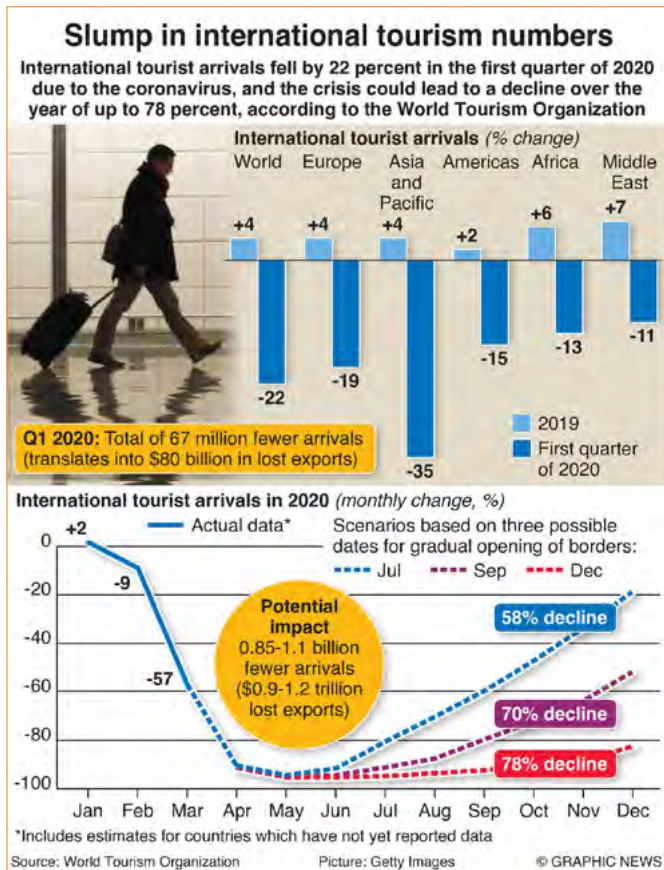
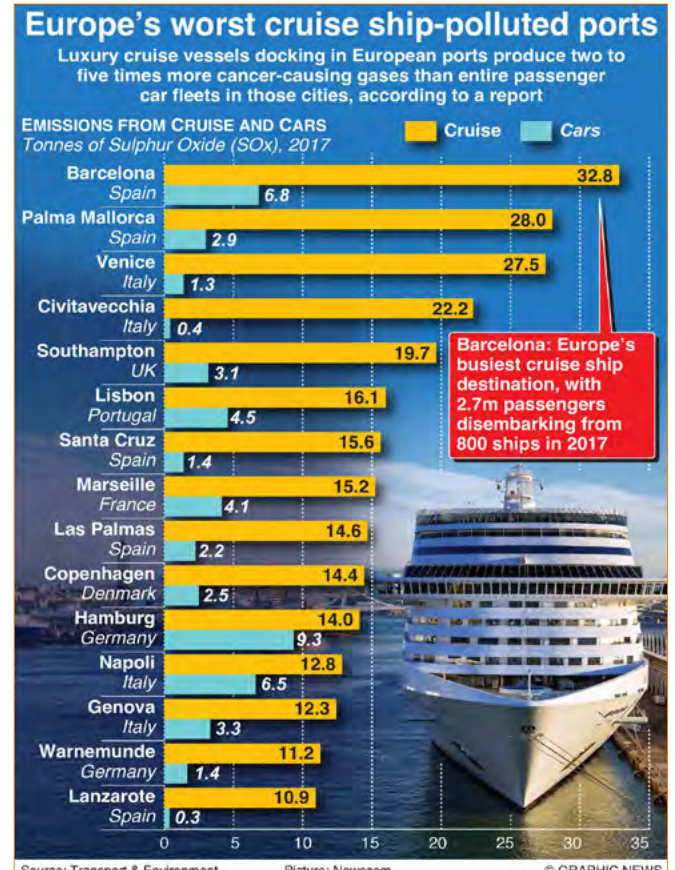


STAGE 6 SKILLS

SOURCE A: Tourism



SOURCE B: Cruise Tourism



SOURCE C: Great Barrier Reef Ecosystem



Pacific volcano helps revitalise Great Barrier Reef

August 25, 2020 – A vast raft of volcanic pumice stones that floated across the Pacific is helping to revitalise Australia's embattled Great Barrier Reef.

In what seems like an unlikely chain of events, a mass of floating rocks twice the size of Manhattan spewed up from an underwater Pacific volcano and drifted westwards across the ocean to reach Australia's eastern seaboard.

