CASE STUDY

Mumbai, India – the effects of urbanisation on the environment

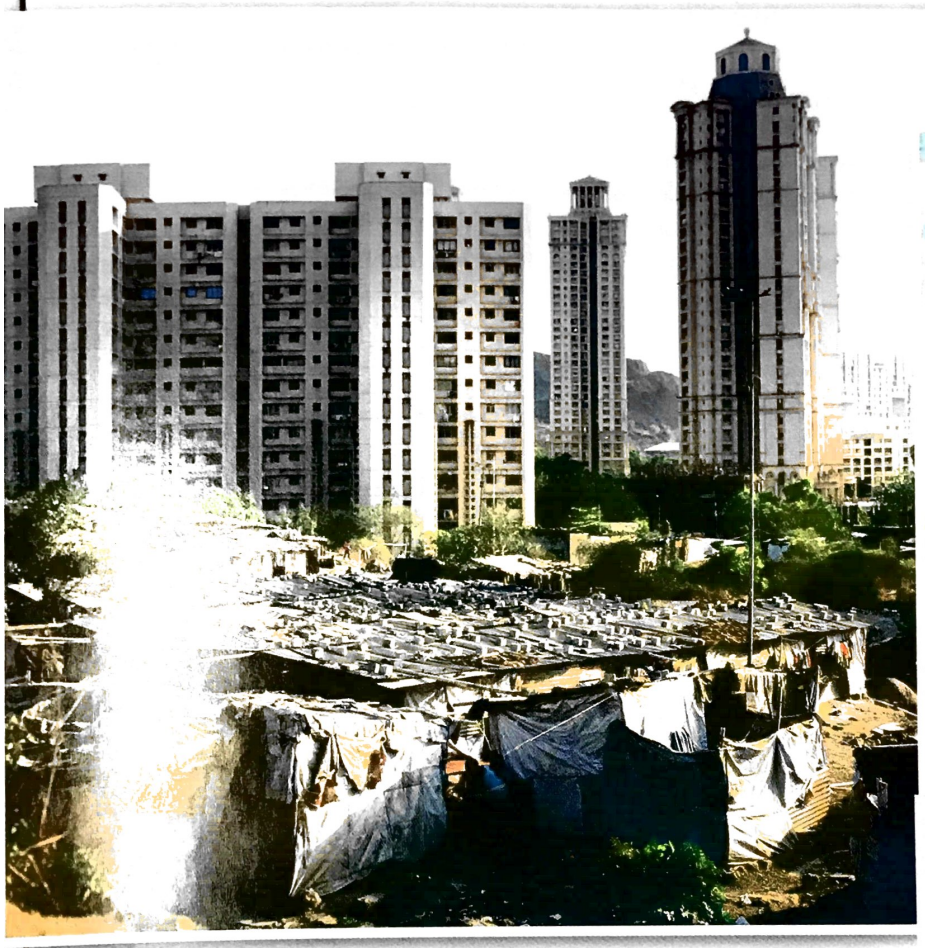
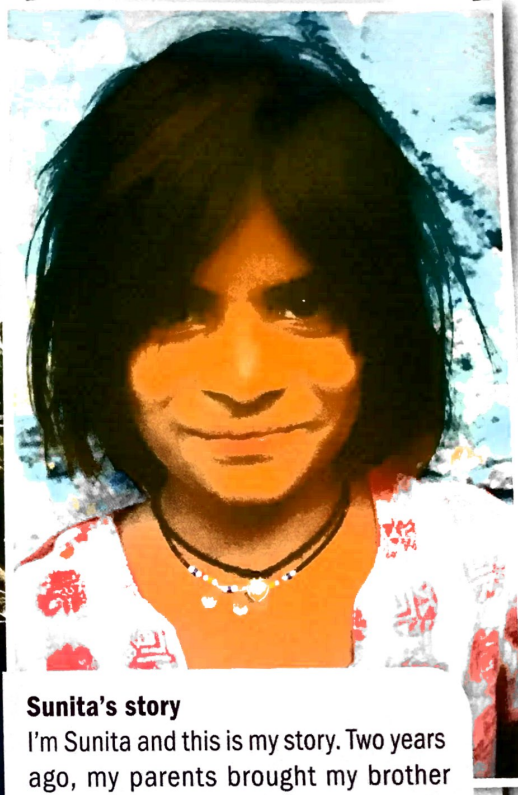


