INTRODUCTION

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Sustainability?
Sustainable cities?
Sustainable development?

These issues have now become the focus of debates and conferences in many parts of the world. While there is a broad consensus on the desirability of sustainability, there is much less agreement on its definition and the ways to implement it.
" …(A) development that meets the needs of the present without compromising the ability of future generations to meet their own needs " is how the Bruntland Commission defined sustainable development. As the world is moving from a rural civilization to an overwhelmingly urban one, with a concentration of the means of production and services in cities, sustainability is now mainly an urban issue. In many places, various groups have studied ways of helping local authorities design sustainable policies for urban areas. In particular, to aid and encourage countries around the world to integrate the issue of sustainability into public policies, including those related to urban development, the United Nations Conference on Environment and Development (UNCED) organized the Rio conference in 1992 and the Habitat II conference in Istanbul in 1996. The main goal of these conferences was to encourage governments to help local authorities set up what are Agendas 21

Many countries around the Pacific Rim have since been elaborating their own Agendas 21. The purpose of the present volume is to highlight the value of comparative work on these issues in relation to Pacific Rim cities. We shall argue that sustainability requires a systemic approach: it has to encompass sociological, economic, environmental and cultural dimensions that need to be discussed and integrated into management and financial aspects with short-term and long-term prospects and involvement. The first conference of the PECC Task Force on Sustainable Cities held in Bangkok in October 2000 prepared the ground for such a thorough examination of " real case studies. " It brought together experts from twelve major cities located in the PECC member economies, and more than 130 participants attended this event. The comparisons among different cities generated a very lively debate. In the following sections, we shall address a few core issues that came up in the conference papers and debates.

The challenges of sustainability

The question of sustainability is an issue that public authorities with responsibilities for urban development have to address in many areas. These areas include urban planning, transport policies, urban services, urban shapes and urban design, but also domains that were hardly touched upon at the Bangkok conference such as health, education, green structures, etc.

Different Cities,
Different Sustainable Policies

All cities are different because of their history, geography, climate, political organization, economic development, and social and cultural dynamics. Are the urban structures of Hong Kong and Jakarta comparable? The former — a " city-state " for decades — is an autonomous and vibrant economic center surrounded by the sea and the mountains, and backed by the massive Chinese mainland, which it serves as a major outlet. It has a very dense urban structure organized around one of the world's most efficient public-transport systems. Can Hong Kong be used as a model for Jakarta, another dynamic city located in a developing country plagued with a serious economic crisis and high demographic pressure? Can the policies implemented by Singapore, a city where the population has stopped increasing, be applied to a sprawling city such as Kuala Lumpur or Bangkok?

The issues of multi-ethnicity and multi-culture are not the same in Tokyo, Taipei, Sydney or Santiago, but in each of these cities, sustainable

Different cities, ...

policies are being devised that need to take such problems into account. The relationship with both environmental and cultural heritage greatly differs across countries and continents. The development of Sydney and its urban sprawl (see William Ross) — resulting from the Australian preference for individual houses — are not comparable with those of a city such as Taipei (see Hsia Chu-Joe), which hosts a significant population of " ghost communities, " or with Chinese cities that are building large numbers of estates in their suburbs.

Nevertheless, a certain number of general issues have to be identified and defined in order to address the issue of sustainable urban development. *The policies to be followed in order to move towards more sustainable cities are specific to each urban area.* Cities around the Pacific face a wide range of distinct problems. A " bottom-up " approach to the study of these issues — the approach adopted by PECC Task Force on Sustainable Cities — seems to be the only one that can help identify the contrasts in and among different urban settings and expose the concrete problems of sustainable urban development. This method — which implies the close comparison between various experiences — will also highlight realistic, affordable and differentiated policies that are consistent with each of the cities to which they are applied.

