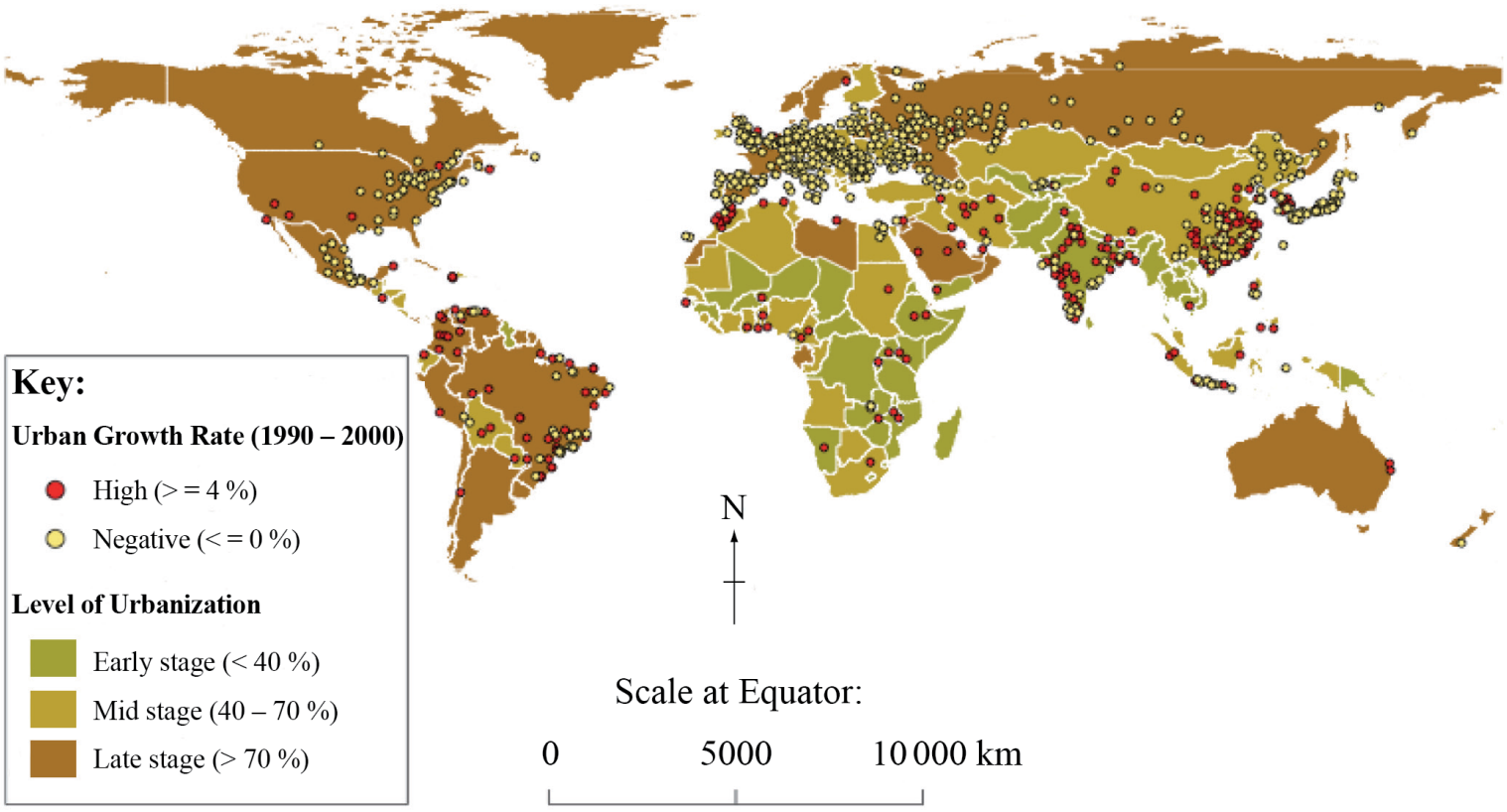
SL Paper 2

The map shows cities experiencing high or negative growth rates in countries with differing levels of urbanization.



[Source: UN HABITAT Global Urban Observatory]

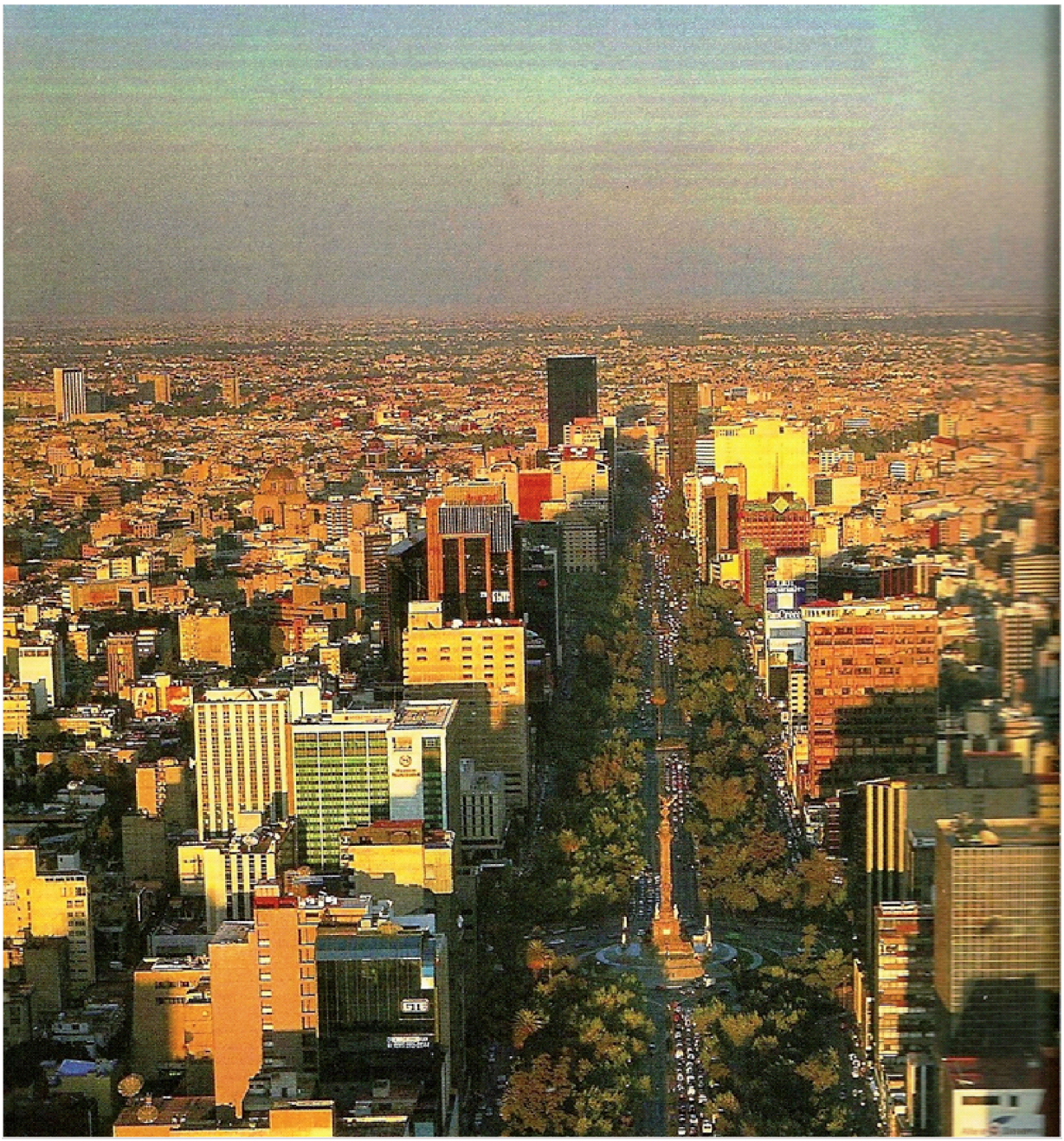
a. Identify the **two** major components of urban growth. [2]

b. Referring to the map, describe the relationship between the level of urbanization and urban growth rate. [3]

c. Explain the pull factors associated with counter-urbanization. [5]

d. Discuss the challenges facing **one or more** cities experiencing rapid growth. [10]

The photograph shows Reforma Avenue, one of the most important streets in Mexico City.



[Source: Calderwood, M. In Cities and Society. Marsilio,2006]

a. Referring to evidence in the photograph, describe **two** types of environmental stress that are likely to affect the population of Mexico City. [2+2]

b. Identify **three** characteristics of Reforma Avenue that are likely to affect the urban microclimate and explain their effect. [6]

c. “Cities can never be sustainable.” Discuss this statement, referring to one case study. [10]

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a. Describe what is meant by a “sustainable city”. [4]

b. Explain **three** ways in which human activities can modify the microclimate of an urban area. [3x2]

c. Examine reasons why cities in some parts of the world have higher rates of population growth than others. [10]

