

Earth's megacities

Lesson Map: <http://esriaustralia.com.au/education/SpatialActivity61>

Engage

How many megacities were there 50 years ago? 20 years ago?

- A **megacity** is defined by the United Nations as a metropolitan area with a total population of more than 10 million people.
- Click on the Lesson Map URL above to open the map. In the 'Details' pane, under 'Content', turn on the *Megacities in the year 1950* layer.
- ? What two cities were classed as megacities in 1950? [*New York and Tokyo.*]
- ? What were the populations of these megacities in 1950? [*New York – 12,338,471; Tokyo – 11,274,641.*]
- In the 'Details' pane, under 'Content', turn off the *Megacities in the year 1950* layer. Turn on the *Megacities in the year 2000* layer.
- ? How many cities were classed as megacities in the year 2000 – 20 years ago? [*In 2000, there were 16 megacities, which was an increase of 14 from 1950.*]
- ? What do notice about the distribution of megacities in 2000? [*(Except for New York, Los Angeles, Moscow, Tokyo and Osaka, the majority of megacities are located in developing regions of the world, particularly in South-East Asia and South America.)*]

Explore

How many megacities are there today?

- In the 'Details' pane, under 'Content', turn off all layers. Turn on *Megacities in the year 2018*.
- This layer's data is sourced from a United Nations Data Booklet titled *The World's Cities in 2018*. As of 2018, there were 33 megacities on Earth. This layer includes data on each megacity's population size, the status of the country's development (developed / developing) and its rank.
- ? List, in order, the 10 megacities with the largest populations? HINT: click on cities to bring up additional information. [*Tokyo (37,468,000), Delhi (28,514,000), Shanghai (25,582,000), Sao Paulo (21,650,000), Mexico City (21,581,000), Cairo*

Download student worksheet [here](#).

Time

30 minutes

Activity

Investigate the distribution of megacities across Earth.

Learning Outcome

Students will be able to:

- Define geographical terms: megacity, GDP per capita
- Analyse the distribution of megacities across developed and developing countries
- Identify and explain relationships between the location of megacities and characteristics including income, GDP per capita, status of development and rural population.

ACARA Curriculum Link

Year 11 Geography | Planning sustainable places: Managing challenges facing a megacity

Teacher Feedback:

To share your feedback on this, or any Spatial Activity, please contact education@esriaustralia.com.au

Acknowledgements:

Data for megacities and population numbers was sourced from the United Nations' [The World Cities in 2018](#) Data Booklet.

Data for income, GDP per capita and rural populations was sourced from [World Bank](#).

(20,076,000), Mumbai (19,980,000), Beijing (19,618,000), Dhaka (19,578,000), Osaka (19,281,000).]

- ? Of these 10 largest megacities, what is the general status (developed / developing) and distribution of the countries they are in? *[Except for Tokyo and Osaka, the other 8 megacities are all located in developing countries. Furthermore, of these top 10 countries, 7 are in South-East Asia.]*
- In the 'Details' pane, under 'Content', hover over the *Megacities in the year 2018* layer. Click on the 'Table' icon . This will enable the layer's attribute table.
- ? Of the 33 megacities, how many are located in developing countries? *[27 of the 33 megacities are located in developing countries.]*
- ? Of the 6 megacities located in developed countries, choose two and hypothesise why they may have such large populations? *[Answers will vary. Example 1: Moscow may have a high population as vast regions of Russia are uninhabitable or extremely harsh to live in thus, people converge to the capital. Example 2: Los Angeles is arguably the entertainment hub of the world; aspiring actors and actresses, musicians, bands and performers from around the world relocate to LA in the hopes of 'making it'.]*

Explain

Why are most megacities in developing countries?