Volcano F, located just north of the Vava'u islands in Tonga, erupted in August 2019, sending trillions of small pumice stones to the ocean surface where they were carried by currents across the Pacific. Pumice stones are formed from frothy volcanic glass filled with solidified gas bubbles and are light enough to float.

As the rocks bobbed around in the water, they attracted marine organisms like algae, barnacles, corals, and more. These tiny hitchhikers ended up riding thousands of kilometres across the ocean, and are now helping to seed and replenish endangered Australian coral systems with new corals and other reef-building organisms.

It is not the first time this has happened – Volcano F also erupted in 2001, and activity is becoming more frequent, with the volcano expected to breach the surface in coming years and form a new island.

Researchers are hopeful the latest pumice delivery will do some good for the Great Barrier Reef, which is beset by coral bleaching as the world's ocean temperatures rise due to climate change

The 2019 eruption's pumice raft can now be found along Australia's east coast from Townsville in Queensland to northern New South Wales – a spread of more than 1,300 kilometres.

Source: Graphic News: <https://www.graphicnews.com/en/pages/40498/environment-giant-pumice-raft-reaches-australia>

Challenges of mega cities: Dharavi

Collated by Lorraine Chaffer

SOURCE D: Dharavi and COVID-19



Coronavirus hits India's "Maximum City"

May 18, 2020 – Mumbai, India's most densely populated city, is now responsible for one in three of the nation's coronavirus infections. Dharavi, India's biggest slum, is particularly susceptible to the virus.

Located in the centre of Mumbai, the capital of Maharashtra state, Dharavi has an estimated one million people crammed into 239 hectares of space. They work in the slum's 15,000 work-live factories or as maids and chauffeurs to the financial capital's residents. However, Dharavi is the most educated slum in the country, with a literacy rate of 69 per cent.

Dharavi's narrow alleys, crowded housing and poor sanitation offer the perfect breeding ground for the virus. Dharavi has been under a severe lockdown since the coronavirus appeared in the slum. Virus hotspots include Matunga labour camp, Kumbharwada, Transit Camp and Naik Nagar, as well as along Cross Road, 90 Feet Road and 60 Feet Road. Police are using drones to make sure people obey the strict lockdown.

Graphic News: Published 18/05/2020

SOURCE E: Extract from ABC News report

India's biggest slum has so far nailed coronavirus. Here's how they did it

ABC NEWS. Read the full article here – www.abc.net.au/news/2020-08-08/indias-biggest-slum-declares-victory-over-coronavirus/12518818

With its narrow streets, congested housing, underfunded health care and poor sanitation, many thought India's largest slum would be devastated by COVID-19. In fact, Dharavi – located in India's financial capital Mumbai – was often heralded as a prime example of why the country was ill-prepared to deal with the coronavirus.

The World Health Organisation has lavished praise on local authorities after they embarked on an ambitious and comprehensive program to bring the coronavirus under control in a region where social distancing and contact tracing is impossible. With a million residents crammed within 2.4 square kilometres, local government assistant commissioner Kiran Dighavkar said relying on home quarantine was not an option.

"In one apartment of 10 feet by 15 feet (3 x 5 metres), you'll find at least 10 to 12 people," he said. "It is very difficult to do contact tracing because one person who used the community toilet, or toilet seat, is used by another 500 people.

Anything from sports centres, schools, nursing homes and hotels were converted into coronavirus treatment and isolation centres. Hundreds of community toilets were sanitised multiple times a day. Instead of waiting for symptomatic patients to come forward, authorities would doorknock homes to test temperatures and oxygen levels. Anyone considered at risk or showing depleting oxygen levels was taken into care.

SOURCE F: Reflection from a slum tourist

Look Inside Dharavi: My Experience

Source: <https://www.tripsavvy.com/mumbai-dharavi-slum-tours-4072927>

“Welcome to Dharavi!” a customer called out to us from the *chai wala*, as we exited the stairs at Mahim West railway station. I had just entered what is often labelled as Asia’s largest slum. Yes, THAT slum, which rose to fame in the movie *Slumdog Millionaire* and angered many Indians for its portrayal of poverty. The movie has been referred to as an example of “poverty porn”, one that encourages perverse western voyeurism and promotes slum tourism and volunteering.

And, there I was, about to embark on a two hour “slum tour” of Dharavi. But, if you think I was indulging in any kind of poverty voyeurism, think again.

“It’s important for everyone to come to Dharavi and see how it functions, see the industry going on here. This is not a place where poor people are depressed. Look around. Do you see any beggars?”, he (tour guide Salman) implored me.