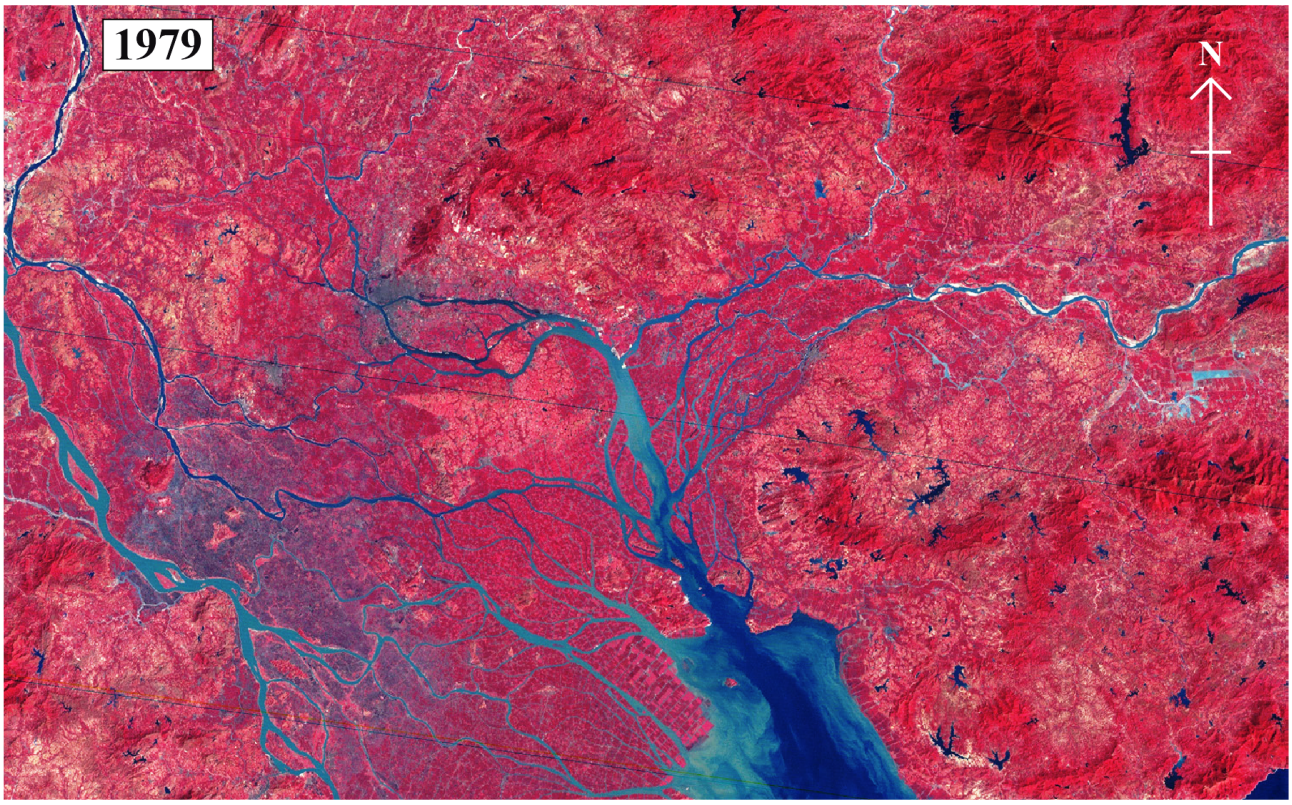
a.i. Describe **two** differences between a circular city system and a linear city system. [2]

a.ii. Outline how **one** transport management strategy can contribute to a circular city system. [2]

b. Explain **two** reasons for the location of retail activities in the central business district (CBD) of **one** city you have studied. [6]

c. Examine the consequences of the movements of different socio-economic groups within a city. [10]

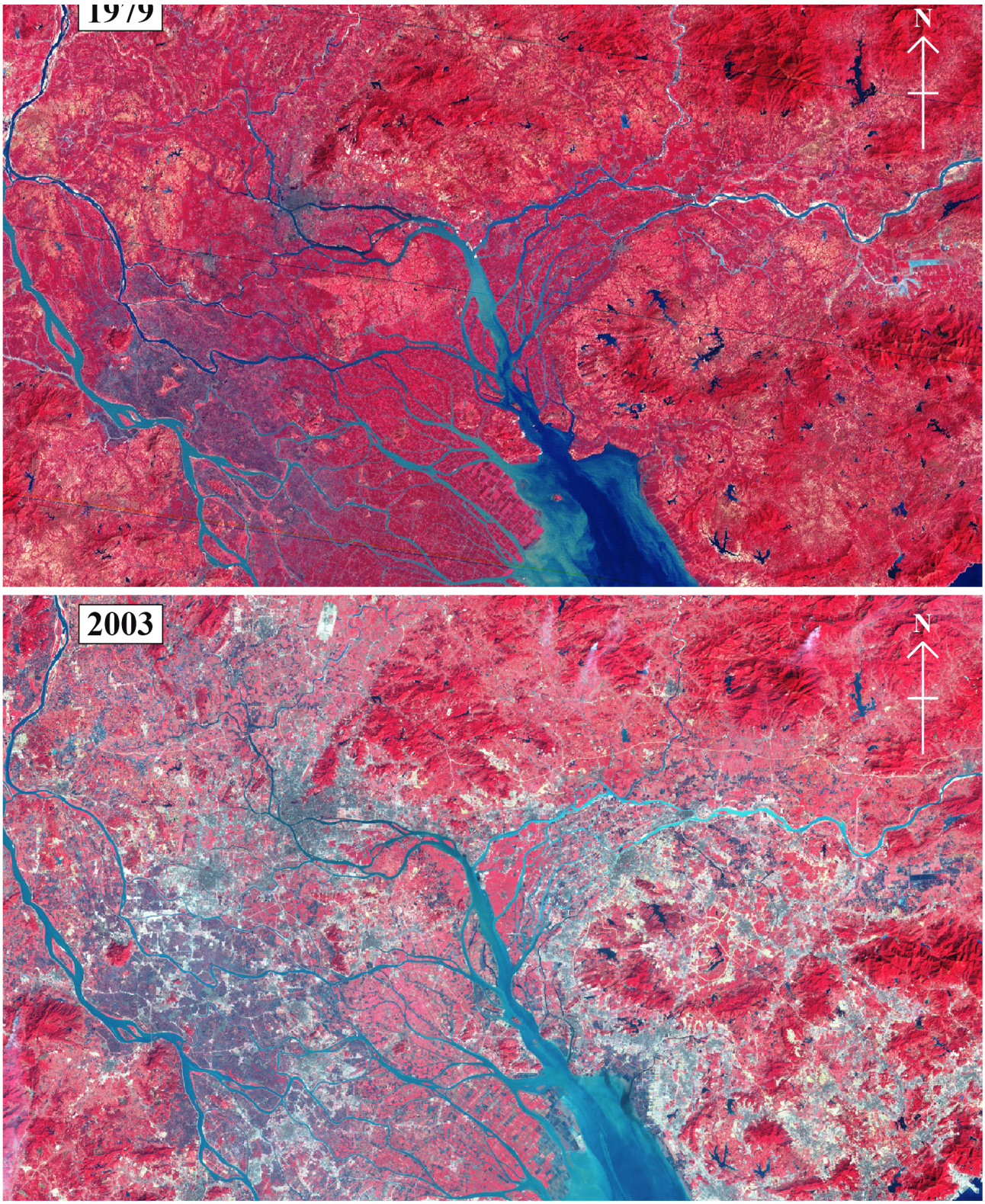
The false-colour satellite images compare the Pearl River Delta in southern China in 1979 and 2003.



Key:

- Vegetation
- Water
- Shallow/sediment laden water
- Buildings and paved surfaces

0 25 km



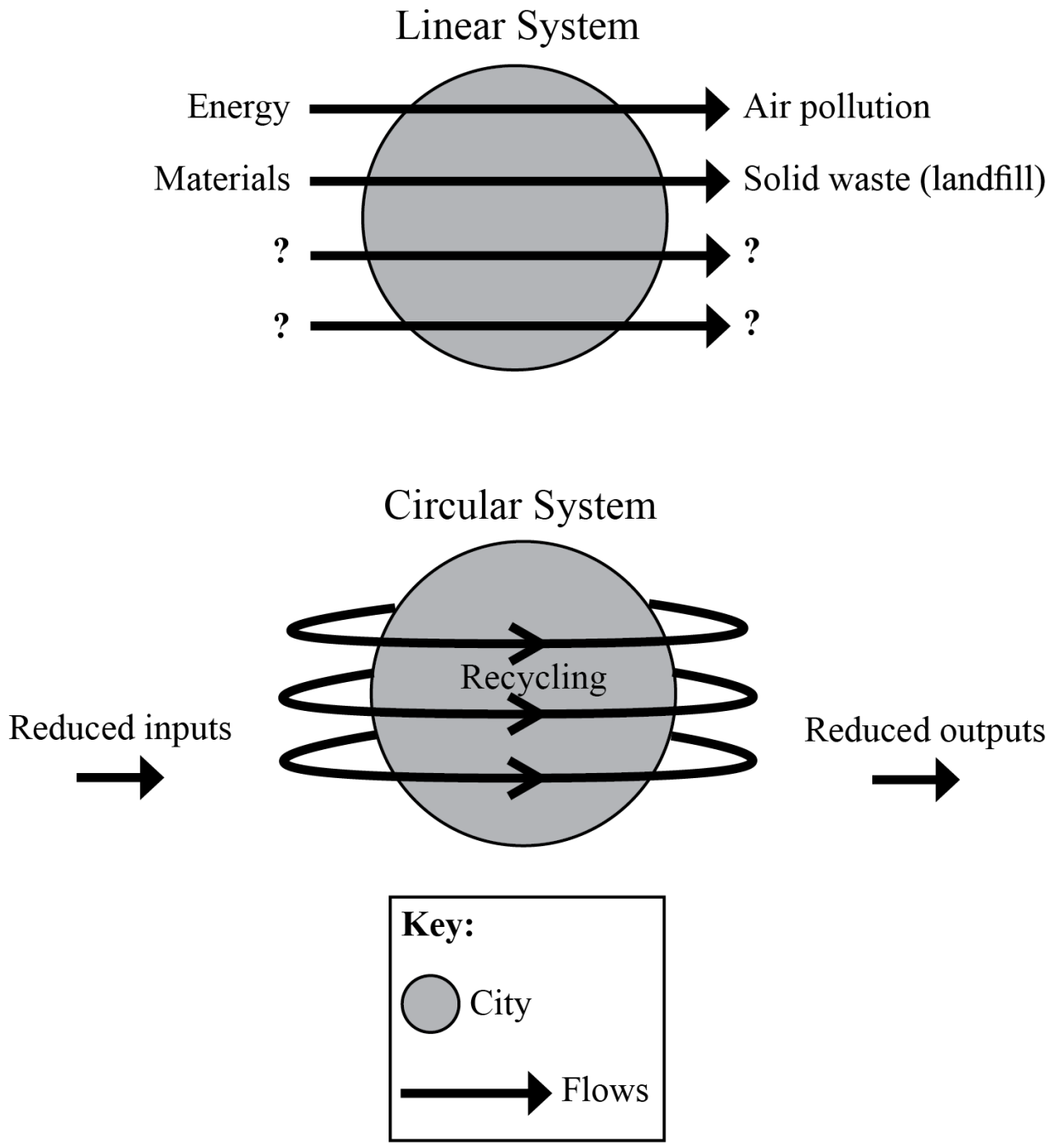
[Source: First image: Jesse Allen, 1979, Landsat 3 MSS, pearlriver_l3_1979292, GLCF, Maryland, 2012; Second image: Jesse Allen, 2003, Landsat 7 ETM+, pearlriver_l7_2003010, GLCF, Maryland, 2012]

a. Describe the pattern of urban growth since 1979. [4]

b. Suggest **three** reasons for the rapid growth of some cities. [2+2+

c. Examine the factors that determine the socio-economic characteristics and location of residential areas within cities. [10]

The diagram shows two contrasting city systems.



