The Challenges of an Urban World Case Studies

Topic	Case Study 1	Case Study 2

LEDC City Challenges	**Mumbai, India**
	Housing
	• 54% of people live in slums
	• The largest slum, Dharavi, has 800,000 people living in it
	• On average, people in Mumbai only have 4.5m² of living space
	Transport
	• Only 2% of people own a car
	• 55% of people walk to work
	• Despite this, Mumbai is still one of the most congested cities on earth
	• 3,000 people die crossing railway tracks or falling off packed commuter trains each year
	Water supply & pollution
	• Mumbai suffers from severe water shortages
	• 650 million litres of water is lost every day due to old, leaking pipes
	• Some slum dwellers spend up to 20% of their money on water
	Informal Economy
	• Employs 68% of Mumbai's workforce
	• Large majority of people working in the informal sector come from slums across the city
	Pollution
	• Levels of PM10 (a particulate matter which can cause asthma, bronchitis and even cancer) are around 132 micrograms per m³ are dangerously high
	  ○ The recommended safe limit for PM10 is 20 micrograms per m³
		Mexico City, Mexico
		Air Pollution
		• In 1992, the UN described Mexico City as the most polluted city on the planet
		• In 1998, the UN then named Mexico City as 'the most dangerous city in the world for young children'
		• The air pollution caused over 1,000 deaths and 35,000 hospital admissions in 1998
		• The main sources of air pollution were from vehicle exhausts, emissions from factories and power stations
		Water Pollution
		• Growing population has led to over-exploitation of the underground water supplies
		• Mexico city pumps water up from the 514 underground aquifers
		  ○ The land surface of the city is now sinking at the rate of 9cm per year, causing water and gas pipes to fracture
		• Increasing use of water has put more pressure on sewage-treatment plants which cannot cope with the volume
		Waste Disposal
		• Mexico City produces 13,000 tonnes of rubbish each day
		• Only 9,000 tonnes can be removed by the current waste collection system
		• Excess rubbish being dumped on open ground, waterways, streets and drains causing more problems by clogging up the system
		• In 2012, the biggest waste dump in the city was closed leading to a massive rubbish mountain and neighbouring towns refused to take their waste

MEDC City Challenges	London, UK	New York, USA

	Food
	• Food is generally imported from elsewhere in the UK or from overseas (e.g.: London gets beans from Kenya)
	  ○ Adds to cost of food
	  ○ Contributes to the city's carbon footprint
	• People are encouraged to buy locally produced food
	Water
	• Each person in London consumes 161 litres of water a day, 12 litres more than the UK average
	• Single-occupancy homes consume 78 litres per person more than a household of four
	• Rainfall in London is lower than the national average
	• Water has to be brought in from further away, e.g. the Lea Valley
	• A desalination plant has also been built to treat water from the River Thames to make it available to the population
	  ○ Provides water for nearly one million people
	Transport
	• 34 per 1000 people own a car
	• 3 million private cars, 8,500 buses, 18,000 black cabs and many other vehicles make London congested
	• Vehicles release pollutants into the air
	Waste
	• London produces 20 million tonnes of waste each year, most of it still being buried in landfill
	  ○ Expensive and wasteful
	  ○ Annual cost of sending waste to landfill was £260 million in 2011, by 2014 it will be £280 million
	  ○ Generates methane adding 460,000 tonnes of greenhouse gases to the atmosphere each year.
		Food
		• Food supply for New York takes about 6 million hectares of farmland
		• 96% of all food for New York is transported by lorry
		• The city wastes 200,000 tonnes of food each year
		Water
		• Water supply is 4.1 million m^3 of drinking water per day
		• Most of the water is supplied from the north of the city, and some from 200 km away
		Energy
		• The city consumes 50,000 gigawatts of electricity each year
		• Most of the energy is produced from oil, gas and nuclear-powered power stations
		Transport
		• New York City has a lot of traffic congestion
		• Many of the streets aren't designed for cars and trucks
		• All the vehicles pollute the air resulting in poor air quality
		Waste
		• The city produces 12,000 tonnes of household waste every day
		  ○ Only 17% of which is recycled
		• Another 13,000 tonnes of waste comes from businesses
		• 90% of waste is transported by river barge to landfill sites