Sustainable Urban Organizations

A relationship exists between a city's density and its impact on air pollution from exhaust-gas emissions. Cities such as Hong Kong (see Rebecca L.H. Chiu) and Singapore (see Lye Lin Heng) illustrate one point in this relationship: they have a very compact center, new towns or sub-centers, a very efficient public-transport system and green cuts between urbanized areas. The question is whether and how other metropolises can appropriate this type of urban organization. To come up with possible

...different policies

answers, it is necessary first to understand what is really happening in these other urban areas that may make them more " compact. "

Patterns of Development
Cities are characterized by very different modes of urban development resulting from contrasting dynamics. One of these dynamics is an essential feature of developing countries: the massive attraction of the metropolis. In cities such as Manila, Jakarta and Mexico City, a population of floating peoples and ghost communities (see Hsia Chu-Joe) looking for jobs, and sometimes sheer survival, is attracted to the large metropolis. As a result, a city made up of slums and camps grows inside the city or on its fringes. This development is rarely subject to effective (municipal) control, as it is most often against the wishes of local authorities that these urban areas receive this immigrant population (see Agus Budi Purnomo).

Another dynamic lies in the demand for adequate urban living conditions, which generates urban sprawl. As times passes on, immigrant populations ask for the services, such as adequate housing with good sanitary conditions, that they need in order to be able to live decently. Faced with the dereliction of the central districts, and for want of having given them a " modern " look, many cities then " delocalize " the population living in the center to the suburbs. Under such policies, slum areas themselves gradually get rebuilt and improved. Isolated districts, large housing estates or new towns then spring up in areas that may be well or badly served by public transportation. As a result social segregation generally increases, as the experience of Santiago demonstrates (see Francisco Sabatini & Federico Arenas).

A third dynamic is the demand for urban quality. In developed countries, and in some developing countries, many wish to live in individual houses, close to nature, and to benefit from the advantages of the existing infrastructure: this explains the urban fabric of cities such as

When the population explodes in the city center, new residential estates grow outside the town; if badly connected, this increases urban sprawl and social segregation.

Sydney (see William Ross), Christchurch (see Mark Bachels) or the American cities, another pattern of urban sprawl.

In response to this demand for urban quality, local authorities rehabilitate public spaces and parks, and improve the road network and transport system to offer better quality of living for all. This development tends to challenge our vision of urban forms as the pervasiveness of urban functions increasingly blurs the line between urban areas and rural areas.

To this analysis, one can add the fact that large commercial centers, and industrial and/or services sectors outside the dense city, have encouraged the population to gather closer to these polarities (and, conversely, one could say that these polarities have developed as businesses try to set the best location for their customers).

Another fundamental element in this development process is the role of land prices, which are usually much lower on the outskirts than in the compact and well-served areas. Yet this is a complex mix, under all periods, as residents carefully balance their choices between costs, distance, housing and accessibility to urban amenities, jobs and leisure facilities.

Finally, the vigorous development of New Information Technologies in the past decade represents a phenomenon with unforeseen consequences. Mobile phones have a fundamental impact on social and professional relationships. An increasing number of people are using the Internet for work and to organize their everyday life in the best possible way. Information Technologies enable people to live far away from the large urban polarities. The full extent of this evolution on the management of cities has yet to come.

These various forces are complementary. It is the role of the public authorities to take into account both the prevailing dynamics at any given time and the financial resources of the local authorities and inhabitants to prepare a set of sustainable policies.

Compact Cities

Would a " modern " city made up of skyscrapers, high-rises and towers, with a very high ground-occupancy coefficient meet the conditions of being a " compact city? " The measurement of density is a complex matter. First, there is a gap, often a fairly large one, between density figures and the perception of density by the population. Second, in assessing the issue of density in terms of the efficiency of the urban shape, are we only referring to residents and people living, working and shopping in a space unit? Or are we talking about economic density? At what scale should density be measured: the whole urban area (with an average that has little significance and with the additional problem of defining the relevant limits of this area), the plot, the block, the district, or the urban area around a public-transport station?

All of these units are legitimate, as a city is not simply made up of the juxtaposition of unrelated objects. On the contrary, various entities and logical approaches co-exist at various levels. A city is made up of different " pieces " that differ according to their functions and densities. These pieces must be inter-related so as to create a well-balanced city and, at the same time, achieve progress towards sustainability.