Indeed, I could not. What I could see were laughing children running through the lanes and playing cricket, and people diligently working in all types of small-scale industries.

Dharavi’s Astonishing Economy

To further dispel any notion of poverty-stricken people miserable in squalor, Salman began quoting astonishing numbers to me. In Dharavi, there are a total of 4,902 production units bringing in an annual income of around \$1 billion. They’re divided into:

- 1039 textiles
- 932 potters
- 567 leather
- 498 embroidery
- 722 recycling
- 111 restaurants
- Thousands of boutiques.

“Dharavi has so many specialist industries because of the people moving here from different areas of India, and they bring their skills with them,” Salman informed me. It’s worth nothing that, apparently, there is less than 10% unemployment in Dharavi.

Dharavi’s incredible recycling industry

The first part of the Dharavi tour took us through some of the small-scale industry workshops. It was fascinating to see how they operated. Salman explained the process of plastic recycling, as we watched the work going on.

“First, the plastics for recycling are grouped together according to colour and quality. Next, they’re crushed and made into small pieces. Then, they’re washed and dried on the roof tops. After that, they’re taken and rolled into pallets, and sent to the plastic manufacturers. 60,000 recycled products are made from them.” All kinds of plastic items, from *chai* cups to pieces of old telephones, were being sorted through and processed by Dharavi residents.

Redevelopment of Dharavi

As we walked, Salman continued to explain the importance of Dharavi in the context of Mumbai. “Now, everyone is taking an interest in Dharavi’s infrastructure and facilities. It’s well connected by both Mahim West railway station and the Eastern Express Highway. The government wants to redevelop the area and build high-rise apartments, and they’ll move the residents into these apartments.”

Without understanding Dharavi, you could easily mistake this for a good thing. After all, residents will be getting free apartments as part of the deal. However, as Salman revealed to me, the truth is much more complicated. “The residents have emotional attachment to their *chawls*. Plus, the government is going to give everyone 225–275 square foot apartments, regardless of how much space they already have. Also, only people who have been living in Dharavi from before the year 2000 are eligible to get an apartment.”

Then, there is the troublesome issue of what will happen to the small-scale industries, which will have to be moved out of the area. “It will be difficult for residents to have to travel to far-off, relocated workplaces,” Salman lamented.

Other Small-Scale Industries in Dharavi

My friend and I got really excited once we reached the block-printing workshop. They were making export quality fabrics – and due to overwhelming demand, it was possible to buy them! Salman called the “boss man” over. “He doesn’t look like the boss, but he is,” he referred to the informally dressed topless man, who commenced laying out a range of beautiful fabrics before us. Unlike many Indian shopkeepers, he knew not to pull out too many pieces, which would overwhelm and confuse us. He also left us alone to decide what we wanted.

STAGE 6 SKILLS

The tour progressed through other small-scale industries. Used tin drums were being renewed and repainted, leather was being processed, vessels were being spun on pottery wheels, small clay *diyas* were being shaped, and *pappads* were being rolled out (next time you dine at a restaurant in Mumbai, it's likely that the *pappad* you eat would've been made in Dharavi).

While photography isn't allowed on the Dharavi tour, occasionally Salman gave us the opportunity to take pictures. "The artists do appreciate the acknowledgement of their work. It makes them proud that foreigners come

and take an interest in what they do, and even buy what they make."

Conclusion and lessons learned

Without a doubt, it was an amazing, eye-opening, and POSITIVE experience. Everyone should go on a Dharavi tour and experience it for themselves. In my view, anyone who is reluctant to do so because they're worried about "poverty tourism" needs to examine their egos and false sense of superiority. The people in Dharavi are not ashamed of how they live, nor are they miserable. They are friendly, welcoming, and dignified.

SOURCE G: A photo tour of Dharavi: A working slum

Taken by Lorraine Chaffer during a tour of Dharavi Slum in 2016

Housing



Clothing manufacturing: gold embroidery on silk, white & blue jeans, sports clothing