- Close the Attribute table. Leave the *Megacities in the year 2018* layer on. Turn on the *Income rating* layer.
- Each country has an income rating between 1 and 4. Click on 'Legend' to see what colour represents each rating. The rating scale is below:

1	Low income
2	Lower middle income
3	Upper middle income
4	High income

- ? What do you notice about the income of most countries that had at least one megacity? *[Most countries – with a few exceptions – belonged to countries that had a rating of somewhere between 'low income' to 'upper middle income', with most falling into a rating of 2 or 3.]*
- In the 'Details' pane, under 'Content', turn off the *Income rating* layer. Turn on

GDP per capita.

- **GDP per capita** is a measurement of a country's economic output that also accounts for its people. It divides the country's **gross domestic product (GDP)** by its total population. This provides a measurement of a country's standard of living. It can tell you how prosperous a country feels to each of its citizens.
- View the 'Legend' for further insights.
- ? Describe the relationship between the locations of megacities and GDP per capita? *[Megacities are almost exclusively located in countries characterized by low to medium GDP per capita. The one exception to this relationship is the city of Paris as France is characterized by a high GDP per capita.]*
- In the 'Details' pane, under 'Content', turn off the *GDP per capita* layer. Turn on *Percentage of population in rural areas*. View the 'Legend' for additional information.
- ? Describe any trends you observe concerning the status of a country's development and the percentage of a country's population living in rural areas? *[In more developed countries – Australia, Canada, Japan, Western Europe – most of the population is living in urban areas, rather than rural areas. In developing regions, like Africa and South-East Asia, the percentage of the population living in rural areas is significantly higher.]*
- ? Explain why this may be the case? *[In developing countries, large numbers of the population have only been exposed to small amounts of formal education. Of the people that have attended school, even fewer have studied beyond schooling years. As a result, most of the population perform unskilled labour or agricultural work.]*
- ? Click on several countries from both developed and developing regions. Choose some from South-East Asia and some from Africa. Read the information that appears in the pop-up box. What is happening to every country's rural population? *[The rural populations of each country are consistently declining. In developed countries, the decline is smaller as the majority of the population already live in urban areas. In developing countries, huge amounts of the population are migrating to urban areas, some of which are megacities.]*
- It is observed that people in developing countries often undergo rural-urban migration in the hopes of obtaining better employment conditions (better pay, better jobs, more job opportunities etc.). After observing the income status, GDP per capita and rural population layers, this becomes increasingly evident. As of 2018, China alone was home to 6 megacities, while India had 5.

Extend

What do the next 15 years look like for megacities?

- According to the UN, nine of the 10 cities projected to become a megacity between 2018 and 2030 are located in developing countries. London is projected to be the only new megacity to emerge in the developed world.
- In the 'Details' pane, under 'Content', turn off all layers. Turn on *Megacities in the year 2035*.
- ? By 2035, what city is projected to be the largest city? *[Delhi will replace Tokyo as the largest megacity with a population of approximately 43,345,059.]*
- In the 'Details' pane, under 'Content', turn off the *Megacities in the year 2035* layer. Turn on the *Predicted population change (%)* layer.
- ? Click on Tokyo. What do you observe about the population change between 2018 and 2030? *[Tokyo's population is predicted to decrease by 2.39% by 2030.]*
- ? In comparison, view Delhi's and Shanghai's predicted population changes. What do you notice? Explain why this may be the case? *[Delhi's population is predicted to have increased by 36.56% by 2030. Shanghai's population is predicted to have increased by 28.48% by 2030. This may be the case due to a number of reasons: (1) By 2030, China and India are likely to be powerhouses in the world economy, producing goods for the rest of the world, thus requiring more workers; (2) By 2030, these countries may be approaching a status of 'developed' as they undergo rapid urbanisation and industrialisation.]*

Next Steps:

Request a free ArcGIS Online Account for your school:

Australian schools can request a free ArcGIS Online account as part of Esri Australia's Classroom GIS Initiative. A school subscription provides additional map layers, content, features and privacy.

Learn more about ArcGIS Online, and apply for your ArcGIS Online School subscription at <http://esriaustralia.com.au/education>