High-density living presents two major advantages. First, if it offers a mixed and dense use of space, it allows for a greater variety of leisure and culture on offer. Second, it allows for the establishment of efficient public-transport systems. But there still remains the question of assessing the cost of high- and low-density cities: how can the investment, management, social, pollution, safety, and other costs all be evaluated? Pollution issues cannot be the sole determinants of sustainability. Furthermore, both high and low-density cities present contrasted, yet attractive, urban qualities.

Sprawling Cities and Poly-nuclear Cities

In a city organized around a dense center, itself located around public-transport stations, people commute to work using mainly public-transport systems while, in their local areas, they use bicycles or walk. If it becomes possible to de-localize inhabitants and create employment inside these polarities, commuting decreases. The effect is the emergence of the poly-nuclear city. The city of Tokyo, for instance, is a poly-nuclear metropolis established around transport systems, especially around large stations. Other metropolises like Seoul (see Kim Jeong-Ho) or Hong Kong (see Rebecca L.H. Chiu) have set up new towns in order to better organize their territory and decongest their centers.

This raises the question of the priorities of these polarities: do all functions have to be located in the center, with secondary centers of lower rank — which clogs the roads leading to the centers (see the star system described by Mark Bachels) —, or are there advantages in a poly-nuclear urban area with equivalent and complementary polarities — where the star-shaped transport system becomes a grid such as the one that the public authorities are implementing in Tokyo?

In any case, an optimum size must be found for metropolises, a size beyond which the drawbacks would outweigh the economic advantages: a network of cities such as the one emerging in Hong Kong, Macao, Shenzhen, Zhuhai and in the Pearl River Delta is perhaps opening up the prospect of an efficient urban organization.

Future work will have to be based on the concrete realities of cities in order to respond to issues related to the compact city concept, and especially to see how far the perspective that it offers allows for the implementation of realistic and affordable urban policies (see Somrudee Nicro).
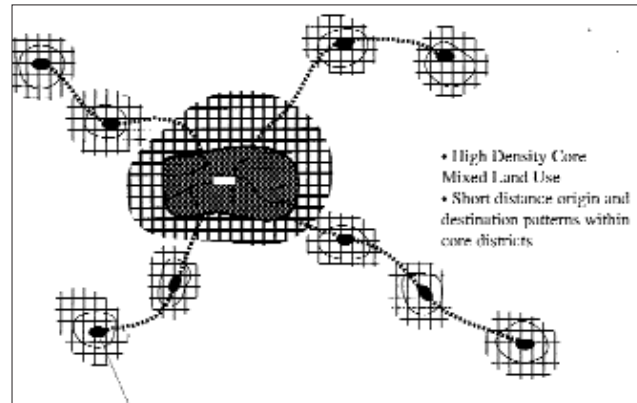
The Star System
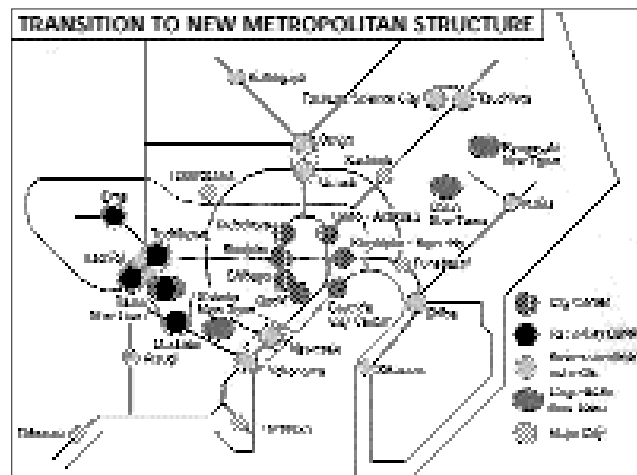
Tokyo: a poly-nuclear metropolis shaped by a grid transport system. A structure different from the star system.