Fig. 2.48 In Mumbai, rich and poor live side by side with very little spare space

Fig. 2.49 Dharavi, Mumbai



Sunita's story

I'm Sunita and this is my story. Two years ago, my parents brought my brother Rakesh and I to live in Mumbai – in an area called Dharavi. People say it's a slum. Maybe it is – we're all poor here – but my father says at least we have work. And one day maybe Rakesh or I will be rich.

Dharavi is very crowded and very noisy. Everyone is busy all the time. Just outside our house people wash laundry, sew clothes and bang the dents out of used oilcans, so they can be recycled. There are small workshops everywhere. Somebody told me there are 15 000 in Dharavi.

It's smelly, too, I suppose. There are lots of open sewers. I like to walk down to the biscuit factory where it smells nicer!

I go to school every morning. The lessons are literacy and maths. In the afternoon I help my mother clean our house. It only has two rooms, but we do have electricity. Afterwards, I often go rag picking with my friends to earn a little money.

The informal economy

Many people in squatter settlements think that if you're old enough to walk and carry a bucket, you're old enough to work and earn your keep. Many people work for themselves in the **informal sector.**

People who work in the informal sector don't do a job that earns a regular wage. They make and sell goods and services unofficially – often on a 'cash-in-hand basis'. They don't have a contract, so there's no job security. They also don't have any health-and-safety protection, health insurance, or pension scheme to fall back on. If they can't work they don't earn anything. But they don't pay any taxes either!

Living and working in Dharavi

Dharavi lies between two railway lines in Mumbai. A lot of the homes there are pretty solid – made from brick, wood and steel. And a lot of them have electricity (like Sunita's). Although people live there illegally, Dharavi has well-established communities that provide self-help clinics, food halls and meeting places – as well as thousands of small workshops like those in Fig. 2.50 and Fig. 2.51.

But average incomes in Dharavi are low. Rakesh Pol, a leather worker, earns about £40 a month. He can rent a room for about £12 a month. Gradually, families can acquire extra building materials to improve their homes, but few of them can afford to move out of Dharavi, because the rest of Mumbai is far too expensive.

Fig. 2.50 Re-cycling soap in Dharavi

Fig. 2.51 One of the many small potteries operating in Dharavi

Improving squatter settlements

Around the world, people are trying to improve their quality of life. If you live in a squatter settlement, improving your home is a good place to start. Ways of doing this might involve the local authorities, or the residents themselves – or both.

Vision Mumbai

The city authorities in Mumbai have a big plan, called *Vision Mumbai*. Part of this plan is to try to tackle the poor quality of life of many Mumbai residents. Over the years, Mumbai's slums have multiplied and grown out of control, and pollution and water problems have rocketed. This situation has to be dealt with if Mumbai is to become more prosperous and successful in the future.

Dharavi's buildings might be poor quality, but the land they're built on is worth a fortune – US$10 billion! As part of *Vision Mumbai*, the plan is to demolish Dharavi's existing buildings and sell the land to property developers. As part of the deal, these developers will have to use some of the cleared land to build better homes for Dharavi's current residents. Up to 1.1 million low-cost, but higher-quality, homes could be built (many of them in high-rise tower blocks to fit in more homes in a smaller land area). This should cut the number of Mumbai residents living in slum housing by 90%. The water supply, sanitation, education and health care would all be improved too.