STAGE 6 SKILLS

Fabric and textile dyeing



Smelting metals



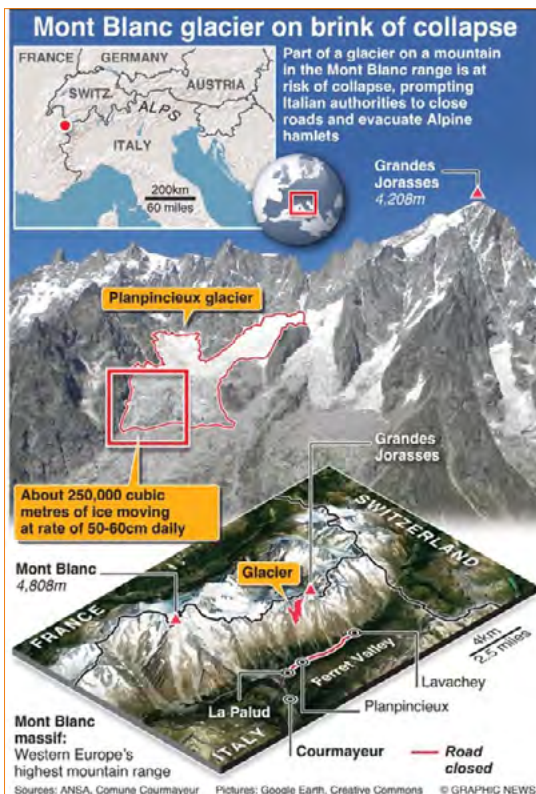
Baking goods for Mumbai and beyond



Recycling a large amount of Mumbai's waste



SOURCE H: Cryosphere – Glacier collapse



Mont Blanc glacier on brink of collapse

September 25, 2019 – Part of a glacier on a mountain in the Mont Blanc range is at risk of collapse, prompting Italian authorities to close roads and evacuate Alpine hamlets.

A section estimated to contain up to 250,000 cubic metres of ice could fall down the mountain, the mayor of the nearby town of Courmayeur, Stefano Miserocchi, has warned.

Roads in the Val Ferret on the Italian side of Mont Blanc have been closed, after experts warned that a section of the glacier was sliding at speeds of 50-60cm per day.

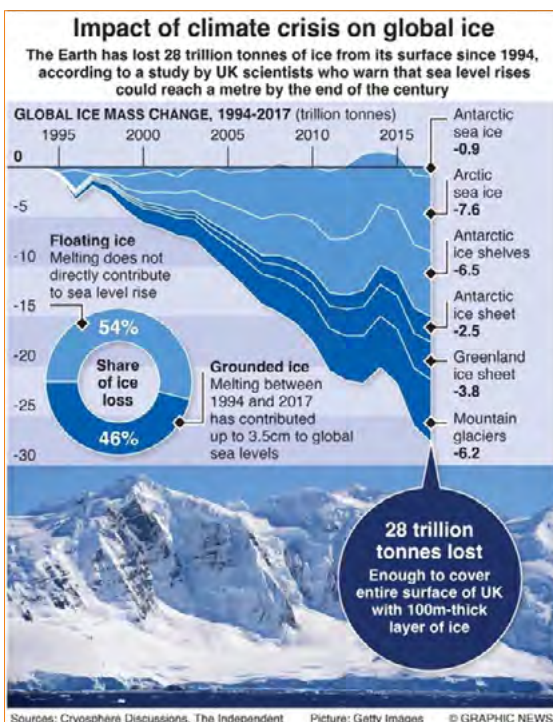
Rising global temperatures are causing the melting of mountain glaciers and the retreat of polar ice sheets.

Read more:

- [Mont Blanc: Glacier in danger of collapse, experts warn \(BBC\)](#)
- [A Low-Cost Optical Remote Sensing Application for Glacier Deformation Monitoring in an Alpine Environment](#)

Source: Graphic News – <https://www.graphicnews.com/en/pages/39543/climate-change-mont-blanc-glacier-collapse>

SOURCE I: Cryosphere – Global ice losses



Source: Graphic News – <https://www.graphicnews.com/en/pages/40501/environment-global-ice-loss>

Earth has lost 28 trillion tonnes of ice since 1994

August 26, 2020 – The Earth lost 28 trillion tonnes of ice between 1994 and 2017 with 60 percent of melting occurring in the northern hemisphere, according to data published in the online journal Cryosphere Discussions.

Scientists from Leeds and Edinburgh universities and University College London combined satellite observations and numerical models to identify the impact of global warming.