[Source: adapted from www.dep.org.uk/scities/rationale/whylearn.php]

a. Identify **two** possible additional inputs and two possible additional outputs for the linear system. [4]

b. Explain why the circular system has a reduced urban ecological footprint. [6]

c. Examine the dominant population movements and their consequences for **one or more** urban areas. [10]

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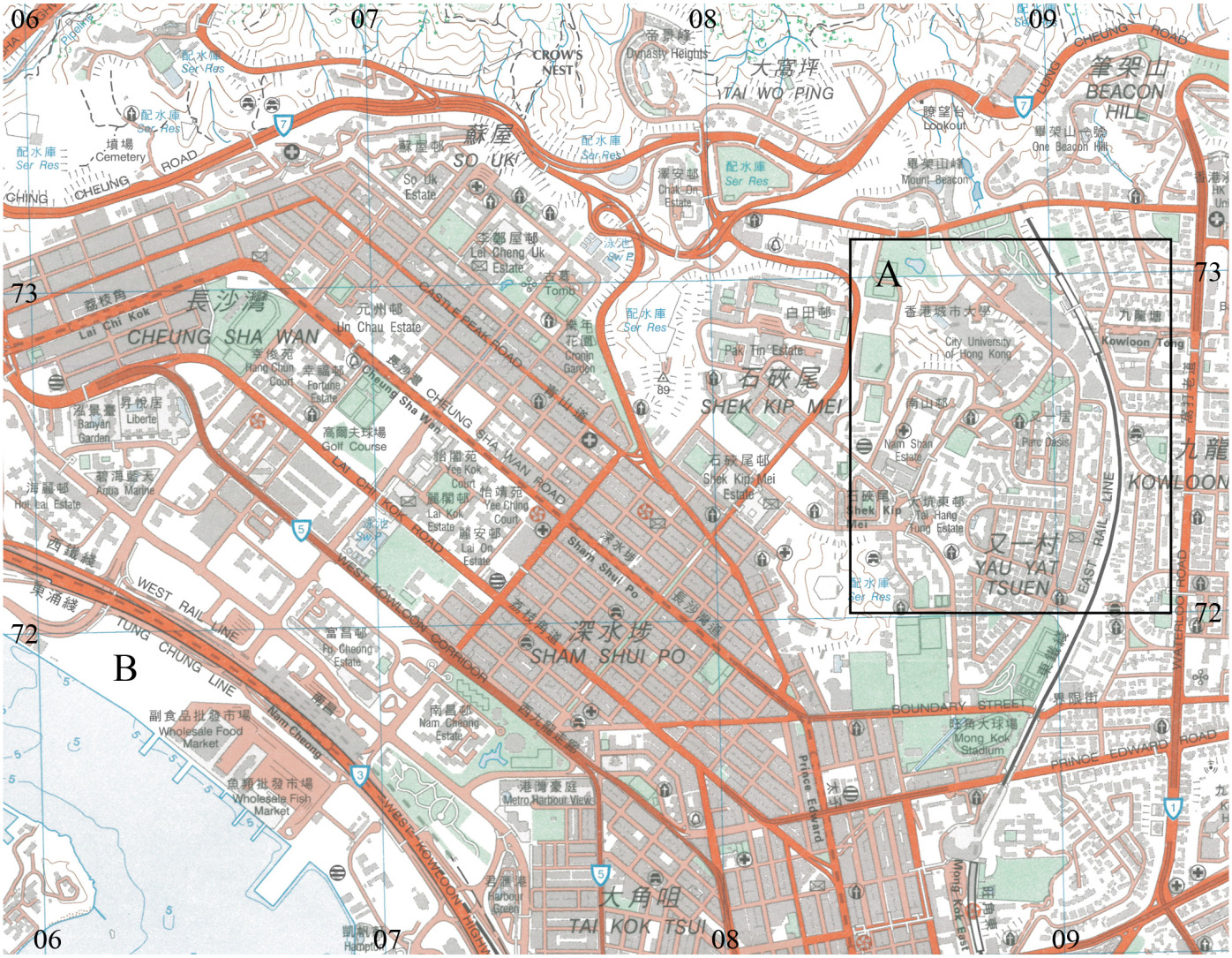
a(i). Define the term *megacity*. [1]

a(ii). Explain **two** processes responsible for population growth in megacities. [4]

b. Using **only** an annotated diagram, explain the operation of a sustainable urban system. [5]

c. Examine the effects of human activity on the climate of urban areas. [10]

The map shows part of a city in Asia. The scale of the map is 1 : 20 000. The contour interval is 20 metres.



Key/Legend for map:

鐵路及道路 RAILWAY & ROADS

鐵路及車站	地底 Underground	Railway & Station
快速公路	幹線編號 Route number	Expressway
公路主線		Main road
高架道路		Elevated road
公路支線	行人橋 Footbridge	Secondary road
雙線		Double width
單線	R 限制通道 Restricted access	Single width
泥路		Track
非行車路		Non - motorable road
興建中之道路		Road under construction
小徑		Footpath

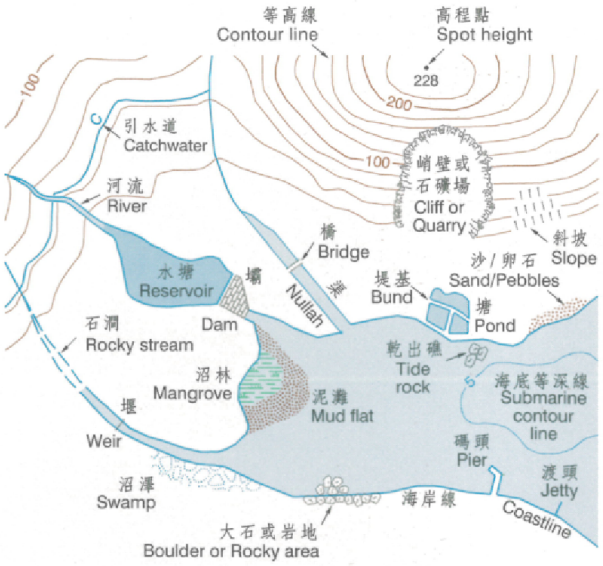
建築物 BUILDINGS

已建區	平台 Podium	Built-up area
寮屋		Temporary structures
政府合署		Government offices
消防局		Fire station
醫院 / 診療所	/	Hospital / Clinic
警署		Police station
教堂		Church
寺 / 廟		Monastery / Temple
清真寺/猶太廟	/	Mosque / Synagogue
郵政局		Post office
郊野 / 海岸公園管理站		Country / Marine park management centre

地圖書體 MAP LETTERING

地理形象	書體 TYPE FACE		FEATURE
市鎮	沙田	SHA TIN	Town
區域	*紅磡*	*HUNG HOM*	Area / District
村落 / 屋邨	老圍	Lo Wai	Village / Estate
鐵路車站	九龍塘	Kowloon Tong	Railway station
山 / 丘	大帽山	TAI MO SHAN	Hill
海角 / 岬	黃麻角	Wong Ma Kok	Cape / Promontory

地形及水文要素 TOPOGRAPHIC & HYDROGRAPHIC FEATURES



其他 OTHER FEATURES

特別行政區界		Boundary of Special Administrative Region
電纜	塔架 Pylon	Power line
三角網測站		Trigonometric station
信號站		Signal station
航標或燈標	航海 Nautical / 航空 Aeronautical	Navigation beacon or light
法定古蹟		Declared monument
公園 / 運動場	/	Park / Sports ground
海岸公園/保護區或自然護理區		Marine park / reserve or Nature reserve
郊野公園		Country park
耕地		Cultivation
林地		Woodland

島　嶼	青　衣	TSING YI	Island
水文要素	大潭灣	TAI TAM BAY	Water features

[Source: Survey and Mapping Office, Lands Department, *Hong Kong Island and Kowloon*, HM20C Series, Edition 14, Sheet 11, (2009). The map reproduced with permission of the Director of Lands. © The Government of Hong Kong SAR. Licence No. 62/2011]

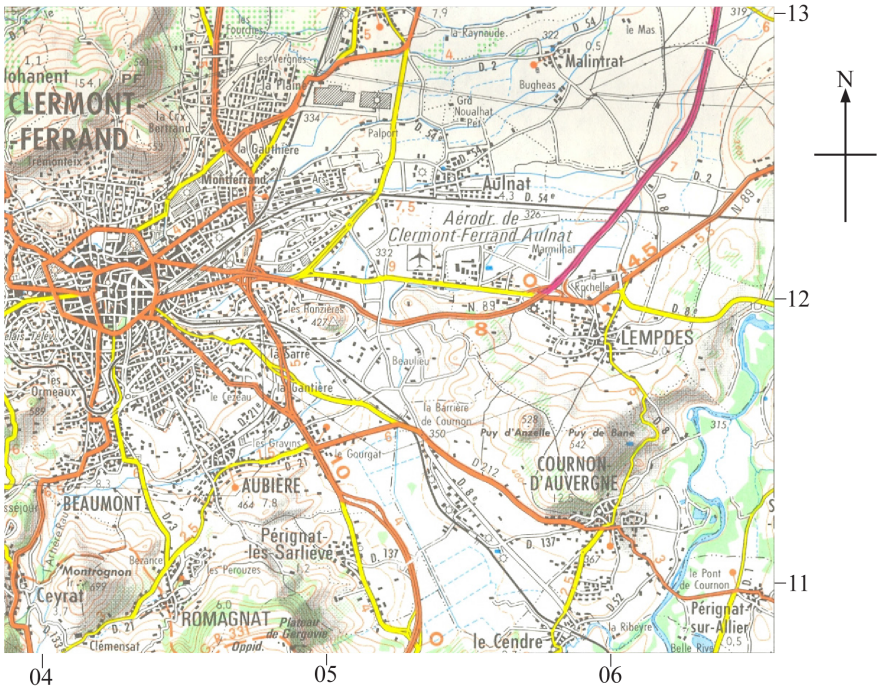
a. Using map evidence, describe **two** characteristics of Area A which suggest it is a high-class residential area. [2+2]

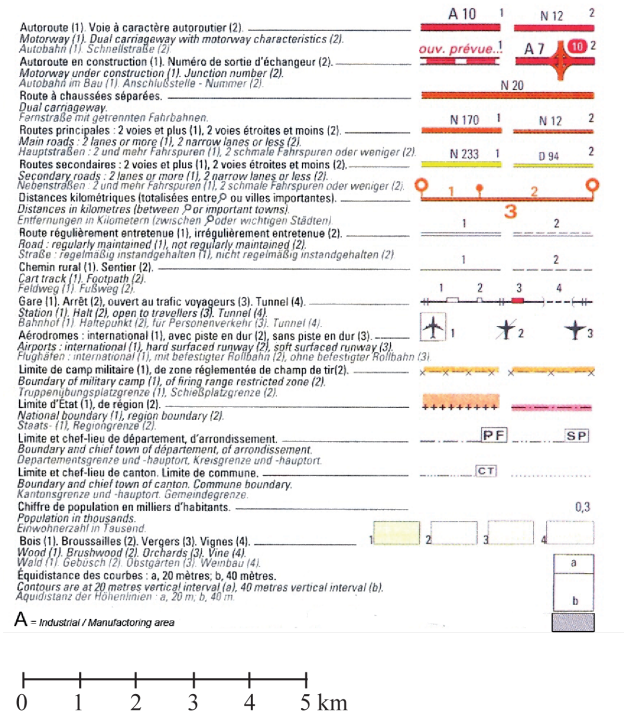
b. Using map evidence, suggest **three** reasons why Area B may be a suitable location for a manufacturing activity. [2+2+

c. With reference to **one** named example, evaluate the success of a strategy designed to manage pollution in an urban area. [10]

The maps show Clermont-Ferrand in France in 1979 and 2003.

