

# IS 101

Week 10: Population and Environment


# Each group will deal with 1 question below.

- 1. (a) Population growth in the recent past has been explosive. However, the author wants you to focus on how recent this explosive growth has been. Why do you think that is? Later in the chapter the focus is on the three main factors contributing to this growth. See if you can find them and explain them to yourself.
- 1 (b) Global demographics have been changing in very specific ways. Can you explain this statement using the reading?
- 2 (a) Can you explain the relationship between population growth and urban growth? Why do you think the two have gone together?
- 2 (b) What is the relationship between population growth and poverty? What assumptions did you have about this relationship before doing the reading?
3. What is the relationship between population and climate change? (the link in your canvas module, below your required reading summarizes this relationship).
4. We will end with discussing the issue of political will. Can you find any reference to this in your reading?

Population growth is the main reason why we see increasing poverty and climate change. Each speaker will speak for 2-3 minutes each.

For the topic	Against the topic
Speaker 1 (lay out the answer to the question) and who will do what in your group. It is a good idea to have at least 2 arguments prepared.	Speaker 1: lay out the reason why you disagree with the statement. Having three arguments prepared is a good idea. Critique speaker 1's points.
Speaker 2 critique speaker 1 on the other side. Link back to what speaker 1 said. State your own arguments.	Speaker 2 critique speaker 2 on the other side. Link back to what your speaker 1 said. State your own arguments.
Speaker 3: wraps up their side of the debate. Should give a summary of what was discussed. Should be able to end by linking content back to the statement and explaining why their side is right.	Speaker 3: wraps up their side of the debate. Should give a summary of what was discussed. Should be able to end by linking content back to the statement and explaining why their side is right.

The three judges should think carefully about how they will justify their choice of who wins.



At present the United Nations estimate of the world population stand at a little over 8 billion.

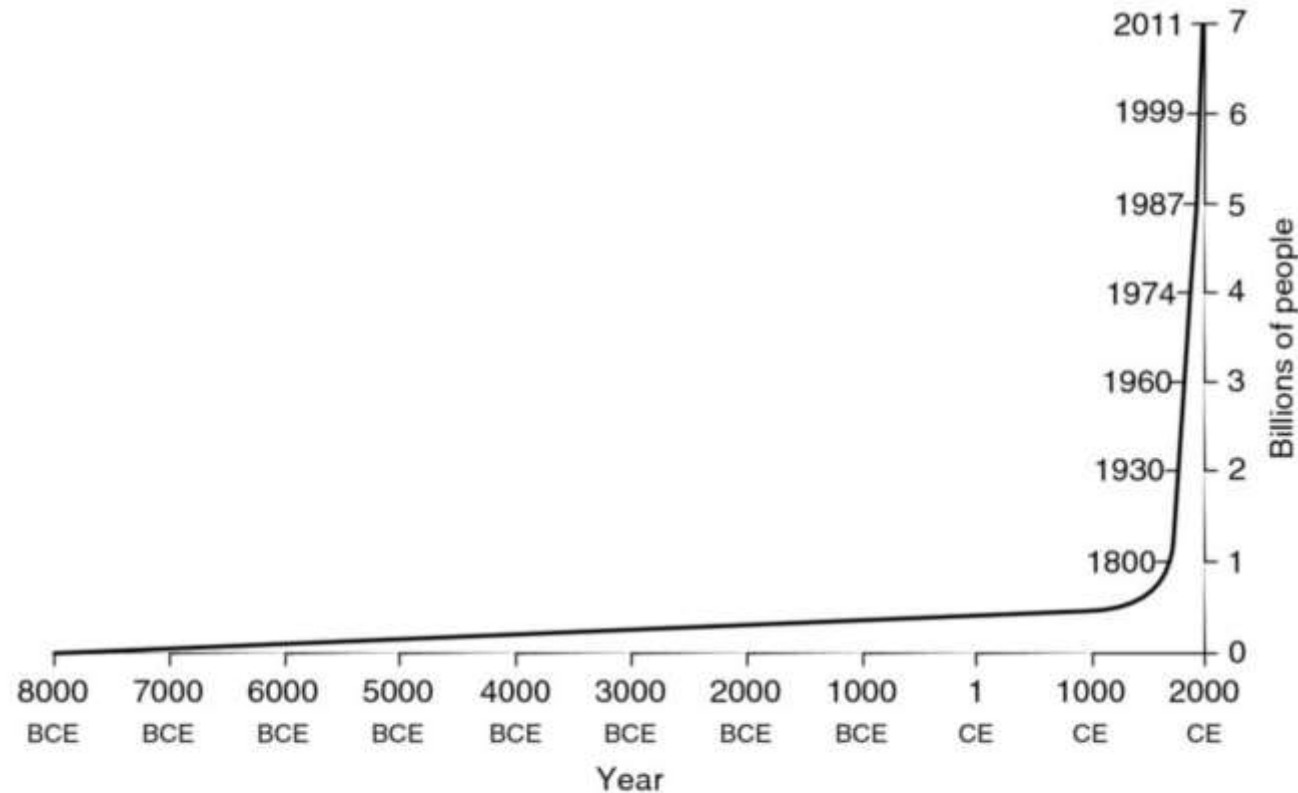
The fact that the world's population is increasing rapidly is not surprising. What is surprising, is how recent most of this growth has been. Look at the graph below. Note that from 1960 onward, the gap to add a billion to the world's population has shrunk considerably.

