustainable urban regions of the future, and the team's ten 'practical solutions' – realistic but meaningful first steps which can be implemented immediately, everywhere. A more extensive summary and discussion of the team's findings has been published in the ISOCARP *Review 07*, 2011.

1 Rapid urbanisation is eating the future

Rapid urbanisation, particularly in Asia, Africa and Latin America, is creating entirely new kinds of urban environments, generally with the following characteristics.

- Vast, 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.

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 fulfilment of human potential – depending on how these regions are planned, managed and governed. The challenge is to imagine how these new urbanising regions can provide people with the most humane and sustainable environments for urban living.

If urbanisation 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 had to 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 included the following.

- Strong global action had been taken to establish a high price on carbon.
- Strong global action had been taken to price natural capital at its real value. (Perhaps the best work in this regard has been done by the UN's Economics of Ecosystems and Biodiversity Study (TEEB).)
- Therefore we assumed that rapidly urbanising regions will be powered by low-carbon energy and that 'free' environmental goods and services will be accurately valued and managed conservatively as capital assets.
- We assumed that urban development will be 'light-weight', in that the extremely resource-demanding construction of the present has been replaced by durable but light-weight and adaptable structures using recycled materials to the maximum, and that heavy industry has transitioned from carbon (heat) processes to hydrogen (electrical/chemical) processes, both transformations having been driven by real values being attributed to natural capital.
- We assumed that there will be high levels of social mobility, openness and transparency in a fully digital world.
- We also had to assume that strong and enlightened leadership will provide holistic, long-term strategies and science-based policies for rapidly urbanising regions (see section 5 below).

These assumptions, undeniably bold and optimistic, become the *preconditions* for liveable, sustainable urban environments. Without these preconditions, even the best urban planning and design cannot prevent rapid urbanisation 'eating' the planet.

2 Rapid urbanisation does not result in 'cities'

Urban growth in its traditional form is unlikely to play a significant role in accommodating the next three 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. Rapid urbanisation, spreading around growth zones, ports, airports, mining districts and transport corridors, will be urban but 'non-city': fast, extensive, less structured, more dynamic, more spontaneous and in some ways more innovative than more familiar forms of urban growth.

Where this leaves traditional forms of planning was one of the critical questions addressed in this project. We concluded that contemporary planning approaches and the use of familiar models of urban form (for example, the metropolitan region with core, sectors, corridors and subregions) cannot be applied to these 'non-city' rapidly urbanising regions. *Attempts to apply these models are likely to fail in both diagnosis and prescription.* It could be a serious impediment to the effective management of these regions if the planners and administrators imagine that they are building 'cities': 'non-cities' call for a clever form of 'non-planning' from the politicians, urban managers and planners. More importantly, traditional planning is likely to fail to capitalise on the potential of these regions to generate new models, new approaches and new solutions.

Rapidly urbanising regions need to be seen as a new paradigm in the production of the human habitat, with the following attributes and potential.

- Rapidly urbanising regions extend dynamically, and even unpredictably, across large areas, ignoring all levels of governmental boundaries, and stretching for 100 or 200 km or more. In the case of the Beijing-Shanghai corridor, the dense rapidly urbanising region extends some 1500 km.
- Rapidly urbanising regions 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 flexible and dynamic, and can be more resilient than traditional cities.
- Rapid urbanisation creates 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 to subregions and regions.
- Rapidly urbanising regions are poorly connected, making many journeys long, uncomfortable and/or expensive.
- Rapidly urbanising regions 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; neighbourhoods and quarters are typically separated by transport corridors and other forms of infrastructure.
- Rapidly urbanising regions are wasteful and inefficient in the use of resources and excessively damaging to the environment – responding to short term and local interests rather than strategic and regional priorities.
- Rapidly urbanising regions 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 the result of large movements of people and rapid economic growth overlying existing natural, social and administrative landscapes.

We concluded that the dynamism of these rapidly urbanising regions may be able to produce a human environment which is not only liveable and sustainable but which will provide models for the transformations also required in the mature cities of fully urbanised countries. What could these regions be like, in a generation or two?

To begin to answer this question, the UPAT team investigated non-city rapid urbanisation at three scales, from regional to local. While merely schematic, the following three kinds of rectangular territories enable us to investigate and describe the nature and planning of these new kinds of places.

'10x100': the 10 km by 100 km 'slice' or transect This is a large area of 1000 square kilometres (1000 km²), and therefore indicative of the scale at which rapid urbanisation 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 urbanisation. It may ultimately accommodate 10 million people. (By way of comparison, Singapore with its islands has an area of about 700 km², 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 km² could in classical terms be seen as a city of one million people. As in Singapore, 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-kilometre 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 to 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.

The hypothetical 10 x 100 rapidly urbanising region (1000 km²) is notionally made up of...