Map 1: In 1979

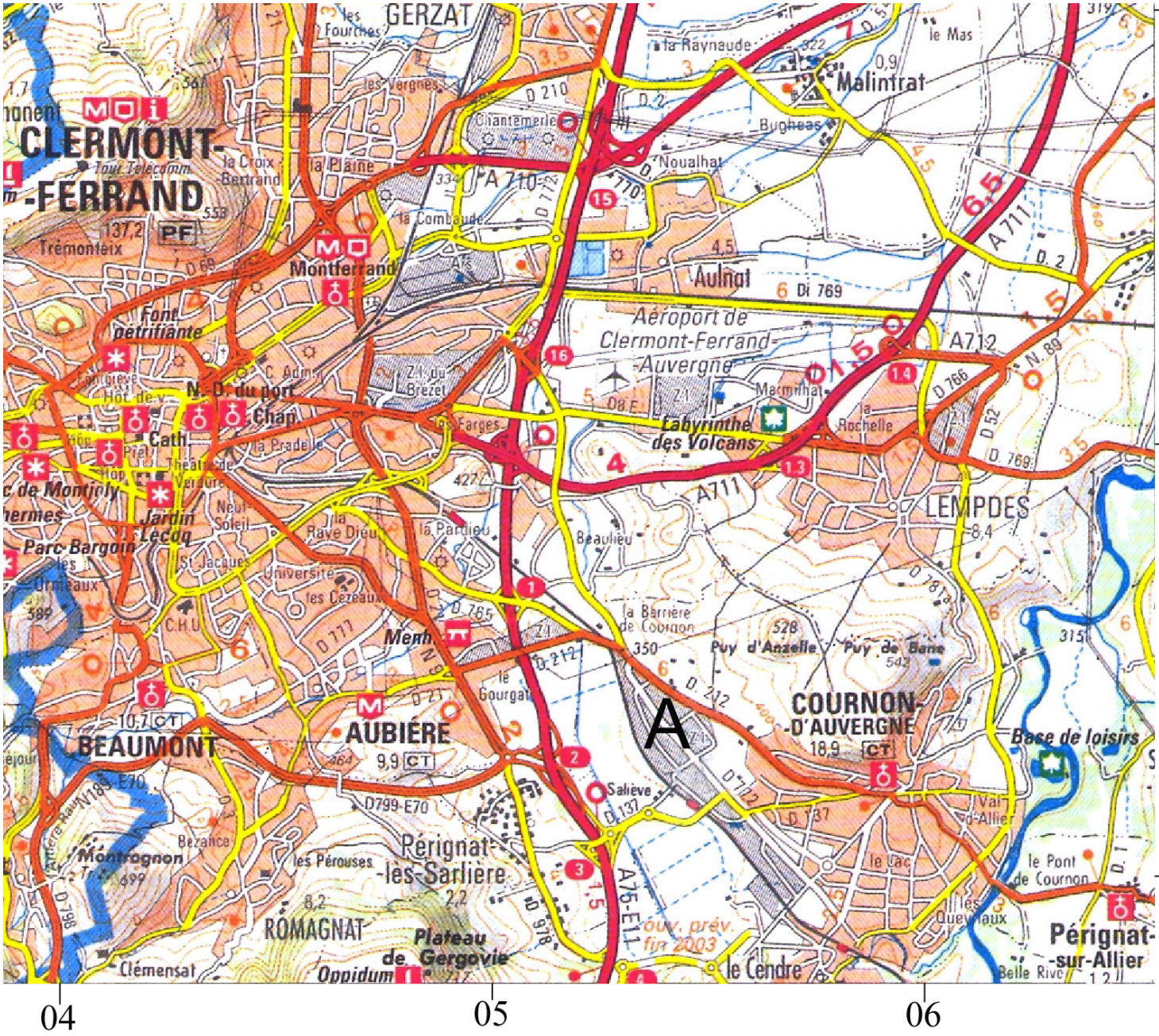




SCALE FOR MAPS 1 : 100 000

[Source: Extract from a map of Clermont-Ferrand produced by IGN (1979)]

Map 2: In 2003



[Source: Extract from a map of Clermont-Ferrand produced by IGN (2003)]

ai. Define the term suburbanization. [2]

aii. Referring to map evidence, briefly describe **two** processes, excluding suburbanization, that have led to the growth of Lempdes. [2]

b. Referring to map evidence, suggest **three** reasons why an area of manufacturing has developed at point A (054113) on the 2003 map. [6]

c. Examine the pattern of urban deprivation in a city of your choice. [10]

The table shows the 21 megacities in the world in 2010 and their predicted rate of population growth between 2010 and 2025.

Rank	Megacity	Country	% change in population 2010–2025
1	Tokyo	Japan	1
2	Delhi	India	29
3	São Paulo	Brazil	7
4	Mumbai (Bombay)	India	29
5	Mexico City	Mexico	6
6	New York-Newark	USA	6
7	Shanghai	China	21
8	Kolkata (Calcutta)	India	29
9	Dhaka	Bangladesh	43
10	Karachi	Pakistan	43
11	Buenos Aires	Argentina	5
12	Los Angeles (including Long Beach-Santa Ana)	USA	7
13	Beijing	China	21
14	Rio de Janeiro	Brazil	6
15	Manila	Philippines	28
16	Osaka-Kobe	Japan	0
17	Cairo (Al-Qahirah)	Egypt	23
18	Lagos	Nigeria	49
19	Moscow (Moskva)	Russian Federation	1
20	Istanbul	Turkey	15
21	Paris	France	4

[Source: United Nations, “World Urbanization Prospects, the 2009 revision”, http://esa.un.org March 2010]

a. State which megacity is predicted to grow most rapidly. [1]

b. Describe the global distribution of the megacities listed in the table. [3]

c. Using examples, explain why some large urban areas have much higher population growth rates than others. [6]

d. “Sustainable strategies in cities can only succeed when cities have zero population growth.” Using examples, discuss this statement. [10]

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a. State **four** main characteristics of a central business district (CBD). [4]

b. Explain the processes of gentrification and counter-urbanization. [6]

c. Contrast the causes and effects of air pollution for **two named** urban areas. [10]

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b. Explain **two** strengths **and one** weakness of **one named** city's attempt to reduce urban pollution. [6]

c. Examine the effects of the movement of economic activity to derelict land such as brownfield sites. [10]

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a. With reference to urban environments, describe: [4]

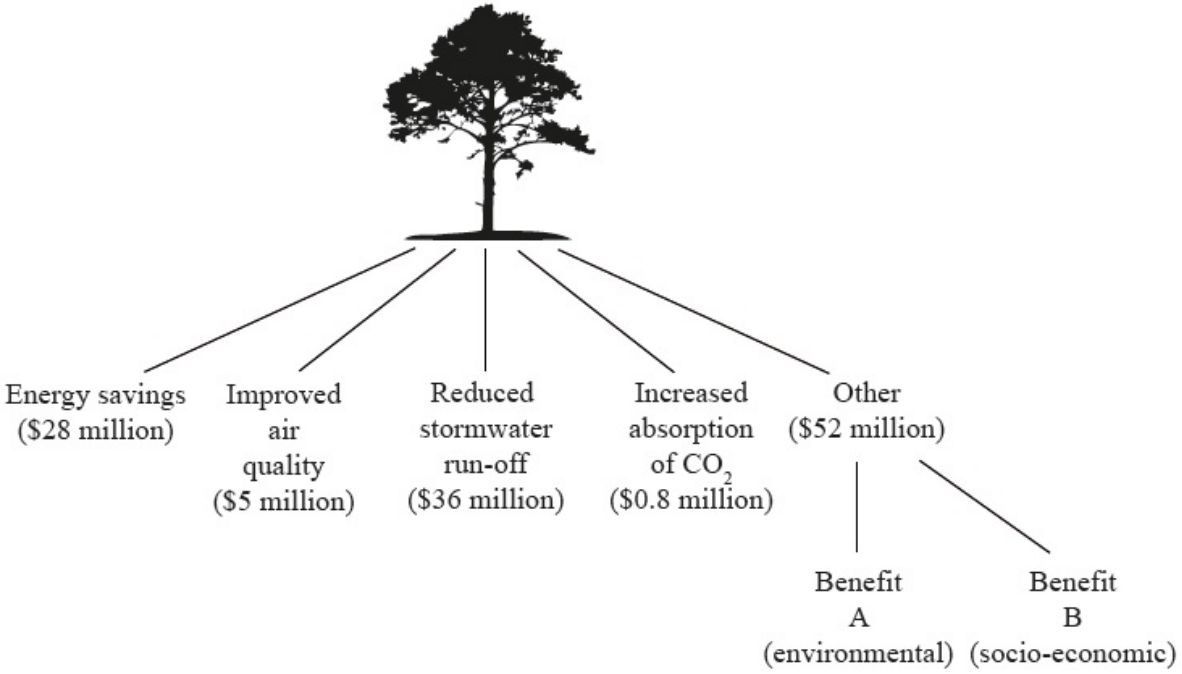
(i) **one** type of centrifugal movement;

(ii) **one** type of centripetal movement.

b. Explain **two** features of the internal structure of the central business district (CBD). [6]

c. Evaluate the success of **two** different urban management strategies. [10]

The diagram shows the ways in which urban trees help to reduce environmental and social stress for the inhabitants of a major city. The numbers are the estimated annual value of the benefits, in US dollars (US$).