**Table 1.1** Time taken to add each billion to the world population, 1800–2046 (projection)

<i>Date</i>	<i>Estimated world population (billions)</i>	<i>Years to add 1 billion people</i>
1800	1	2,000,000
1930	2	130
1960	3	30
1974	4	14
1987	5	13
1999	6	12
2011	7	12
2024 (projected)	8	13
2046 (projected)	9	22

Source: Data from UN Department of Economic and Social Affairs, Population Division, *World Population Prospects: The 2012 Revision*.

The same data, but presented differently really gives an idea of the enormity of the change in the last few decades

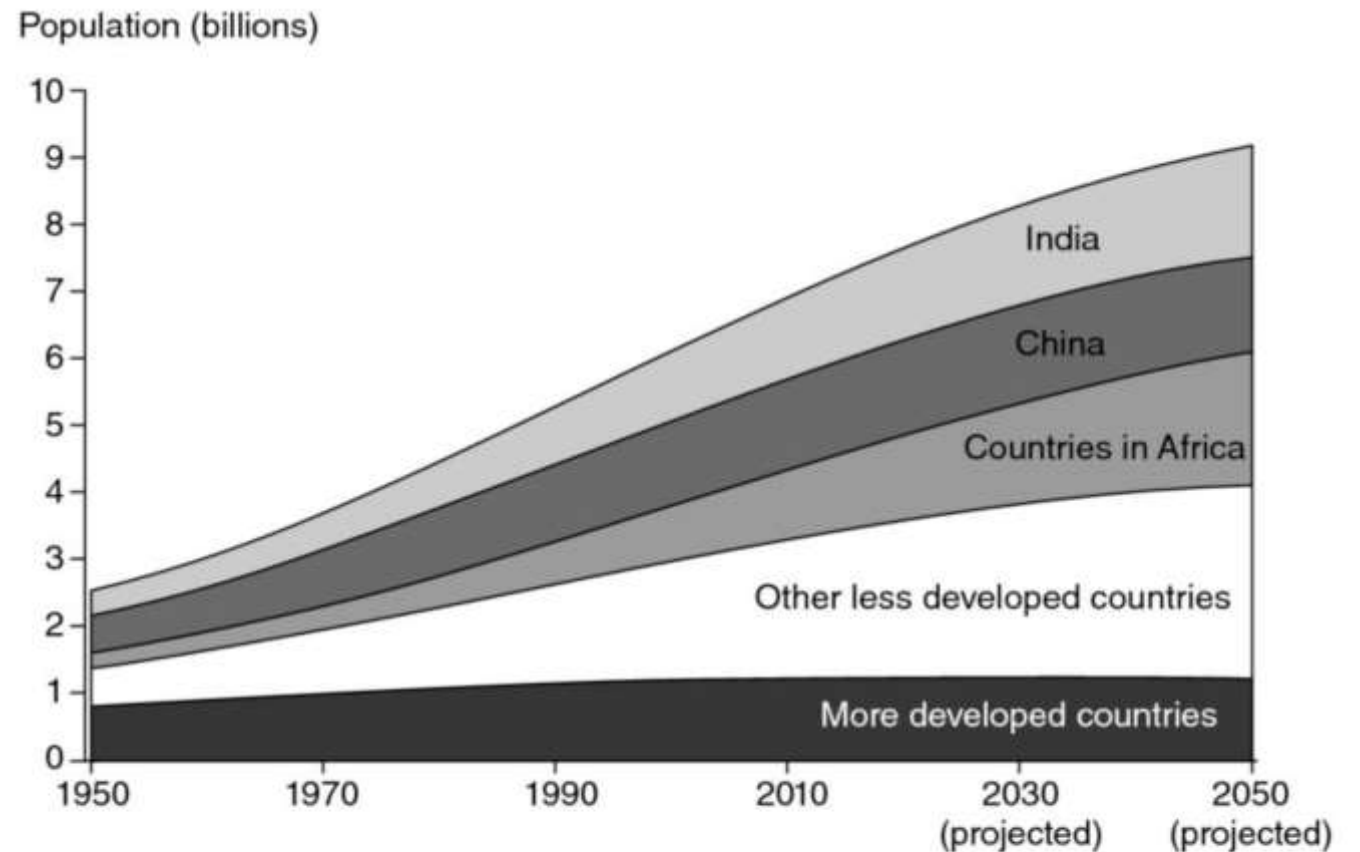


