Table 4.1
Relationships between characteristics of the urban system, and economic and other parameters.

City (by geographical area, with example)	Average speed home to work (km/h)	Modal split home to work			Average distance home to work (km)	Size (million inhabitants)	Density (inhabitants + jobs/ha)	GRP *per capita* (US $, 1990)	GRP to transport (%)	Total CO_2 emissions from transport *per capita* (kg)
		Car	Public transport	Slow modes						
American cities*										
Average	34.9	86.3	9.0	4.6	15.0	4.8	22.3	26,822	12.5	4,683
Los Angeles	*40.3*	*89.3*	*6.7*	*4.0*	*17.8*	*8.7*	*36.3*	*24,894*	*12.0*	*4,476*
European cities**										
Average	21.5	42.8	38.8	18.4	10.0	2.5	81.4	31,721	8.1	1,887
Amsterdam	*19.8*	*40.0*	*25.0*	*35.0*	*9.2*	*0.8*	*71.0*	*25,211*	*7.1*	*1,475*
Wealthy Asian cities***										
Average	15.6	20.1	59.6	20.3	10.0	13.3	240.2	21,331	4.8	1,158
Hong Kong	*14.9*	*9.1*	*74.0*	*16.9*	*10.9*	*5.5*	*440.5*	*14,101*	*4.1*	*760*

Source: Kenworthy and Laube (1999).
* Boston, Chicago, Denver, Detroit, Houston, Los Angeles, New York, Phoenix, Portland, Sacramento, San Diego, San Francisco and Washington.
** Amsterdam, Brussels, Copenhagen, Frankfurt, Hamburg, London, Munich, Paris, Stockholm, Vienna and Zürich.
*** Hong Kong, Singapore and Tokyo.

to be a case of ‘accelerate *or* concentrate’, rather than ‘accelerate *and* concentrate’. But it also indicates that from a purely economic point of view a range of combinations of these two factors appears to be viable. There are *different* ways (or different combinations of speed and spread) of increasing the effective size of urban markets. The link between the effective size of urban markets and the performance of a local economy, as identified by Prud’homme and Lee (1999), provides a useful reference for urban development efforts. However, such efforts can become much more focused, if this economic goal is combined with other, possibly more discriminating, goals. In line with this conclusion, the design challenge can be formulated as follows:

> **How, within given preconditions derived from non-economic criteria (including environmental sustainability), can the effective size of urban markets be increased through consistent combinations of transport and land use policies?**

The Netherlands and transport performance

The design challenge outlined above was central to research conducted by the University of Amsterdam as part of the ‘Transport Performance for the Region’ (‘VPR’ in Dutch) programme initiated by the Netherlands Agency for Energy and the Environment (Bertolini *et al*., 2002). The objective of VPR is to promote sustainability in regional transport planning. One of the basic assumptions is that within a broader social and political context, environmental sustainability will never be the sole objective but will always have to be weighed up against other goals, including that of encouraging economic competitiveness. The implication is that multi-dimensional solutions, which are able to serve several objectives simultaneously, are often the most feasible and almost always the most promising ones. In addition to environmental sustainability, typical operational goals are associated with transport systems are accessibility, safety and quality of life. In this context, accessibility is of primary importance as it represents, if adequately defined, a direct translation of the policy-design challenge of increasing the effective size of urban markets (and thus contributing to the improvement of regional economic performance). How then can the enhancement of accessibility be combined with environmental sustainability? Before attempting to answer this question, it is necessary to define the two terms more precisely.