[Source: adapted from "Tree Count Results"; New York City Department of Parks & Recreation, 2006, http://www.nycgovparks.org]

a. Identify what Benefit A (environmental) and Benefit B (socio-economic) might be. [2]

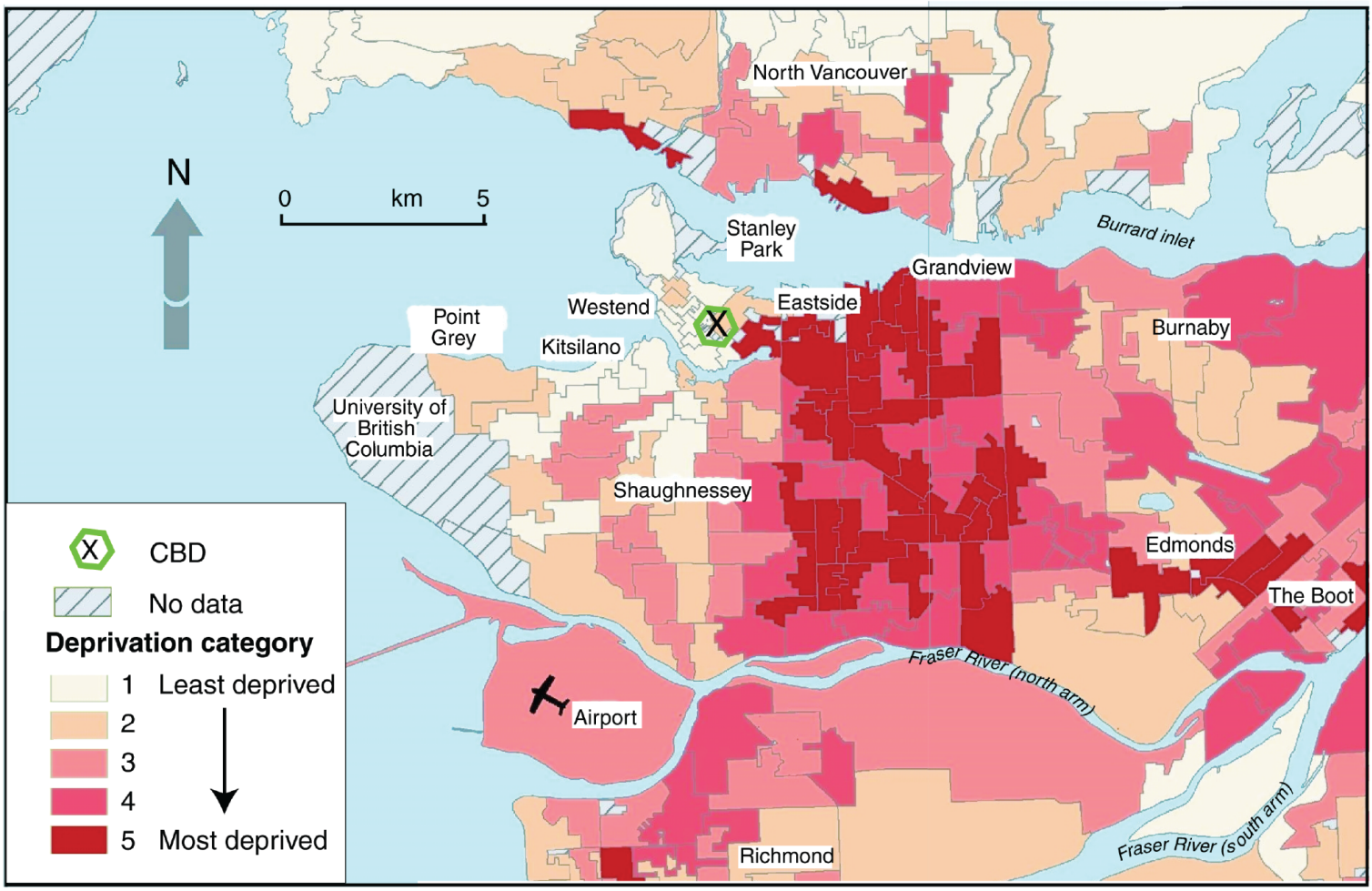
b. (i) Define the term *urban ecological footprint*. [4]

(ii) Explain how **one** of the benefits named on the diagram (excluding "Other") would reduce the city's ecological footprint.

c. Explain how human activity in cities may result in an urban heat island effect. [4]

d. Examine the reasons why economic activities (such as retailing, service and/or manufacturing industries) sometimes change location within an urban area. [10]

The map shows the pattern of deprivation for Vancouver, one of Canada's wealthiest cities.



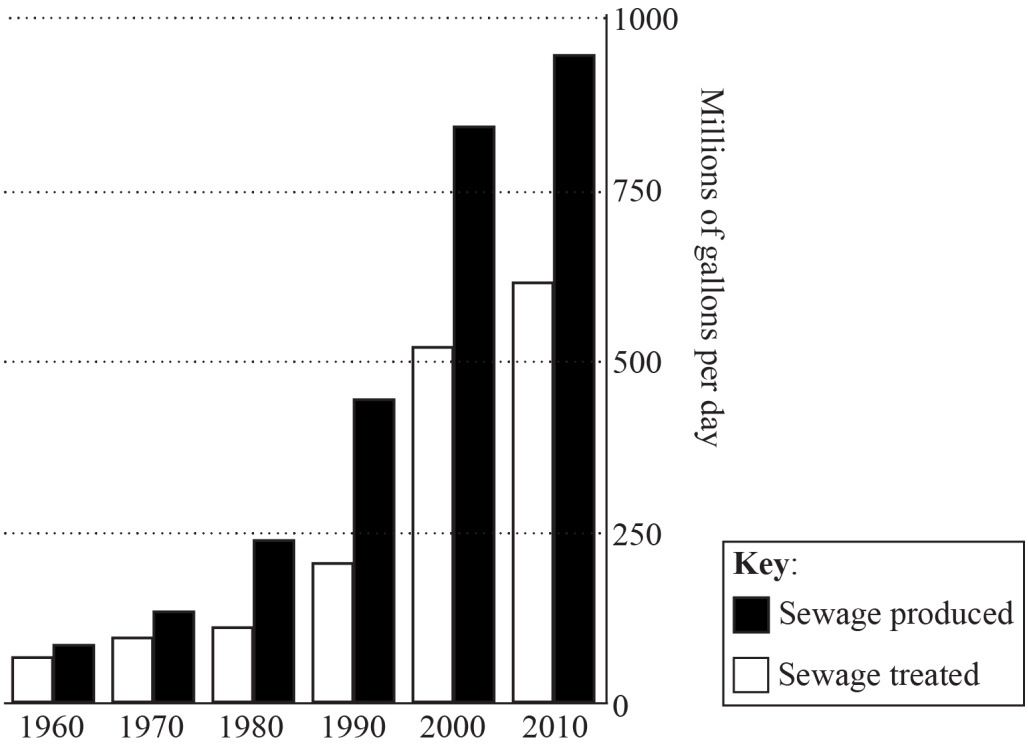
[Source: Springer and the *Journal of Urban Health*, volume 84, 2007, 591-603, 'Deprivation indices, population health and geography: an evaluation of the spatial effectiveness of indices at multiple scales', Nadine Schuurman, Nathaniel Bell, James R Dunn and Lisa Oliver, no 4, with kind permission from Springer Science+Business Media B.V..]

a. Describe the pattern of deprivation shown on the map. [3]

b. Explain how and why the pattern of deprivation might differ for a city in a low income country. [2+5]

c. Evaluate **one or more** sustainable strategies designed to improve life in urban areas. [10]

The graph shows changes in the amount of sewage produced and treated in a rapidly growing megacity.



[Source: adapted from http://www.nytimes.com/imagepages/2006/09/29/world/20060929_WATER_GRAPHIC.html]

a. Describe the trends shown in the graph. [4]

b. Explain **three** symptoms of urban stress. [3x2]

c. "Urban poverty and deprivation are widespread in all cities." Discuss this statement. [10]

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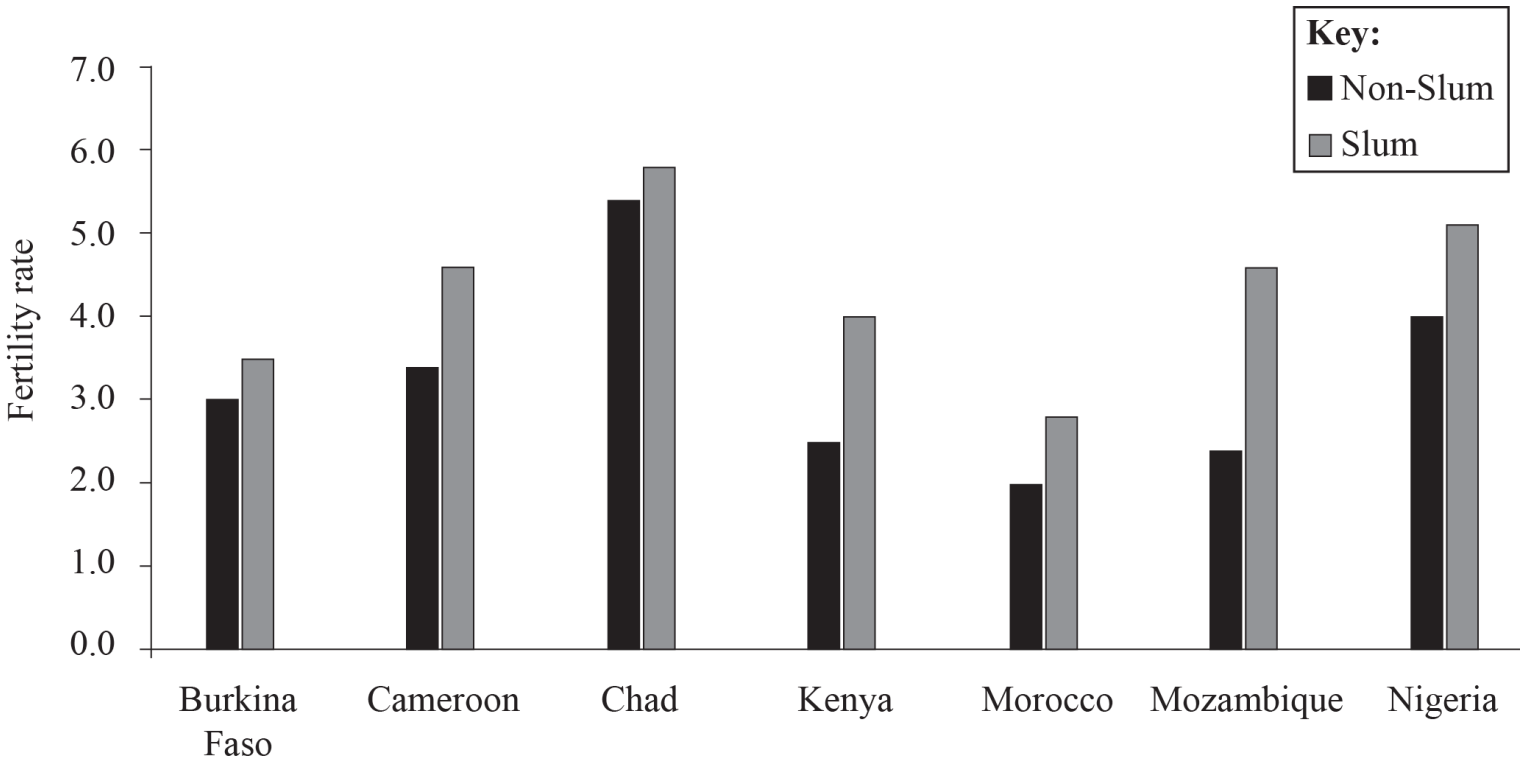
a. (i) Define the term *suburbanization*. [4]