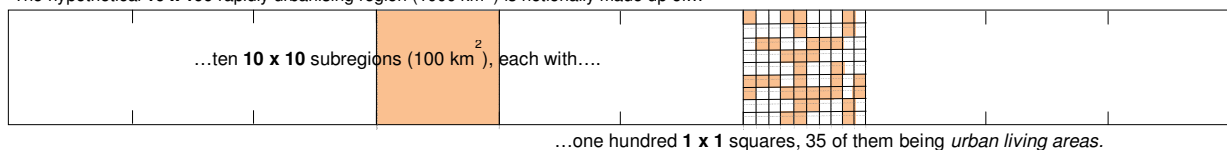


Figure 1 The three scales adopted for the investigation of rapidly urbanising regions

These three scales, admittedly abstractions and simplifications, enable the focus to move from the whole region to the subregion to the neighbourhood (while also recognising that many of the challenges may well be at the intermediate scales). One thousand 1x1 urban 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:

- the rebuilding of natural capital, the optimisation of local energy potential and the social fairness of the urban environment all have to be implemented and safeguarded at the regional scale or larger;
- natural resources, land use and infrastructure should be integrated at the subregional scale; and
- there should be a fine grain of diverse land uses and transport modes within a walking catchment of a few square kilometres.

3 Overlapping mosaics

Planners are, of course, familiar with maps and plans, including those showing intended land use patterns, or urban designs, or blueprints, or structure plans, or regulatory land use allocations. A very different kind of spatial language is required in rapidly urbanising regions, closer to natural patterns and processes, often having fuzzy boundaries and anticipating unpredictable patterns of growth and change. The image is one of patchworks or mosaics – a fluid jigsaw puzzle that reflects the natural world and the complexities of the human habitat.

The first layers of spatial representation seek to understand the overlapping mosaics of natural resources and opportunities which will strongly influence urbanisation, including:

- the distribution of ecological communities and habitats, including critical areas and corridors;
- the landscape which sustains ecological diversity and delivers access to resources, recreation and nature;
- 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 agricultural, built and natural purposes;
- climate and environmental risks;
- the cultural landscape, including cities, towns, villages, historic areas, places of cultural significance and meaning, landmarks, visual landscapes, natural heritage areas, etc;
- the potential arterial routes and catchments for all modes of the transport network.

Some of these layers are fixed, some fluid; some are sharp and some fuzzy; some are non-negotiable while many are amenable to planning, design and mutual optimisation. 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 centres, 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 explicit yet at the same time capable of being implemented in many ways – the strategy is nothing like a master plan. Likewise, 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 notionally made up of one thousand 1-km² square segments, it is apparent that these segments are highly varied, with many being mono-functional, making up airports, ports, road and rail infrastructure, heavy industry, forest, natural areas, water bodies, farms, regional parks and the like. Others will be a complex combination of, for instance, commercial centres, health facilities, educational campuses and sports grounds. Many of the 1x1 *urban living areas* – about 350 of the thousand segments – will be areas where most of the population live, work, shop, study, play sport, etc.

Over time, governed entirely by opportunity, demand and circumstance, the details of the urban living areas will be sketched in and progressively planned in detail. Within any single neighbourhood, 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 the different levels of thin, tall buildings, and allowing people of diverse occupations and incomes to live and work in the same neighbourhoods, to shop in the same centres 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.

In the rapidly urbanising regions, the landscape is under tremendous pressure. Natural resources rapidly disappear, farms become housing projects, trees vanish, watersheds

become polluted, streams are reduced to drains, 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 based on a landscape ecology approach are needed to maintain and nurture a landscape framework that enables and supports a liveable city. One example 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.

4 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 urbanising 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 urbanisation. The result can be highly inefficient, and expensive or impossible to correct.

Just as a new kind of spatial language, of patchworks or mosaics, is required for land use patterns, so a new spatial language is needed for layers of loose networks laid over the regional mosaics, representing green corridors, parkways, drainage, railways, roads, transit, pipes, wires, etc. The equivalent of the land use *mosaic* is the network *fishnet*. Layers of 'fishnets', of all sizes and complexities, represent loose grid systems. Compared to a typical planned grid, they have more connections, they have redundancy, and they are adaptive. This approach responds to the uncertainties of rapidly urbanising 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 urbanisation 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, but allow nodes to develop in quite different ways, allowing for a network that can absorb a large degree of uncertainty. A fishnet is a finer network than is ultimately required. While some of the links in the network will be strengthened and 'promoted', many 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.

Many planners anticipate that sustainability entails deprivation, and specifically a return to human-powered transport supplemented by pre-car forms of public transport. Sustainability does mean the end of the fossil-fueled car and the end of the private vehicle as the main mode for the journey to work, but for most, an urban life will offer increased physical mobility, not less. In order to avoid dependence on cars, even though in the early stages of urbanisation large roads are cheaper and easier to build than mass transit, these regions 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.