Controlling Mobility

What are the links between transport and sustainability and how do transport policies improve sustainability in the city? There are three major ways in which transport has an impact on a city's health: the pollution and greenhouse gases that it generates; traffic congestion and its economic consequences in terms of loss of time; and the nuisance that transport brings to the urban area (especially noise and road safety). But without transport and the organization of flows of people and goods, there can be no city.

A strong interaction exists between urban shapes and transport demands. The number of cars per capita is one of the mobility indicators. The asymptote of this indicator is about 600 cars for every 1000 inhabitants in the United States, and 400 cars in Europe. Two very different conceptions of urbanization explain this difference. Urbanization in the United States is based on the spread out and

Many city centers are being rehabilitated to improve the quality of urban life: traffic and parking restrictions, pedestrian amenities, urban landscaping.

diffused low-density city where most of the mobility depends on cars, whereas European cities are generally denser and have efficient public-transport systems.

The urban shape plays a part in the demand for transport but other issues also have to be considered. A comparison can be made between the different phenomena that give rise to urban sprawl and the bases of the demand for transport. The first dynamic corresponds to the increase in the number of cars linked to the growth of per capita GDP, an increase that is hard to eliminate. Several participants at the Bangkok conference, in particular those from developing countries, clearly argue for the " right to mobility " without generating discrimination between people.

A second dynamic is the strong demand for a modification of the quality and nature of mobility: complaints inevitably emerge about congestion, the bad quality of public transport, noise and pollution. A new distribution of the demand for transport arises: job-related movements are proportionally reduced and those related to " non-work " greatly increase. In Europe, for instance, only 35 percent of the mobility in cities is related to work. Holidays, leisure and weekend trips are taking a predominant role in mobility. To conceive a realistic transport policy, a city must take account, among other things, of actual social demands. The number of cars will keep on growing in many countries and this trend must be considered seriously. To resist this current, some countries have implemented a set of public policies: Hong Kong and Singapore, for the reasons mentioned above; and cities such as Christchurch (see Mark Bachels), to obtain the best energy results concerning their transport systems. These policies include very efficient public transportation systems, urban tolls, downtown parking and traffic restrictions, enhancement of urban space for pedestrians and eco-friendly modes of transport. Aware of

the danger of car invasion in cities, some developing countries (Vietnam, for instance) have decided to apply heavy taxes to car prices, thus slowing down the increase in car ownership. Others are introducing severe pollution standards for cars (Beijing and Shanghai, for instance). Other cities equip their buses with carburetors that can function with less-polluting energies, such as gas (see Zhang Min & He Cheng).

The massive growth of motorization encourages local authorities to build major transport infrastructures, urban expressways and public-transport systems (underground or above ground). In the first phase, the impact on air pollution is evident with the reduction of traffic congestion. Bangkok has visibly improved the quality of life and its environment thanks to its recently built rapid transit urban expressways and its sky train (see Somrudee Nicro). It is essential, however, to find the right balance to improve the necessary transport infrastructure without encouraging excessive motorized movements.

Urban Services

Urban services — their implementation, management and maintenance — are among the major concerns of local authorities. It is impossible to live without water, electricity, rubbish collection and treatment, cleaning of public spaces, telephones and electronic communication, and other urban facilities. This issue is essential for all communities and it is particularly crucial for developing countries: the population increase in Manila is estimated at 60 percent between 1995 and 2015 and at 88 percent in Jakarta. The low quality of urban services in these cities generates severe social problems such as overcrowding, which encourages the growth of ghettos and social segregation, but it also affects public health and causes pollution, floods and the exhaustion of natural resources (see Agus Budi Purnomo).

In many countries, the local authorities have long performed the role of contractors for

" hard " infrastructures (e.g. roads, railways, harbors and airports, and other facilities) while at the same time acting as operators for the " soft " infrastructures (e.g. water supply, electricity, waste management, sanitation, and telephone). This conception is today facing a strong challenge. Experience, and the rapid evolution of techniques and specially the emergence of the NTIC, teach us that the implementation and management of urban services is a matter that increasingly requires specific professions and competence. Cities can no longer keep up with all the developments in urban services, especially the challenges of carrying out the necessary R & D, developing of new solutions, and achieving sound economic management. The development of expertise in these professions is based upon the constant cross-comparisons and encounters with contrasting situations in various contexts and under different constraints. These conditions make it necessary to link up research centers and networks. They also call for a review of the respective roles of the public authorities and the private sector.