(ii) Briefly outline **two** possible **population** changes in an urban area where suburbanization is occurring.

b. Referring to **one or more named** cities, explain **two** ways in which humans affect urban air pollution. [6]

c. Examine the effects of the movement of services and manufacturing activities to new locations in cities. [10]

The graph shows fertility rates in 2006 for slum and non-slum areas in various African countries. Fertility is an indicator of poverty.



[Source: adapted from *State of World Population* (2007), UNFPA]

a. Describe the differences in fertility shown on the graph. [4]

b. Explain **three** other social differences (other than fertility rates) between slum and non-slum populations. [2+2+

c. Evaluate the effectiveness of **one or more** strategies to control rapid city growth resulting from in-migration. [10]

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b. Suggest **two** reasons for the occurrence of low-cost housing areas within cities. [6]

c. Evaluate the success of **one or more** strategies to control rapid city growth resulting from in-migration [10]

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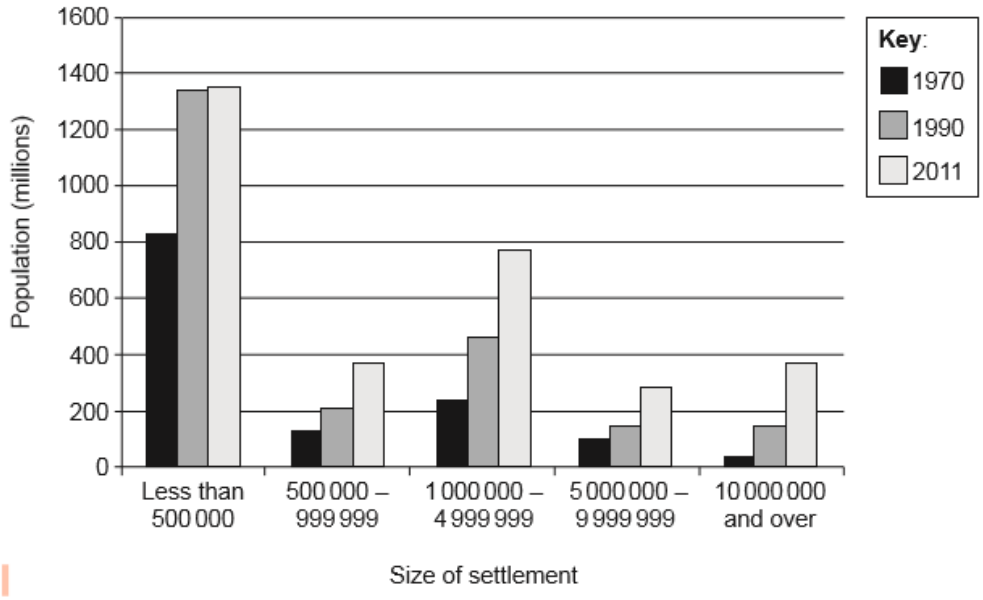
a. The graph shows the total population living in urban areas of different sizes, between 1970 and 2011. [4]



[Source: From UN Department of Economic and Social Affairs (DESA), Population Division (2012) *World Urbanization Prospects*, by Gerhard K. Heilig, © 2012 United Nations. Reprinted with the permission of the United Nations.]

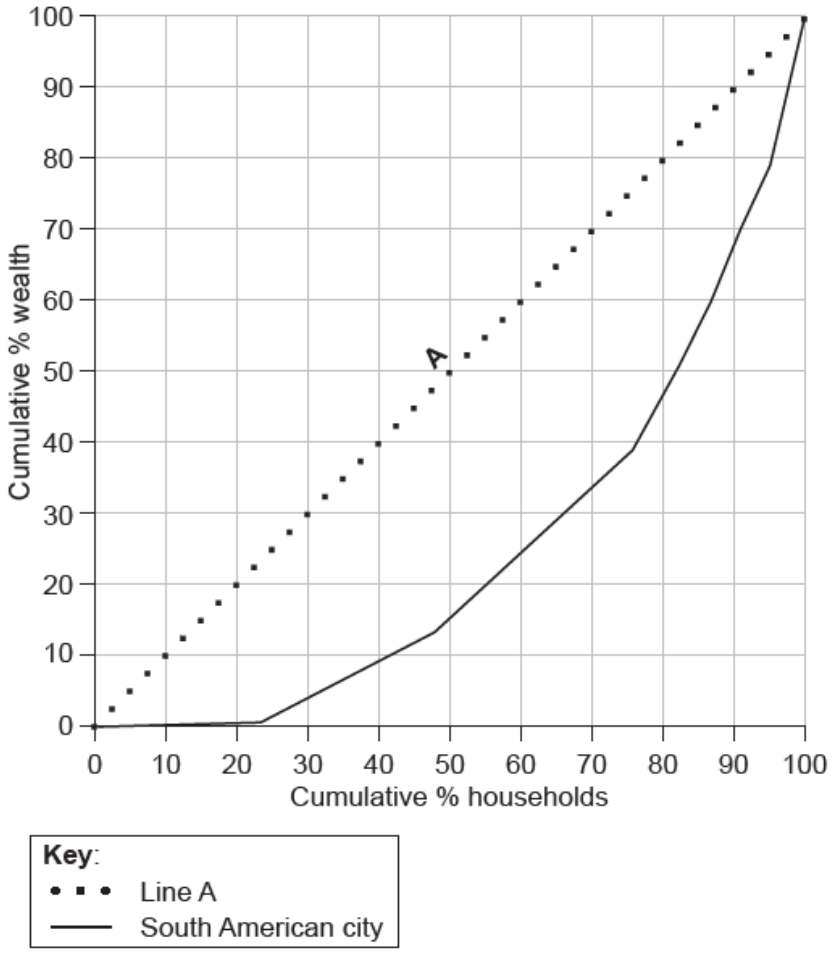
(i) Estimate the number of people worldwide living in megacities (10 000 000 people and over) in 1990.

(ii) Describe changes in the total number of people living in small cities of less than 500 000 people.

b. Explain **two** characteristics of the distribution of **one named** economic activity within **one named** urban area. [6]

c. "Managing a city sustainably requires a wider range of strategies than those that only limit its ecological footprint." Discuss this statement. [10]

This Lorenz curve shows the distribution of wealth in a South American city.



[Source: © 2010. Lincoln Institute of Land Policy. Lorenz Curve of the Distribution of Residential Wealth by Housing Value Groups in Metro Rio, D Vetter *et al.*]

a.i. Describe what line A represents. [1]

a.ii. Estimate what percentage of the city's total wealth belongs to the wealthiest 10 % of households. [1]

a.iii. Referring to the graph, outline the evidence that many households in this city suffer from poverty. [2]

b.i. Explain why people's choice of residential location within a city might be influenced by their ethnicity. [3]

b.ii. Explain why people's choice of residential location within a city might be influenced by their family status (stage in lifecycle). [3]

c. Evaluate the success of **one** strategy designed to sustainably manage pollution in **one named** urban area. [10]

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a. The graph shows population change in Detroit, a city in the USA. [4]

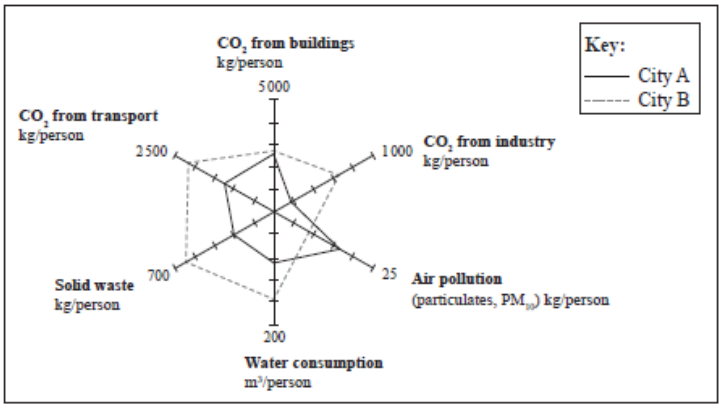
[Source: *The Economist*, July 2013]

Describe the changes in the size of Detroit's population between 1900 and 2015.

b. Using examples, explain **two** push factors and **one** pull factor that help explain counter-urbanization movements. [6]

c. Using examples, discuss the varied effects of human activity on urban microclimates. [10]

The diagram shows the urban ecological footprint for two cities, A and B.