Reducing eco-footprint	**<u>London, UK</u>**
	• ***Sustainable Transport*** - The large majority of London's buses are hybrid buses reducing CO2 emissions.
	• ***Low emission zones*** - encourages the most polluting vehicles to become cleaner
	• ***Increase recycling*** - Many councils around London offer recycling services for their residents making it easy for them to recycle
	Beddington Zero Energy Development (BedZED)
	• It encourages people to travel around by public transport, cycling and walking rather than taking the car.
	• Only using energy from renewable resources generated on site
	• All of its houses are energy efficient. The houses face south to maximise solar gain, windows are triple glazed and have high thermal insulation
	• Rainwater is collected and reused on site. Appliances are water efficient and the taps are low flow taps reducing water use.
	• All building materials used to build the site were selected from renewable or recycled sources with 35 miles of the site, reducing transportation pollution and energy usage.
	• Water, gas and electricity meters are all at eye-level so the residents can keep track of how much they are using and keep their use to a minimum.
	• As a result of all these efforts, BedZED's eco-footprint is considerably less than the average UK resident. For example, their hot water consumption was 57% less and their electricity use was 25% less than the UK average.
		<u>York, UK</u>
		• Eco-footprint is 5.4 ha (hectares) per person which is slightly above the UK average
		• Attempts to reduce the city's eco-footprint are focused on
		  ○ Reducing energy use
		  ○ Reducing waste
		• Energy use makes up 24% of York's eco-footprint
		• Home heating accounts for 60% of the carbon dioxide emissions that come from household use
		• The council has produced a series of tips for its residents, such as:
		  ○ Turn down the thermostat
		  ○ Shower rather than having a bath
		  ○ Fill kettle only for what you need
		  ○ Turn off lights when not needed
		• In 2011, York produced 85,000 tonnes of waste
		  ○ People now have to sort and recycle their waste
		  ▪ This has led to a big reduction of 30% since 2006 of the amount of waste going to landfill
		  ○ People are encouraged to buy fewer pre-packed goods to reduce the volume of household waste
		  ○ Over 70% of the methane generated from landfill sites is now recovered and used

Sustainable Transport	**<u>London, UK</u>** ***Congestion Charging*** • Introduced in 2003 to reduce traffic levels • Seen a 21% fall in traffic levels and a 45% increase in bus passengers • Traffic levels over the past 10 years have gone down by 10.2% • Emission free cars don't have to pay ***Cleaner Buses*** • Currently have 500 of diesel-electric hybrid buses which reduce CO2 emissions by at least 30% compared to a diesel bus • London expects to have 1,700 of these buses by 2016 making up 20% of their bus fleet • Currently a fleet of eight hydrogen fuel cell buses in London which release nothing but water into the air • By March 2014, 900 older buses will have new technology fitted to help reduce emissions of nitrogen oxides by 88% ***Boris Bikes*** • In 2010, London Mayor, Boris Johnson, introduced a bike hire scheme which quickly became known as the 'Boris Bikes' • Aimed to increase the number of people cycling and reduce pollution • Bike lanes and four 'Cycle Superhighways' have been built to encourage people to cycle • In 2012, there were 8,000 bikes to hire from 570 'docking stations'. There are currently plans to expand the scheme to large areas of south west London • Barclay's Cycle Hire is already the second largest cycle hire scheme in Europe
Self-help scheme	**<u>Rocinha, Rio de Janiero, Brazil</u>** • Rocinha is the largest favella or shanty town in Brazil • It has no roads and only paths creating a maze between the houses • Access is poor, conditions are cramped, it's hard to police and there is a high crime rate. • 70,000 people live packed close together in houses built on a steep slope • Many of the homes used to be simply wooden shacks, but the local authority is now helping people help themselves. • Local people have begun rebuilding their homes with bricks and concrete and even have electricity and water. • In some cases, these building materials have been provided by the city government and NGOs.

Urban Planning	**<u>Curitiba, Brazil</u>**
	• city of 2.2 million people
	• Its urban plan was based around 5 main axes crossing the city composing of one-way, three-lane roads, with the central lane reserved for express buses.
	• Curitiba has an 'Integrated Transport System'
	  ○ The system allows people to move both quickly and cheaply in and out of the city
	  ○ The express routes in and out of the city are fed by several other buses from outlying settlements and suburbs outside the city centre
	  ○ Bus-stops are cylindrical clear-walled stops with turnstiles. People pay their fares at the stop before boarding the bus meaning bus drivers don't have to waste time with fares.
	  ○ Buses have extra-wide doors and ramps which extend to the bus stop platform when the doors open
	  ○ These features allow result in a typical boarding time of only 15 to 19 seconds
	  ○ The system is fast, efficient and cheap and transports 2.6 million people everyday
	• Curitiba's buses are use alternative fuels which reduce air pollution, and because so many people use public transport, the city uses 30% less fuel per person than the eight other Brazilian cities of the same size and has one of the lowest rates of air pollution in Brazil.
	• Curitiba's above ground transport system now carries as many people and at the same speed as a subway but is 500 times cheaper.

Non-Governmental Organisations	**CORP (Community Outreach Programme), 1977, Mumbai** • CORP began with only one community centre and three staff members in Asia's largest slum, Dharavi • They now have 20 community centres in Mumbai and more than 70 staff members • Their work focuses on education, health and nutrition, helping street children, vocational training and shelter. • In 2012, they helped 29,000 people in Mumbai