The most severe problem in the development and management of " soft " infrastructures arises in the developing countries. Various public–private partnership solutions have been implemented that take into consideration the end-customer and the social structures into which he fits, as well as the financial capacities of the local authorities. Quite a few cities in China, Vietnam, the Philippines, Indonesia and Chile have set up such partnerships. Industrial countries also rely on such partnerships. Environmental demands compel these countries to design and build facilities that take the environment into consideration. Such investments are huge and public–private partnerships are best suited to implement such projects. There is another reason for these partnerships: the fundamental role of the local authorities is to organize and manage the city. As such, they are increasingly involved

in social issues as well as in economic development, education and public health. These increased responsibilities make it appropriate to resort to partnerships with private specialized firms.

Another technical and financial problem that is becoming more crucial in the majority of the Pacific Rim countries is the scarcity of water resources due to aridity in some regions like North China, intensive deforestation, excessive pumping of groundwater and its pollution, as in Beijing and Jakarta (see Agus Budi Purnomo). This deficit in water resources has environmental consequences on different scales, from inter-state coordination, to the designing and implementing of appropriate technical and financial tools.

The Architectural Shape and the Urban Shape

One of the elements of sustainability relates to the heritage that we shall pass onto future generations. The relationship with heritage
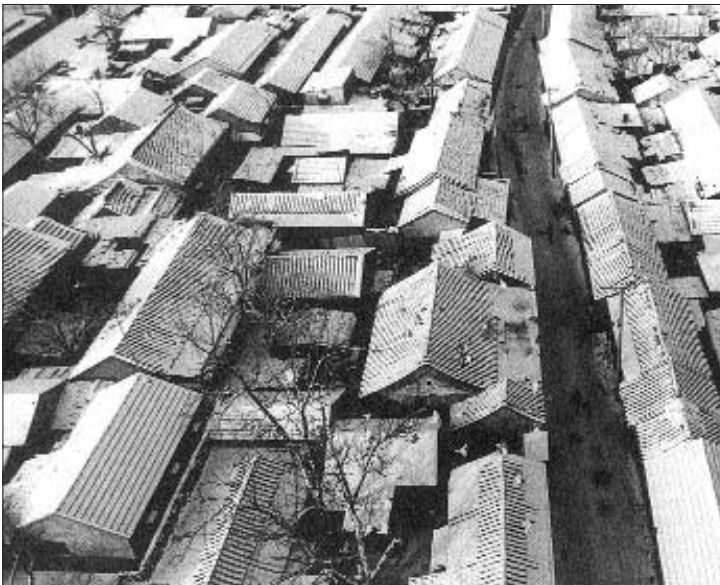
Heritage is not only about ancient buildings, it is also about ancient urban fabrics

takes on very different meanings depending on whether one lives in Japan, China, Southeast Asia, Latin America or the Austral continent. The age of human settlements varies greatly, immigration movements have mingled cultures and colonial invasions have left their mark. This relationship also differs because each culture has its own definition of " heritage. " Centuries-old buildings are preserved in Latin American countries (see Daniel Hiernaux-Nicolas) whereas in Asian countries, repainted temples symbolize the way in which values are rooted in the past. But heritage does not only mean ancient buildings. Housing shapes, urban and village organization, and urban fabrics are integral parts of heritage in the sense that they are evidences of the way of life.

It is on this older fabric that new major transport infrastructures, as well as office and housing skyscrapers, have settled. Sometimes whole districts are destroyed to make room for totally new urban settlements. Modernity finds its place in these mega-cities, sometimes by denying the relationship with heritage. Thanks however to international tourism, among other things, however, and to the desire to conceive the country both in its historical depth and its current state, many Asian countries are reconsidering their earlier policies of destruction and have started rehabilitating traditional housing.