5 The 'regional commission': working around dysfunctional boundaries and 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 urbanising regions, where there will be layers of local, rural, municipal and regional governments and special-purpose agencies and districts already in place. Do rapidly urbanising regions need a new form of government? Should a new regional government replace all the existing governments, sweeping aside all these boundaries, as is often advocated?

We concluded that it is best to leave most or all of these government structures in place. Firstly, there is the practical reality that structural reform on such a scale creates enormous problems of conflict, re-integration and adjustment, lasting for years, even decades. Secondly, and even more importantly, notwithstanding parochialism and narrow mandates, existing government structures have expertise, local knowledge and essential functions to perform, and will be needed to implement regional strategic plans and policies.

The imaginative alternative to restructuring is the superimposition of a regional leadership body – an expert commission, or a council of elders – which has the necessary authority to guide the region, but of a different kind. It is not endowed with legal powers and resources, since any such powers and resources would have unavoidably been removed from existing agencies. Instead, it has high public standing, as a small, stable group of wise and experienced men and women, operating transparently, and guided by community engagement and excellent science.

This 'regional commission' has an open mandate (unconstrained by statutory functions and funding) and is thus better able to exercise persuasive moral authority than any normal government body. It exercises and strengthens this moral authority in articulating a credible, compelling, public vision for the urban region, in maintaining a strategic focus on the long term interests of the whole region, and in providing agencies and the public with a constant flow of independent data, assessments and forecasts.

6 Possible outcomes: radically new land use patterns and densities

A further challenge was to quantify the allocation of land across a future, sustainable urban region. This is not easy or simple to do (and is seldom done), for several reasons. Firstly, there is no master plan and no prescriptive land use regulation beyond strong regional policies relating to 'mosaics' and 'fishnets', so patterns of land use will fluctuate markedly over time in response to opportunities, constraints and demand. Secondly, even well-managed rapid urbanisation retains its spontaneity, so the filling in of the 'mosaics' and 'fishnets' is piecemeal and opportunistic, resulting in diverse patterns from place to place. In short, land use allocations such as those listed below cannot be seen as either 'plans' or predictions for any given time or place.

Nevertheless, it is essential to attempt to describe a desirable future pattern of land use allocation. Without such an attempt to quantify intended outcomes there are no guidelines, no benchmarks against which to measure outcomes, and no aspirations. The following tables should be understood in that spirit.

The **10x100 region** (the transect) might have the following characteristics. As noted above, the figures are not prescriptions or predictions. They are indicative of the broad shape of the possible/desirable/sustainable future non-city rapidly urbanising region.

Area	1000 km ²
Population	10 million people
Population density	10 000 people/ km ² = 100 people/regional ha
Dwelling density	40 dwellings/regional ha

The 1000 km² area is allocated as follows:

Nature, farming, broadacre open space	25%	250 km ²
Large scale commerce and exchange	10%	100 km ²
Large scale industry and production	10%	100 km ²
Large transport infrastructure	15%	150 km ²
Water and waste processing	5%	50 km ²
1x1 urban living areas	35%	350 km ²

Notes on areas used for indicating densities

- i A density expressed as 'people per *regional hectare*' (abbreviated as people/*regional ha*) is the population divided by the entire area of the region in hectares.
- ii In the tables below, density expressed as 'people per *urban living area hectare*' (people/*urban living ha*) is the population divided by the area of the 1x1 urban living area, which generally excludes areas allocated to regional infrastructure and other major elements.
- iii In the tables below, density expressed as 'people per *site hectare*' (people/*site ha*) is the population divided by the area of the actual residential site(s) while excluding the rest of the land in the urban living area (non-residential uses, streets, parks, etc).

If the 10x100 transect is thought of as being made up of one thousand 1-km² squares, around one in three is allocated to nature, farming, broadacre open space and water, another one in three is allocated to large-scale commerce, industry and transport, and only about one in three is an urban living area. As indicated in the above table, the 1x1 urban living areas notionally 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.

Area	1 km ² = 100 ha = 1 000 000 m ²
Population	30 000 people
Population density	300 people/urban living area ha, 600 people/site ha
Dwelling density	120 dwellings/urban living area ha

The 1 km² area is 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 m ² floorspace	}
Employment areas (10 000 jobs)	200 000 m ² floorspace	
Civic, educations, retail and services	300 000 m ² floorspace	}
Landscaping around housing, etc	10 ha footprint	

Having followed the patterns of land use through to the local level, it is now time to return to the overall regional scale. When 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. It has now been seen that the 1x1 urban living areas include more of the non-residential uses such as parks, agriculture and commerce, and transport infrastructure such as local roads, already listed in for the region. If these local land uses are reallocated at the regional scale, the overall 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%

7 Possible outcomes: What are some practical first steps?

The Urban Planning and Advisory Team was challenged by the Philips Center for Health and Well-Being to develop simple, practical and original solutions that improve the quality of people's lives in sustainable cities in South East Asia. These solutions were to be readily implementable and capable of being 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 urbanising regions, 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.