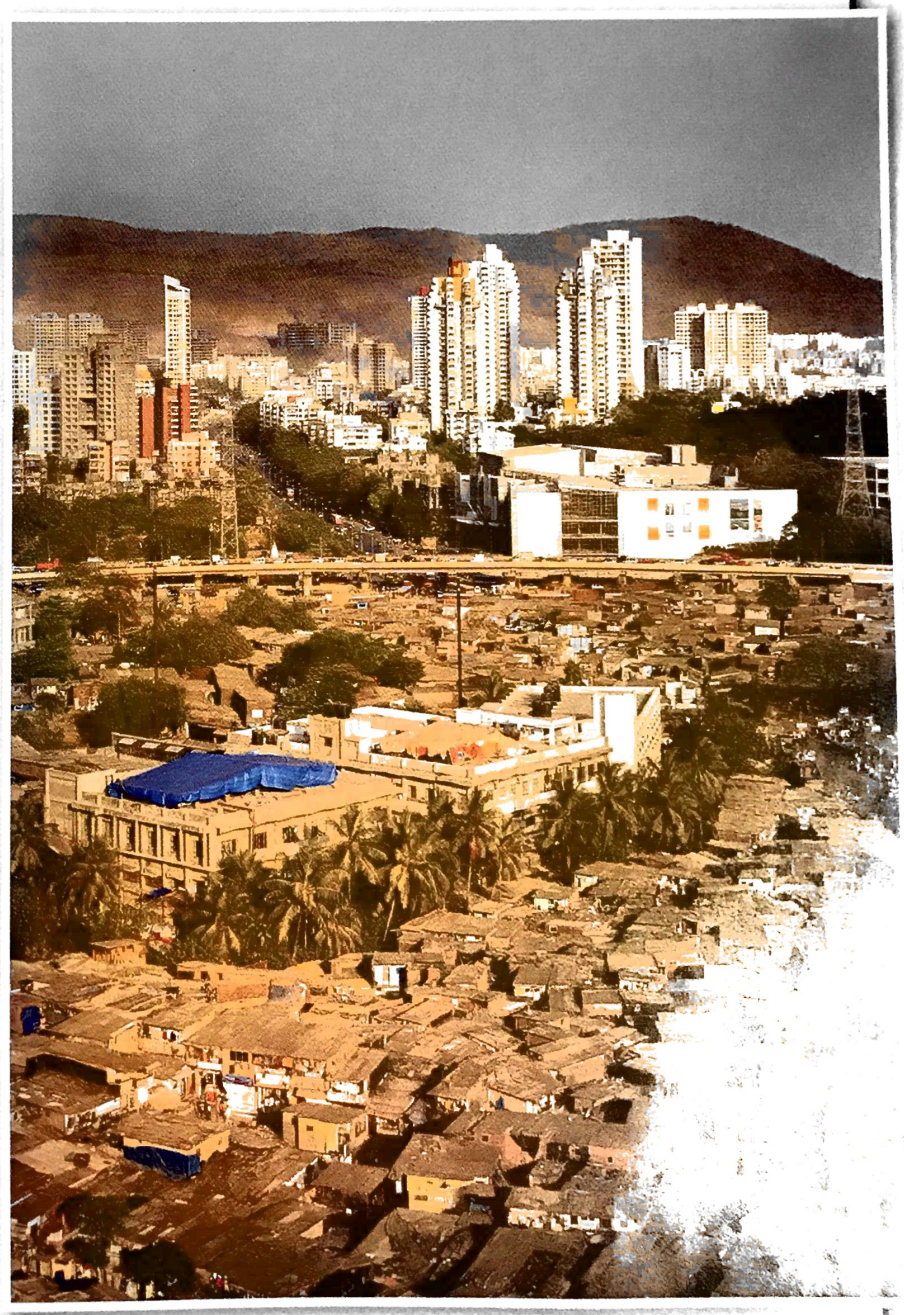
But what's in it for the property developers? *Vision Mumbai* has encouraged the developers to get involved by offering them the land for less money than it's worth. Plus, as well as building high-rise tower blocks for Dharavi's existing residents, the developers will be able to use the land area saved by building upwards to build profitable shopping malls, office blocks and upmarket apartments for sale and rent to Mumbai's richer residents.

So, everyone's a winner? Not quite. Remember Sunita at the beginning of this case study? She says, 'Vision Mumbai has a problem. What happens to the people who live in Dharavi now, while their new homes are being built? Where do they go? Some people have already been forced to leave their homes, so that they can be demolished to make way for the new buildings.' And Dharavi doesn't just provide homes – it provides jobs too. Where will all the small workshops and businesses, like those shown on page 74, go when the area has been redeveloped?