But Asian cities are perhaps beginning to invent a new urban shape consisting of the elements that make it up: brilliant skyscrapers, audacious transport structures, large parks, old urban villages, traditional block cores, and fields and agriculture lying inside an exploding urbanization. They represent dynamic, ceaselessly changing, constantly evolving, hyperdense buzzing cities. They are cities of contrasts, of juxtapositions, and of movement. Is a new heritage being invented? And, as in other metropolises, what impact is to be expected from the new technologies on the architectural and urban shapes?

Establishing a Sustainable Development Policy

" Sustainability " can be defined by a set of criteria used to evaluate the different actions decided in an urban area in order to progressively reach the major objectives set by each city. All cities have ambitions: to become, like Singapore or Hong Kong, major economic centers of the Pacific region; or to combine, like Sydney, attractive living conditions, economic competitiveness, culture and education so as to offer the best quality of life for all their residents. Depending on its situation, objectives and the means that it possesses, a city implements certain activities such as urban planning, transport and urban services, the modeling of the architectural shapes of the built environment, housing, health, education, green and leisure spaces, and cultural and leisure policies.

The Dimensions of Sustainable Development

These different activities will have to be assessed as they evolve, according to their relevance to the underlying political ambitions, but also their contribution to sustainable development. It is at this level and at this stage that sustainable development in public policies must be taken into account. Many major cities have set up Agendas 21 which, in fact, are organized around some of the major components of sustainability: economy, society, environment and culture.

They generally concern:
• *The economy*—how to be competitive in a region or the world, how to attract international investments in order to satisfy the needs of the population and how to make investments corresponding to a good management of expenses in the short and long term? Which forms of public-private partnerships should be created?

A new urban shape:
juxtapositions and contrasts
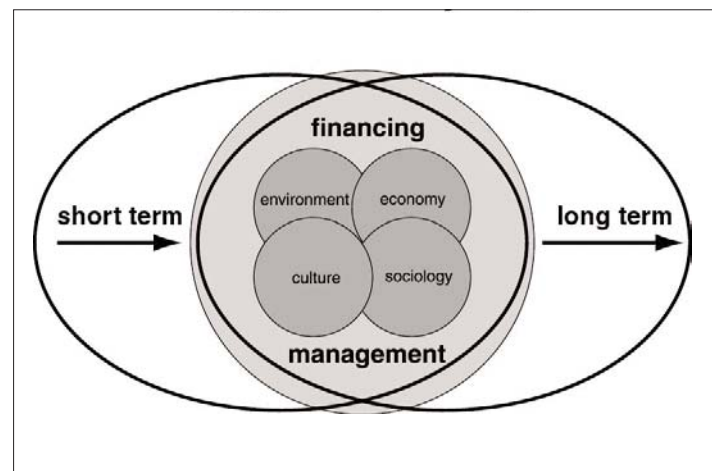
Sustainability: A System

- *Social equity*—how can social equity be promoted and what should be done to avoid the movement of poorer populations into suburban ghettos? How can health, education, hygiene and employment for all be guaranteed?
- *Culture*—how can cultural diversity be guaranteed? How can ancient and contemporary heritage be highlighted? How can the city be made attractive for all, inhabitants, tourists and business firms (see Daniel Hiernaux – Nicolas)?
- *The city's or the district's' environmental quality and good management of natural resources*—how not to pollute and exhaust natural resources, how to renew natural resources, treat waste and regulate polluting industrial emissions?

The dimensions of sustainability are strongly interdependent: economic performance is related to social equity. Culture, by its integrating role, is linked to social equity, but it does not stand outside the economic realm because of the subsidies it needs as well as its attractiveness it has to potential investors. To make choices, and develop tools to assess the relevance of the policies implemented, however, it is necessary to adopt a series of separate criteria.

The Process of Sustainability

How can long-term objectives be fixed that will be both realistic and assessable while, at the same time, bring improvements for today's generation?