The team developed ten such practical solutions. Each was given a name, such as 'Regional leaders', 'Landscape first' and 'Map the energy'. The ten practical solutions are not ranked or prioritised, and indeed they are not necessarily the top ten actions that should be taken: the team developed them because they are important, original and feasible, while recognising that many other important actions need to be taken at the same time.

All ten practical solutions may be most likely to emerge in the dynamic and innovative conditions of rapidly urbanising 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 the great global challenges.

The following list is a truncated summary of the ten 'practical solutions' (which are more fully explained in the UPAT report).

To achieve strong regional governance: '**Regional leaders**'

Without attempting to remove or restructure layers of governments (which continue to be accessible and representative, and to carry out their functions) 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.

To conserve and recover natural capital: '**Landscape first**'

Define the regional landscape framework and plant it prior to urbanisation, to protect and recover biodiversity.

To maximise the local generation of low-carbon energy: '**Map the energy**'

First map the potential wind, wave, hydro, solar, biomass, geothermal and other energy resources, to prevent their sterilisation and to ensure that urbanisation makes the most of these resources.

To minimise separation between food production and urban living: '**Productive landscapes**'

Use food plants for urban landscapes, public gardens, street trees and interim uses of land banks.

Implementing the principle of *strategically certain, tactically flexible*: '**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.

Recognising *the more urban, the more innovation*: '**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.

To maximise mobility, from high-quality spaces to international bullet trains: '**Node for all modes**'

All modes connect seamlessly in a purpose-built interchange integrated into the heart of 1x1 urban living areas.

To maximise the active engagement of citizens: '**Urban playground**'

Plan the new retail centres to fully integrate commercial activities with public areas, social spaces, entertainment, sports and active recreation.

To maximise equity and social mix: **'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.

To encourage corporations to play an increasingly creative role: **'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 urbanisation, to gain insight into daily life, to test innovations and to assist the local community.

8 Conclusion: Urban planet in the balance

The 'cities' issue is receiving historically high levels of attention. Urban planning stories are in the news – stories covering many dimensions of urban issues at all scales, from local to global. Planners are working with communities to find creative, integrated, strategic, sustainable responses to all of these issues.

It is hard not to conclude, however, that the fate of the planet will be largely determined by the scale and type of urbanisation which takes place in those parts of the world where the growth and movement of populations is greatest. Here, in East Asia, in the Indian subcontinent, in Africa and parts of Latin America in particular, rapid urbanisation is creating a new paradigm for which there is not yet a recognised planning, urban management and governance response.

To have any significant impact at a global scale, any response to rapid urbanisation will need to be radically different to the planning, urban management and governance practices of the past. The scale of the change can be seen from the desirable/necessary patterns of land use identified in section 3, above. Consider a part of a country (or, as is often the case, a region which is parts of several adjoining countries), where there are vast areas of rural lands, forest, mountains, and the like, within which is a 'non-city' rapidly urbanising region of 1000 km², growing towards a population of 30 million people. The Liveable Cities UPAT found that within the *urban area*, within that urban region of 1000 km² – within what used to be called the city – high-quality agricultural lands, conservation areas, regional parks and wet areas occupy fully 30% of the land, and large scale commerce, industry and infrastructure occupy another 35%, while what we think of as 'urban' occupies only the remaining 35%.

To achieve that unlikely outcome, the Singapore UPAT found that the management of a rapidly urbanising region would require, amongst other things, an adaptive strategic land use planning approach we called 'mosaics', an adaptive strategic network planning approach we called 'fishnets', and a radical governance approach we called 'regional commission'. Even then, any success would depend on strong global measures to (amongst other things) price carbon and value natural capital.

We gained a great deal from the intense UPAT experience. We intend to investigate these matters further, and in the meantime we will seek to apply the findings in our work. To all attending ISOCARP's 47th Congress in Wuhan, we say: comments, criticism and ideas will be warmly welcomed.

Jeremy Dawkins
Urban planner
Australia

The UPAT report and the published summary

ISOCARP. 2010. *Livable cities in a rapidly urbanizing world*, available at http://www.isocarp.org/fileadmin/user_upload/network/ISOCARP_UPAT_final_20110114.pdf.

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Jeremy Dawkins
Centre for Local Government
University of Technology Sydney, Australia
jeremy.dawkins@uts.edu.au