[Source: adapted from *Sustainable Urban Infrastructure: London Edition – a view to 2025* (2008), page 18]

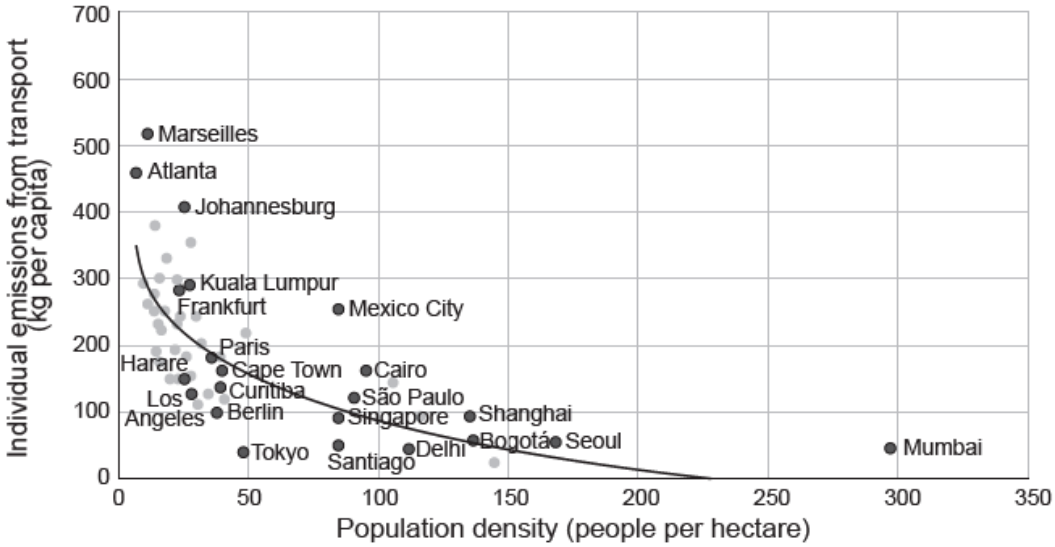
a. (i) Define the term *urban ecological footprint.* [6]

(ii) Referring to the diagram, state which city has the larger urban ecological footprint and justify your choice.

b. Explain **two** ways in which urban air pollution can be reduced. [4]

c. Referring to examples, compare the patterns of formal and informal economic activities in urban areas. [10]

The graph shows population density in cities and individual emissions from transport.



[Source: adapted from World Development Report, (2010), p. 210.]

a. (i) Describe the general relationship between population density and air pollution from transport. [4]

(ii) State why Mexico City could be considered an anomaly.

b. Referring to **one or more named** cities, explain **two** ways in which a circular city system operates. [6]

c. Examine the characteristics of urban deprivation in **one or more** cities you have studied. [10]

The figure shows information about urban deprivation for selected low income regions of the world.

AFRICA			ASIA			LATIN AMERICA
Northern	Sub-Saharan	Eastern	Southeastern	Southern	Western	
Moderate proportion of slum dwellers	Very high proportion of slum dwellers	Moderate proportion of slum dwellers	High proportion of slum dwellers	High proportion of slum dwellers	Moderate proportion of slum dwellers	Moderate proportion of slum dwellers

Key:
- Clearly improving conditions
- Some improvement in conditions
- Deteriorating conditions

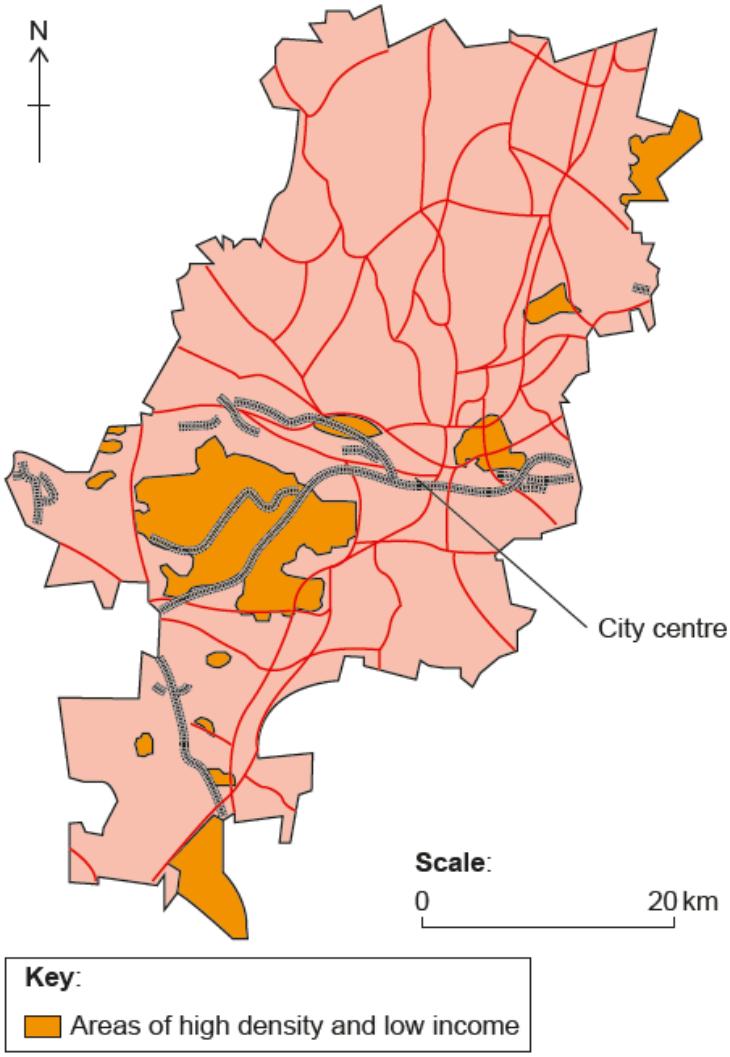
[Source: ©International Baccalaureate Organization 2015]

a. Outline the pattern and trend shown in the figure. [4]

b. Explain **three** factors that influence the location of squatter settlements in urban areas. [6]

c. "The rapid city growth caused by in-migration can never be controlled." Discuss this statement, referring to **one or more** examples. [10]

The map shows the distribution of the neighbourhoods in an African city with low incomes and high population density.



[Source: Adapted from P Guinness, *Johannesburg – a city of acute disparity*, Topic Eye A-Level Geography 2014–2015 edition, page 11, published by Cross Academe Limited.]

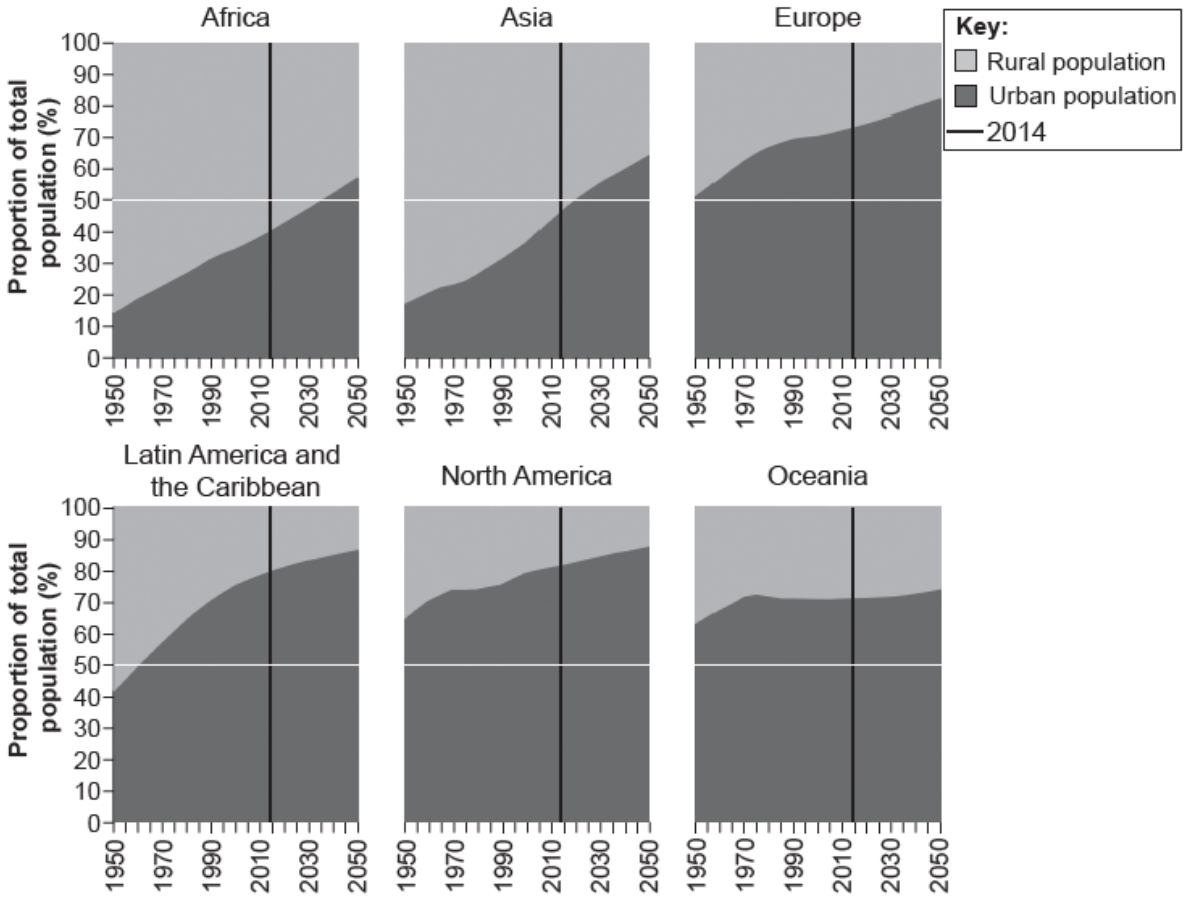
a.i. With reference to the map, describe the distribution of neighbourhoods with low incomes and high population density. [3]

a.ii. Outline **three** possible **economic** reasons for the location of neighbourhoods with low incomes and high population density in the urban area shown on the map. [3]

b. Analyse the contribution of natural change to population density patterns in urban areas. [4]

c. To what extent has **one named** housing management strategy been successful in creating a more sustainable city? [10]

The graph shows rural and urban population as a proportion of total population for different regions from 1950 to 2050.



