

# **Can Urban Intensification Contribute to Sustainable Cities?**

## **An International Perspective**

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In the last twenty years or so there has been an increasing interest in how the form of cities – e.g. their densities, size, building forms, configurations and layouts - can contribute to their sustainability. The main focus has been on the impacts of different urban forms on travel behaviour and transport provision, resource efficiency, social equity, accessibility and economic viability. The outcome from this debate, particularly in Europe, the USA and Australia was a strong advocacy of the ‘compact city’ model. Essentially this is a high-density, mixed-use city, with clear (i.e. non-sprawling) boundaries (Jenks et al., 1996; Williams et al., 2000). This model was supported for several reasons.

First, compact cities are argued to be efficient for more sustainable modes of transport. The population densities are high enough to support public transport and to make it feasible to operate. Also, because compact cities are high density and mixed use, the theory is that people can live near to their work place and leisure facilities. Hence, the demand for travel is reduced overall and people can walk and cycle easily. Second, compact cities are seen as a sustainable use of land. By reducing sprawl, land in the countryside is preserved and land in towns can be recycled for development. Third, in social terms, compactness and mixed uses are associated with diversity, social cohesion and cultural development. Some also argue that it is an equitable form because it offers good accessibility. Fourth, compact cities are argued to be economically viable because infrastructure, such as roads and street lighting, can be provided cost-effectively per capita. Also, population densities are sufficient to support local services and businesses.

All of these claims can, and have been, contested in research (Jenks et al., 1996). However, the dominant idea of the contained, compact, well-connected city prevails to some extent in most planning and city management policies in developed countries. Many of the urban design and planning movements in Europe and the USA, such as ‘New Urbanism’, ‘Sustainable Communities’ and ‘Smart Growth’ share elements in common with compact city thinking. Now, increasingly, these ideas are being investigated and adapted in other contexts too. Planners and urban managers internationally, and particularly in developing countries, are researching if there is anything in compact city theory or practice to help alleviate urban problems. In Asia particularly, the compact city idea has been enthusiastically embraced.

However, clearly there are huge differences between the cities of, for example, Europe, the US, Asia and Africa. Therefore the question of the appropriateness of the

compact city model to deliver sustainable urban environments in different contexts is extremely important. In particular, the question of the effectiveness of urban intensification policies comes into question. If cities are to become more like the compact city model, this implies a process of urban intensification. This is commonly understood as a process whereby new buildings in cities are built at higher densities, vacant land in urban areas is developed, and high-density redevelopment takes place. Urban intensification is also associated with increases in the amount of activity that takes place within cities – both increases in the population density, and the extent of economic and social activity. But the ability of this type of urban policy to deliver more sustainable cities globally raises some important questions.

A first, major, issue is the difference in the physical and demographic characteristics of cities globally. In the European context, the compact city model focuses on maintaining or increasing urban populations (which have been steadily declining) and making urban living popular again. In the UK, the Government’s urban policy in this area is known as the ‘Urban Renaissance’ (DETR, 1999, 2000). Hence the focus is on providing a high quality of life in city centres, developing on infill sites and generally revitalising towns and cities. However, clearly the international context is quite different. In developing countries in particular, cities are characterised by rapid urbanisation in fast growing cities and regions (see Richardson et al., 2000). In terms of size, it is estimated that, by 2015, 22 of the World’s 26 megacities (those cities with populations over 10 million) will be in developing countries, and several of them will have populations of 20-30 million (Burgess, 2000, p.20.). Bearing these figures in mind, the issue of existing density patterns is significant. A very crude generalisation is that urban densities are highest in Asia, high in Europe, North Africa and the Middle East, Low in Latin America and Sub-Saharan Africa and lowest in North America and Australia (Acioly and Davidson, 1996).

As can be seen from the table below, which shows population densities in key cities around the World, if a policy of intensification is advocated, then cities have starkly differing starting points. Perhaps to seek to intensify Los Angeles from a starting figure of 2,836 persons per square kilometre might be feasible, but to seek to increase the population of Calcutta, which already hosts 23,487 persons per square kilometre, might seem ill advised. In fact, many commentators have argued against the transferability of the compact city model on these grounds alone. For example, Hardoy et al. ask ‘what is the sense ... of further densification given that densities are already high and associated with a range of problems including infrastructure overload, overcrowding, congestion, air pollution, severe health hazards, lack of public and green space and environmental degradation?’ (quoted in Burgess, 2000, p.15).