It is impossible to know what the needs of the future generations will be, and therefore impossible to define what should be included in the approach to sustainable development. Nevertheless, hypotheses can be made concerning certain growth trajectories that will prevent us from reaching such a goal. This occurs, for instance, when development strategies lead to an increase in persistent pollution problems that exceed the financial capacities needed to treat them, a reduction of the global heritage value, an increase in dissatisfaction,

high tensions due to social inequalities or a squandering of critical capital essential for future development. Furthermore, it seems necessary to maintain the capacity to respond and adapt, on varying scales, when confronted with accidents or unpredictable events.

Taking into consideration the time factor implies that a sustainable development policy must be viewed as a process. Of course, policy packages can be fixed at a certain date, but it is obvious that, with time, economic, social and environmental conditions will change and that some components of the initial package will be unable to achieve the expected aims. It will therefore be necessary to regularly assess the impact of the decisions made, reconsider some of the actions taken and implement new measures. Regular monitoring is a necessity.

The Relevant Scales of Sustainable Development

A city is never isolated in its region or country. It entertains close relationships with its hinterland and surrounding territories thanks to transport infrastructures. The city's supplies come in part from the surrounding agricultural areas, and water supply is never found solely on the spot. The city is bound to host an immigrant population from the surrounding areas and its economy is generally related to both the regional and the global economies. Furthermore, a good environmental policy will impact on the city itself and will contribute to the overall environmental evolution.

Major cities have now become " city-regions " where problems need to be addressed on another scale, at either the regional level or the national level. As illustrated by the policies implemented in the Philippine, deliberate economic policies helped revive medium-sized towns in the country in order to offer well being and employment to the local population, and encourage them not to emigrate to the capital city (see Benjamin V. Carino). Yet, as the

cases of Manila or Jakarta also show, city-regions are usually not political entities, but are made up of dozens of local municipalities that fight vigorously to defend their independence from the central city, as though they are not all part of the same social and economic unit. A first step, therefore, would be taken if national and city policies were made more coherent.

Defining Agendas 21

Agendas 21 involve all the city's actors: local authorities, inhabitants and economic agents. They involve them both in their private lives and in their economic activity. They also involve them heavily in the decision-making process. The experts, through their knowledge of economic, social and environmental phenomena, are also essential actors in defining sustainable policies and in implementing the necessary processes.

Establishing such a decision-making system raises many questions, and different experiences show different results. How can the population be given a place in the process so that it can feel personally involved? How can civil society encourage the responsibility of governments and how will the latter be accountable to civil society? How can the economic and the financial worlds be associated with these processes? What part can public service companies play in defining the services that must be established and the financial partnerships that could implement and manage them? How can the process be made transparent? How can the leadership of a process that is due to last a long time be organized? In addition, how can local administrations that work differently be brought to work together? The answers to these questions depend on the will of the local authorities and on each city's specific factors.

Conclusion

The present volume is based on the contributions presented at the Bangkok conference and the wealth of the debates and discussion that they produced. It demonstrates how different the situation of each city is and argues for the need for appropriate sustainable development policies. " Sustainability " can be defined by a set of criteria used to evaluate the different actions implemented in an urban area to progressively reach the major objectives set by each city. Splitting up sustainability into four major components — economic, social, cultural and environmental — that interact with each other enables us to describe the system to be corrected. Policy-making to reach the objectives of a given city is a process that must be constantly re-activated and renewed, and it must be run by all the urban actors: local authorities, inhabitants and economic actors, with the help of experts. To solve the problems of urban sustainable development, working on the scale of the city alone is not enough and coordination has to be established among city, region, and state organizations to set up coherent regulations and policies.

Sustainable policies take into account the differing situation of each city. They must be implemented with a realistic view of the major forces at work: local and global economic forces, social forces, and the needs of the population. The processes needed to achieve these major objectives must be devised so as to take into account local cultures and heritage and the environment. They have to be developed in the context of local economic situations.

Cities around the Pacific Rim are among the most dynamic places in the world, each in a different way. The development of exchanges between them, including an analysis of their evolution, will help identify pragmatic and realistic paths towards their sustainable development, that of the region, and that of the planet.