[Source: http://esa.un.org]

a. (i) Identify the region with the highest proportion of people living in urban areas in 2014. [4]

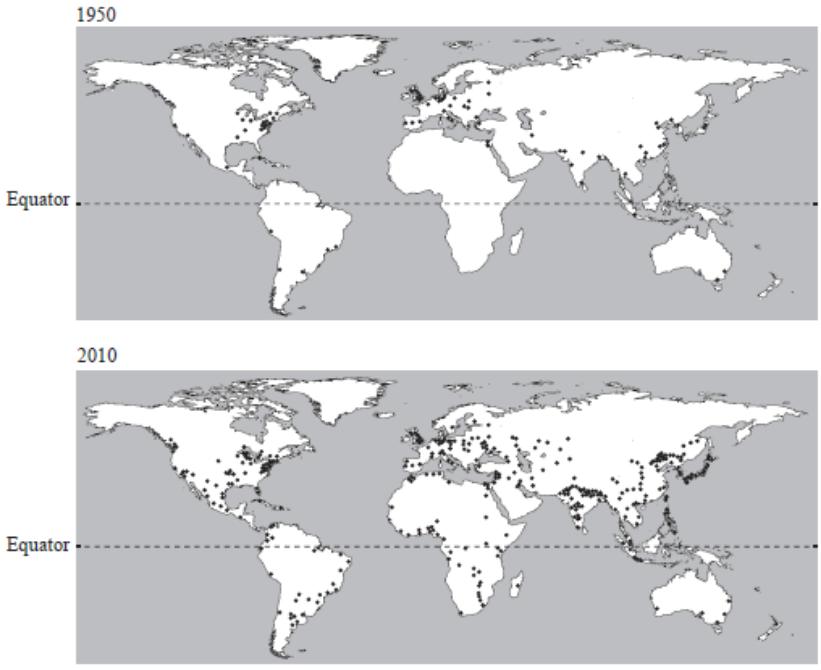
(ii) Identify the region with the lowest rate of urbanization between 1950 and 2050.

(iii) Describe the change in the proportion of people living in urban areas in Latin America and the Caribbean between 1950 and 2050.

b. Suggest **three** reasons why different ethnic groups are often concentrated in different parts of cities. [6]

c. Evaluate the success of **one** management strategy to tackle pollution in **one named** urban area. [10]

The two maps show millionaire cities (cities with at least 1 million inhabitants) in 1950 and 2010.



[Source: G Nagle, (2006), *Philips Interactive Modern School Atlas*, Philips Hodder Murray]

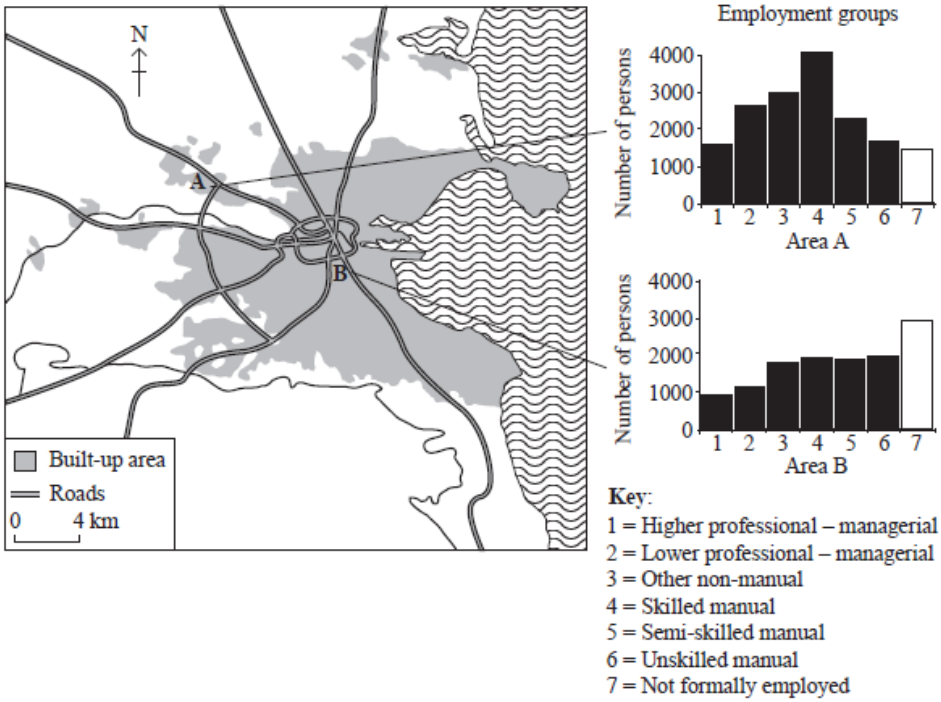
a. (i) Define the term *urbanization*. [4]

(ii) Describe the changes in the distribution of millionaire cities as shown on the maps.

b. Explain **three** reasons for the movement of **named** economic activities within urban areas. [6]

c. Examine the reasons why it is difficult to manage urban areas sustainably. [10]

The map and graphs show employment characteristics for the populations of two contrasting areas of Dublin, Ireland. Area A is a new residential area on the edge of Dublin whereas Area B is an inner city location.



[Source: adapted from A Maclaren, (1993), *Dublin*, page 174]

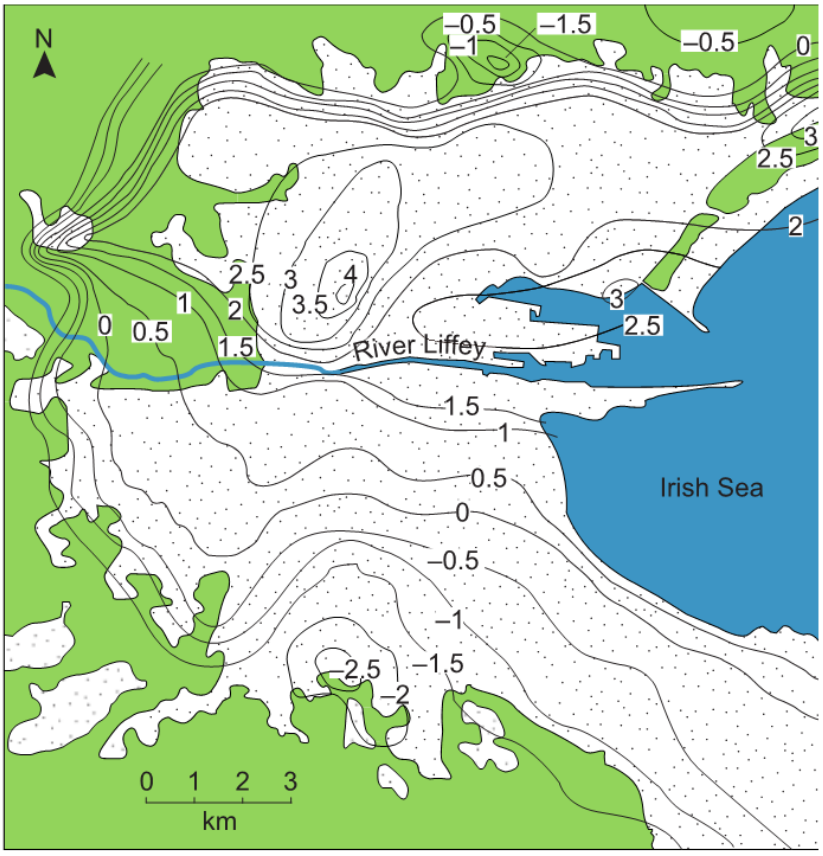
a. (i) Identify **one** group of working people that have been classified as "not formally employed". [4]

(ii) Distinguish between the main employment characteristics for the two areas shown.

b. Explain **two** population movements taking place **within** large cities. [6]

c. "Most large cities suffer from a serious problem of urban poverty for which there is no solution." Discuss this statement. [10]

The map shows temperatures for Dublin, Ireland, at 22:00 during a winter evening.



Key:

- Urban area
- Rural area
- Isotherms (°C) (lines of equal temperatures)

[Source: adapted from G O'Hare and J Sweeney, (1990), *The Atmospheric System: an introduction to meteorology and climatology*, page 31]

a.i. Describe the pattern of temperatures shown south of the River Liffey. [3]

a.ii. Estimate the temperature range north of the River Liffey. [1]

b. Using examples, explain **two** reasons for the growth of suburbs. [6]

c. Examine recent land use changes in the central and/or inner areas of **one or more** cities. [10]

The photograph shows part of the informal sector of the economy in King William's Town, South Africa.

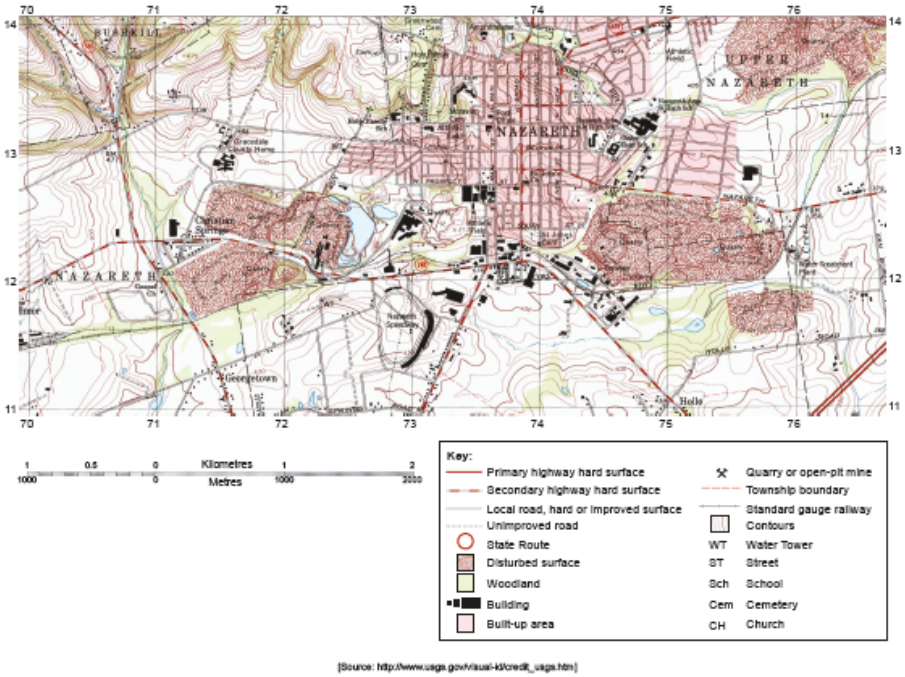
[Source: copyright International Baccalaureate Organization, 2015]

a. Using photographic evidence, outline **two** characteristics of the informal sector of the economy in King William's Town. [4]

b. Referring to examples, explain **two** factors that influence the location of megacities. [6]

c. "Sustainable urban management is desirable but impossible to achieve." Discuss this statement, using examples. [10]

The map shows Nazareth, an urban area in Pennsylvania, USA. The scale of the map is 1:24 000.



[Source: http://www.usgs.gov/visual-id/credit_usgs.html]

a. (i) Identify the economic activities located at 760122 **and** 736133. [4]

(ii) State **two** reasons for the location of the sports stadium (Nazareth Speedway) in 7211.

b. Referring to map evidence, explain **three** likely types of urban stress in Nazareth. [6]

c. Using **one or more** examples, examine the social **and** economic impacts of in-migration on cities. [10]