In 2009, it was announced that the plans to 'makeover' Dharavi would be delayed, because of the global economic crisis. Some of the organisations that had signed up for the Dharavi project had also dropped out. This may mean that Sunita will keep her home, at least for now, life won't get much better.

As you can see from the pictures of Mumbai, one of the problems facing this and many other shanty areas of the world is the size of the problem. It is very difficult to improve such large areas of settlement where so many people live. Even where improvements are going on, it is often difficult to cope, as more migrants move into the area.

Fig. 2.52 *Vision Mumbai* plans to replace Dharavi with buildings more like those in the background



Water pollution

Rapid urbanisation and industrialisation in poorer parts of the world have created big problems for the environment there. For example, getting rid of waste (of all kinds) has led to serious pollution in the Mithi River, which flows through Mumbai. For a long time, this river has been treated as a watery waste disposal unit – leading to pollution from a number of different sources:

- Big industries in Mumbai dump their untreated industrial waste straight into the river.
- The airport uses it to dump untreated oil.
- Every day, 800 million litres of untreated sewage go straight into the river.
- It's also used for dumping other waste, including food and cattle slurry, metals and old batteries – some of which is very toxic.

And in Dharavi, which sits right next to the river – apart from dumping human waste – the river is also used for things like washing out used oil drums.

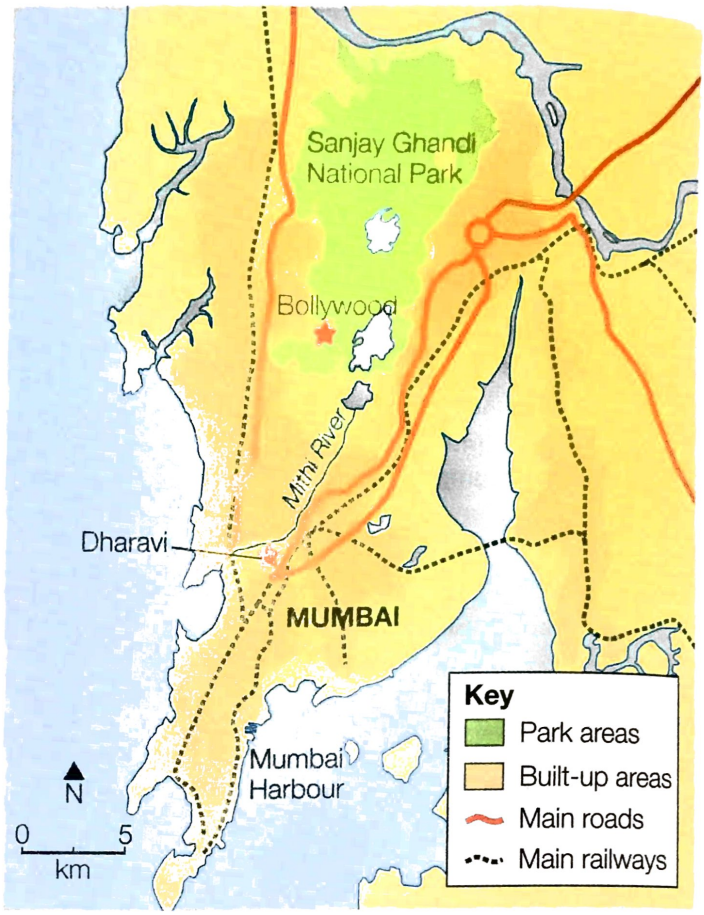


Fig. 2.53 Mumbai and the Mithi River

Flood risk

The solid waste dumped in the Mithi River (the metals and plastics) clogs it up and blocks the drains. Plants then grow on some of this waste, which helps to increase the risk of flooding.

In July 2005, the Mithi River flooded after a metre of rain fell in just 24 hours. Nearly a quarter of Mumbai was flooded. Roads and railway lines were under water for more than 24 hours. The airport was closed and many areas had no electricity for several days. People had to wade through water that was sometimes neck deep. The floods cost the city US$100 million, and 406 people died.