Table 1. Densities of persons per square kilometre in a selection of cities\*

City	Density persons/square km	
	Central city	Metropolitan area

Barcelona	17,433.0	6,369.0
Buenos Aires	14,120.9	3,070.0
Calcutta	23,487.0	8,164.4
Jakarta	14,084.4	-
Lahore	1,982.0	1,333.0
Lima	1,534.9	1,642.1
London	1,667.0	4,227.0
Los Angeles	2,836.0	1,166.9
Mexico	5,568.4	1,914.5
Moscow	8,418.9	-
New York	9,166.6	723.2
Osaka	12,430.0	2,133.0
Seoul	16,899.1	-
Shanghai	10,358.6	2,378.9
Sydney	2,001.3	285.8
Tokyo	13,973.0	5,471.0
Washington	3,566.6	1,906.8

\*Table compiled from data in Richardson et al., 2000.

It is not only absolute densities that vary in different urban contexts: spatial patterns of density and socio-economic characteristics within cities vary between developed and developing countries too. In developed countries, the urban poor and those on low incomes tend to live in the centre, and the rich and middle class on the periphery, in the suburbs. This is very different in developing countries. The poorest people still tend to live in the centre, but are already accommodated at very high densities. However, there are also clusters of poorer people on the periphery, often in low and medium density squatter settlements or illegal subdivisions. As the compact city theory focuses largely on densifying city cores, it is not appropriate in many situations where it would exacerbate existing rates of overcrowding. As Burgess states, ‘...the ability to realise the gains of a more rational allocation of space within the existing building stock that are claimed for densification policies in developed countries do not apply in developing countries.’ (p.17).

Moving on from the issue of density, there is also the question of variations in land uses, and their spatial distribution. The European compaction model is heavily in favour of brownfield development on vacant and derelict land within city boundaries. It also places a strong emphasis on mix of uses. However cities in developed countries are not characterised by the same land use patterns. They have not been through the dual processes of de-industrialisation and counter urbanisation that many cities in developed countries have (op cit p.17). Hence, there is often less vacant land within urban areas and little spare ‘capacity’ for population growth. Also, the undeveloped land that does exist is often highly valued for urban agriculture, and losing this land would effect the very poorest urban dwellers (op cit, p.17).

Cities in developed countries often already have an extremely vibrant mix of uses, not because of planning strategies, but because unregulated development has taken place that reflects the diversity of the social, cultural and economic activities that take place within urban areas. Hence, in a single street, on different levels, commercial uses, religious buildings, homes, health facilities, industrial and agricultural uses can all be found. However, this mix does not lead automatically to a more sustainable urban environment. While there are certainly benefits of such arrangements, there are also often problems of health, safety, noise and air pollution, and poor quality of life: conditions that have more to do with general levels of wealth than land use factors.

So, it seems that the urban context, in terms of density and land use raises important questions about the applicability of urban intensification as a globally useful route to sustainability. However, another equally important issue is the extent that development can be controlled and managed in a way that supports sustainability objectives. Two key questions are, first, can the extent and location of development be controlled to produce a smoothly functioning compact city? Second, can that development then be managed in a way that maximises the benefits of intensification and minimises the negative impacts. Here again, differences are evident in different contexts.

In Europe, where very mature planning systems exist, research evidence still suggests that town planners have less control than they would like over the extent of urban intensification. Planning simply responds to development pressures, which are a result of market forces, and this leads to uneven and increasingly decentralised development patterns (Williams 1998, 1999). This said, since compaction policies have been in place, especially in the UK, there has been a marked concentration of development within existing urban areas, and brownfield land redevelopment rates are running at relatively high levels (ODPM, 2003). In developed countries, only a very small proportion of development is illegal or informal. Hence, although not a perfect system for implementing urban intensification, development is certainly largely controlled and directed to the desired locations.