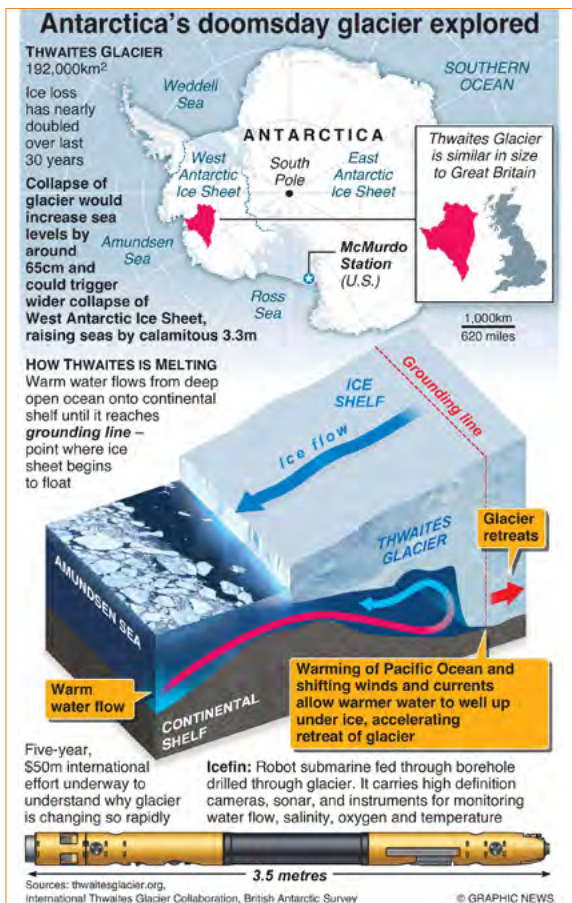
The group of researchers describe the ice loss as “staggering” and warn that melting glaciers and ice sheets could cause sea levels to reach a meter by the end of the century.

The analysis showed that the rate of ice loss has risen by 57 percent since the 1990s – from 0.8 to 1.2 trillion tonnes per year – owing to increased losses from mountain glaciers, Antarctica, Greenland, and from Antarctic ice shelves.

The majority of all ice losses were driven by atmospheric melting, with 68 percent from Arctic sea ice, mountain glaciers, ice shelf calving and ice sheet surface mass balance. The remaining 32 percent of the losses were from ice sheet discharge and ice shelf thinning, driven by oceanic melting.

Read more: [Earth's ice imbalance \(Cryosphere Discussions\)](#)

SOURCE J: Cryosphere – Antarctic glacial melt



Source: Graphic News – <https://www.graphicnews.com/en/pages/39917/climate-change-antarcticas-doomsday-glacier-1>

Antarctica's doomsday glacier melting fast

January 29, 2020 – A massive research effort is underway to understand why the Thwaites glacier is melting so fast. If it collapses, it could trigger catastrophic sea level rise, putting coastal cities around the world at risk.

Thwaites glacier, covering 192,000 square kilometres – an area the size of Great Britain – is particularly susceptible to climate and ocean changes. Over the past 30 years, the amount of ice flowing out of the region has nearly doubled.

A collapse of the glacier would increase sea levels by around 65cm and could trigger a wider collapse of the West Antarctic Ice Sheet, raising seas by a calamitous 3.3m.

As part of a five-year, \$50m international effort underway to understand why the glacier is changing so rapidly, a team of scientists have drilled through the Antarctic glacier.

The 600-metre deep borehole has allowed researchers to lower down a torpedo-shaped robotic submarine to explore the underside of the ice shelf.

Called Icefin, it carries high definition cameras, sonar, and instruments for monitoring water flow, salinity, oxygen and temperature.

As climate change raises global sea levels, parts of the West Antarctica Ice Sheet are particularly vulnerable to collapse. At the end of the last ice age, parts of West Antarctica thinned by an average of 0.5m to 1m per year. Today with GPS, satellite and airborne measurements, scientists are seeing parts of West Antarctica thin by 1m to 6m per year.

SOURCE K: PQE Method for analysing maps, graphs and statistics

PQE is a tool used by geographers to describe the data and to look for patterns in this data.

P – Pattern

Give a general overview of any patterns you may identify. Look for things that stand out or form patterns.

A pattern may be a group of similar features on a diagram, a concentration of a particular colour or feature on a map, or a particular shape that is created by data on a graph. For example, a feature is located in a particular area on a map or a general trend shown by a graph.

Q – Quantify

Add specific and accurate information to define and explain the patterns. Use statistics (quantities) such as amounts, sizes and locations to give specific details. For example, replace 'The forest is located in the centre of the country' with 'Approximately 10,000 hectares of forest extend across an area between 3 degrees south and 10 degrees south'.

'The graph shows an increase between 2010 and 2020 from 10,000 to 25,000 people.'

E – Exceptions

Identify everything that does not fit your patterns e.g. There are pockets of forest spread throughout the country' or '2020 was an unusual year that did not fit the general trend shown in the graph'