

# THE URBAN ECOSYSTEM



Urban roof garden



## Growing cities

Urban population will reach 60% by the year 2030 (4.9 billion). Just over half the world now lives in cities but by 2050, over 70% of the world will be urban inhabitants. By 2050, only 14% of people in rich countries will live outside cities, and 33% in poor countries.

amount: *quantità*  
 brick: *mattone*  
 concrete: *calcestruzzo*  
 currently: *attualmente*  
 diseases: *malattie*  
 drought: *siccità*  
 due to: *dovuto a*  
 harbour: *porto*  
 poorly: *scarsamente*  
 power lines: *linee elettriche*  
 power plants: *centrali elettriche*  
 to provide: *fornire*  
 sewers: *fognature*  
 within: *all'interno di*  
 worldwide: *in tutto il mondo*

An **urban ecosystem** can be defined as any ecological system located **within** a city or, in a broader sense, the greater ecological system that makes up an entire **metropolitan area**. The largest urban ecosystems are **currently** concentrated in Europe, India, Japan, China, Africa, South America and the United States, mostly on coasts with **harbours**, along rivers, and at intersections of **transportation routes**. An urban ecosystem is simply the **community** of plants, animals and people that live in the same environment.

It is an area physically dominated by structures such as **buildings, roads, sewers** and **power lines**, but it also contains green areas – **parks, gardens** and **street plantings** that provide the living heart of the urban ecosystem. As separate as these elements sometimes appear, they work together as a single organism. Environmental stress also modifies the natural elements of urban ecosystems. Trees may be subject to high levels of **air pollutants, diseases**, poor soil quality and frequent **drought**. Animal and bird populations may lose their habitat and food sources, and be victims of toxic substances and vehicle pollution. The human elements of the city – its man-made infrastructures and economy – **provide** goods and services of enormous value.

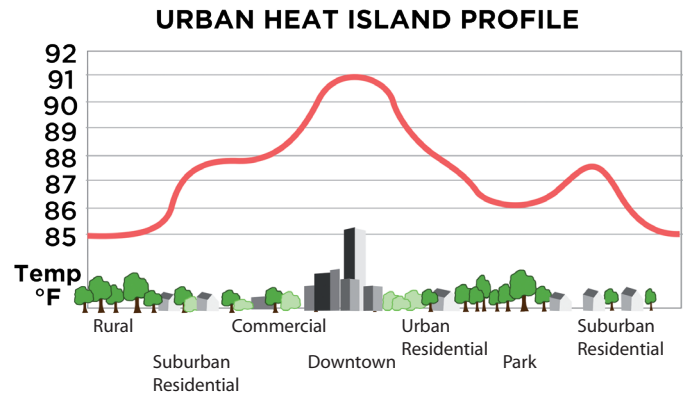
Cities are the heart of commerce and industry, and therefore the primary **centres of work, housing, transportation** and basic **social services** from health care to education. Urban ecosystems currently cover about 4% of the world's surface. But with the rapid growth of cities **worldwide**, urban ecosystems are perhaps the only major ecosystem type that is expanding. The emerging science of **Urban Ecology**, a sub-discipline of Ecology that examines the interaction between organisms in human-dominated ecosystems, may provide additional solutions to urban environmental problems.

Pigeons are part of the urban ecosystem



**1** Answer the following questions.

1. How can an urban ecosystem be defined?
2. Where can the largest urban ecosystems be found?
3. What is an urban ecosystem made up of?
4. What structures can you find in an urban ecosystem?
5. What kind of environmental stress can modify the natural elements in an urban ecosystem?
6. What do man-made infrastructures and economy provide?
7. Why are urban ecosystems expanding?
8. What is Urban Ecology?



**2** Listen to the text and choose the correct option.

**Urban ecology in developing countries**

1. In the near future, population growth will be concentrated in poor countries.
2. In Asia there will be an increase of population in rural areas.
3. In Tanzania, the population of Dar Es Salaam is decreasing.
4. Severe environment and health problems are emerging in developing cities with unsustainable urban development.
5. The quality of urban environment is not linked to the growth of urban population.

T	F
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

**3** Read the text and match causes and effects.

**Urban microclimate**

A metropolitan area is usually much warmer than the rural areas around it. The temperature difference is the consequence of a phenomenon known as the Urban Heat Island (UHI) effect. This is **due to** several reasons:

- Heat energy is released from industrial and residential buildings through **poorly** insulated roofs, doors and windows.
- Road surfaces and building materials, such as **brick** and **concrete**, absorb heat during the day and release it more slowly than rural areas at night, thus maintaining higher air temperature.
- Glass buildings and windows reflect large amounts of solar radiation into the air.
- The warming of urban areas is intensified during hot days and **heat waves**, so the demand of energy for air-conditioning leads to an increase of energy production by **power plants**, which causes higher emissions of greenhouse gases. UHIs have been indirectly related to climate change because of their contribution to the greenhouse effect and, therefore, to global warming.

CAUSES		EFFECTS	
1.	Temperature difference between cities and rural areas <input type="checkbox"/>	a.	Releasing of heat energy
2.	Poorly insulated roofs, doors and windows of buildings <input type="checkbox"/>	b.	Maintenance of higher temperature at night
3.	Building materials absorb heat during the day <input type="checkbox"/>	c.	Global warming and climate change
4.	Glass buildings and windows <input type="checkbox"/>	d.	Urban Heat Island
5.	The demand of energy for air-conditioning <input type="checkbox"/>	e.	Reflection of large amounts of solar radiation into the air
6.	Contribution to greenhouse effect <input type="checkbox"/>	f.	Higher emissions of greenhouse gases