In developing countries, the situation is often quite different. Most major cities do have some degree of municipal planning, with formally agreed plans and strategies for economic and population growth, transport, land uses and so on. However, the extent of control over development varies considerably. In many cities the amount of informal development exceeds that of regulated development, urban change is rapid, much development is 'self built' by the occupier or user, and whole neighbourhoods can be settled and then vacated in short time scales. In this context formalised planning cannot be exercised at the level of the individual building: it can only work at a more strategic level. In these cases, even managing general growth areas, transport interchanges, the central business district, etc. can prove difficult. With this

lack of control over development, it is very hard to see how many of the compact city benefits can be achieved.

Turning to the question of whether development, even if it is compact and mixed in terms of use, can be managed to deliver sustainability, another key set of issues emerge. In Europe and the USA, research has shown that a number of significant barriers stand in the way of those who are attempting to bring sustainability benefits through intensification (Williams et al. 2000). Several of these barriers are related to how the planning system works, how it is resourced, and its operation, and several lie outside the system and can be described as 'external' barriers. But the key problems relate to basic urban management. The Commission of the European Communities acknowledged this problem back in 1990 when it stated that, 'Effective management of our urban environment requires a strategy based on an overview of the urban system, with integrated decision-making in key areas. Few cities possess an administrative structure that can ensure such integration ...' (1990, p.24). Similar viewpoints have been expressed more recently: Mitlin and Satterthwaite have argued that it is the '... failure of effective governance within cities that explains the poor environmental performance of so many cities rather than inherent characteristics of cities in general.' (quoted in Jenks and Burgess, 2000, p.3)

In short, if compact cities are to deliver sustainable outcomes, they have to be well managed: it is blatantly clear that simply increasing densities and mixing uses will not lead to sustainable outcomes. High quality infrastructure needs to be provided, public transport needs to be well managed, affordable and reliable, noise and air pollution have to be maintained at acceptable standards, basic services such as water, drainage and electricity need to be provided, and levels of public facilities such as health care and education have to be appropriate for the high numbers of city dwellers. Furthermore, urban environments have to be kept clean, safe and 'liveable'. Even in developed countries that have good basic infrastructure, these standards are hard to achieve: in developing countries it may be almost impossible. As Burgess states: 'High demographic growth, low levels of economic development, high income inequalities, small urban budgets and shortages of environmental infrastructure, shelter and basic services have a critical effect on densification policies and the effectiveness of policy instruments.' (op cit, p. 15).

So where does this leave us? One conclusion could be that overall, urban compaction, achieved through a process of intensification, is wholly inappropriate for cities in developing countries. They are rapidly urbanising anyway, have high proportions of informal development, and lack the infrastructure and urban management structures to make the model work. Hence, perhaps another urban form or physical arrangement should be sought that might be more sustainable in this context. It may be that the 'polycentric city', or the 'linear, transport-oriented' model is more appropriate. Another conclusion could be that cities in developing countries already have the requisite density standards to make the compact city work, but they now need high

levels of investment in infrastructure and urban management to make the model function sustainably. This could be so, but then implementation problems seem insurmountable in the short or medium term. A third conclusion could be that concentrating on the physical form of cities as a solution to unsustainability has little relevance at all, and urban remodelling is simply not a high priority in the range of sustainable solutions for developing country cities. Perhaps other 'pathways' (Guy and Marvin, 2000) to sustainability that focus on, for example, social development, technological improvements, environmental resource management or political processes are the ways forward. Whatever conclusions are drawn, it is important not to lose sight of the amazing commonalities in aims for cities globally. Whether through a focus on urban compaction, or through other pathways, there remains an impressive level of agreement about the overall aims of sustainability on all continents. The desire, by urban managers at least, to have cities that improve social conditions and cohesion, that are resource efficient and economically sustainable, and that provide a high quality of life are almost universal. Of course, the potential solutions are the key focus for debate. It seems that there is much to admire in the compact city model – in the right place and at the right time. But as a universal response to unsustainable cities it can only be seen as a small part of the solution.

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