Fig. 2.54 The Mithi River is heavily polluted

What's being done? After the 2005 flood, the Mithi River Project was set up to try to prevent such a serious flood happening again:

- The river channel was dredged to make it deeper and increase its capacity to hold more water. It was also widened and obstacles were removed – and the banks were smoothed near bends in the river. All of this was designed to allow the water to flow more easily down to the sea.
- But none of those actions made the river any cleaner, so waste discharges from factories are now checked. More public toilets have also been built, to reduce the amount of raw sewage being dumped in the river.

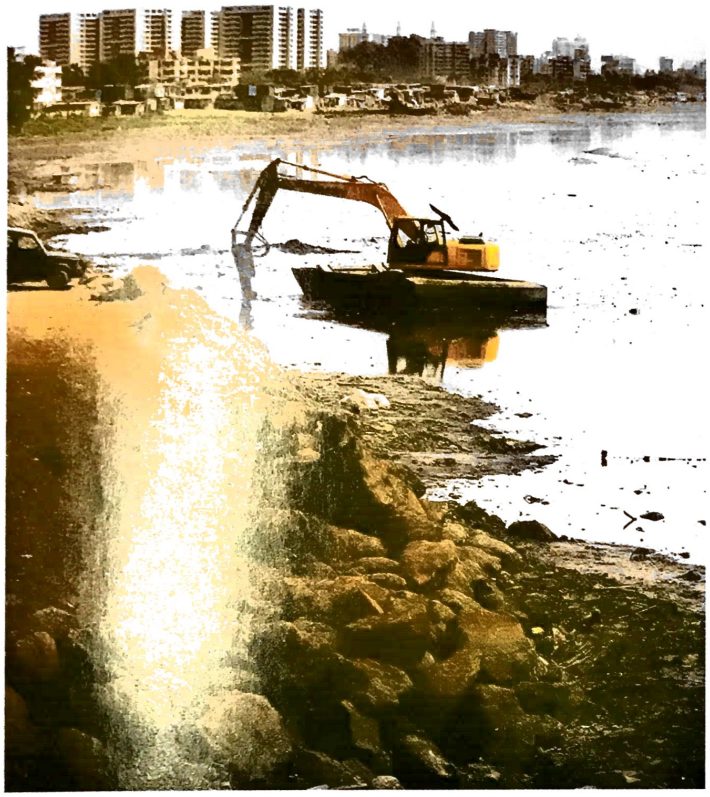


Fig. 2.55 Dredging along the Mithi River helps the water to flow faster to the sea (along with all its waste)

Part of *Vision Mumbai* involves rebuilding homes in Dharavi and improving the area's water supply, sanitation and drains. That should mean that less untreated sewage ends up in the river.

Dharavi's workshops are also a source of pollution. But many are recycling materials that would otherwise be thrown away and add to Mumbai's waste disposal problem.

- Keeping the workshops going – but in a more environmentally friendly way – will therefore help to reduce the overall amount of waste.
- Education projects are also needed to help people understand why they shouldn't dump rubbish straight in the river.

Air pollution

Air pollution is a major problem in Mumbai. Exhaust gases from vehicles, and smoke from burning rubbish and factory chimneys, pollute the air. And, as the Indian economy grows, more and more electricity is needed – most of which is generated by burning fossil fuels like coal. As a result, large amounts of greenhouse gases, including carbon dioxide, are being released into the air.

Mumbai's residents, especially those who live in squatter settlements like Dharavi, suffer from very high rates of breathing problems. Illnesses like bronchitis are common.

Fig. 2.56 Serious air pollution in Mumbai

What's being done? Mumbai has concentrated its efforts to cut air pollution on transport. Vehicle exhausts are the biggest single source of air pollution there.

- A new metro system in the city aims to encourage people to use more public transport. By 2021, the planned metro system should have nine lines, and 32.5 of its 146.5 kilometres of track will be underground.
- The city has also banned diesel as a fuel in all of its taxis. Many of Mumbai's 58 000 taxis now use compressed natural gas instead, which reduces greenhouse gas emissions.
- The main roads in and out of the city have been upgraded with 55 new flyovers. Smoother-flowing traffic should mean less congestion and less pollution.