**Figure 1.1** Population growth from 8000 BCE to 2011 CE

Source: Based on data from Population Reference Bureau, 2010 World Population Data Sheet.



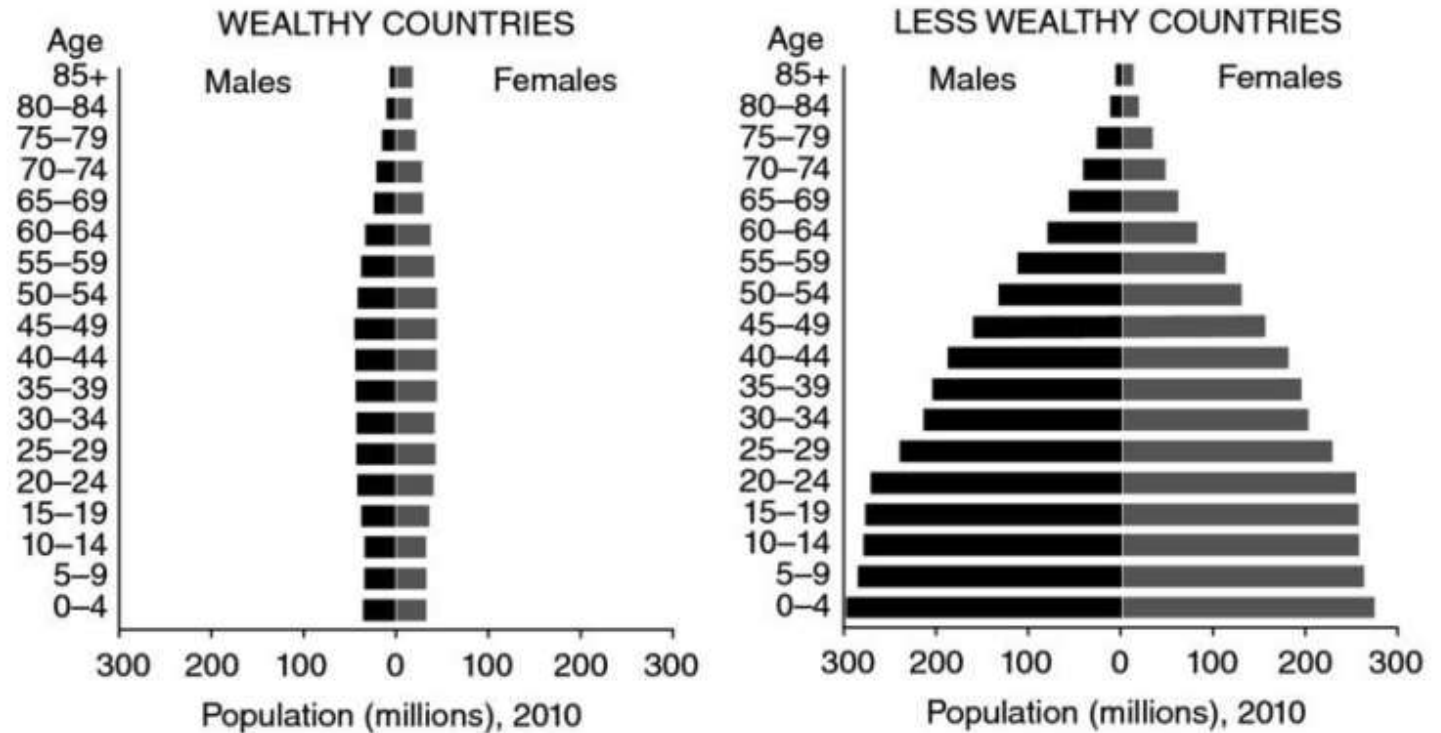
So far we have looked at when this growth took place. What happens when we introduce geography? Where is most of this growth concentrated?



**Figure 1.2** Economic differences in population growth, 1950–2050 (projected)

Source: UN Department of Economic and Social Affairs, Population Division, *World Population Prospects: The 2006 Revision, Medium Variant* (2007).

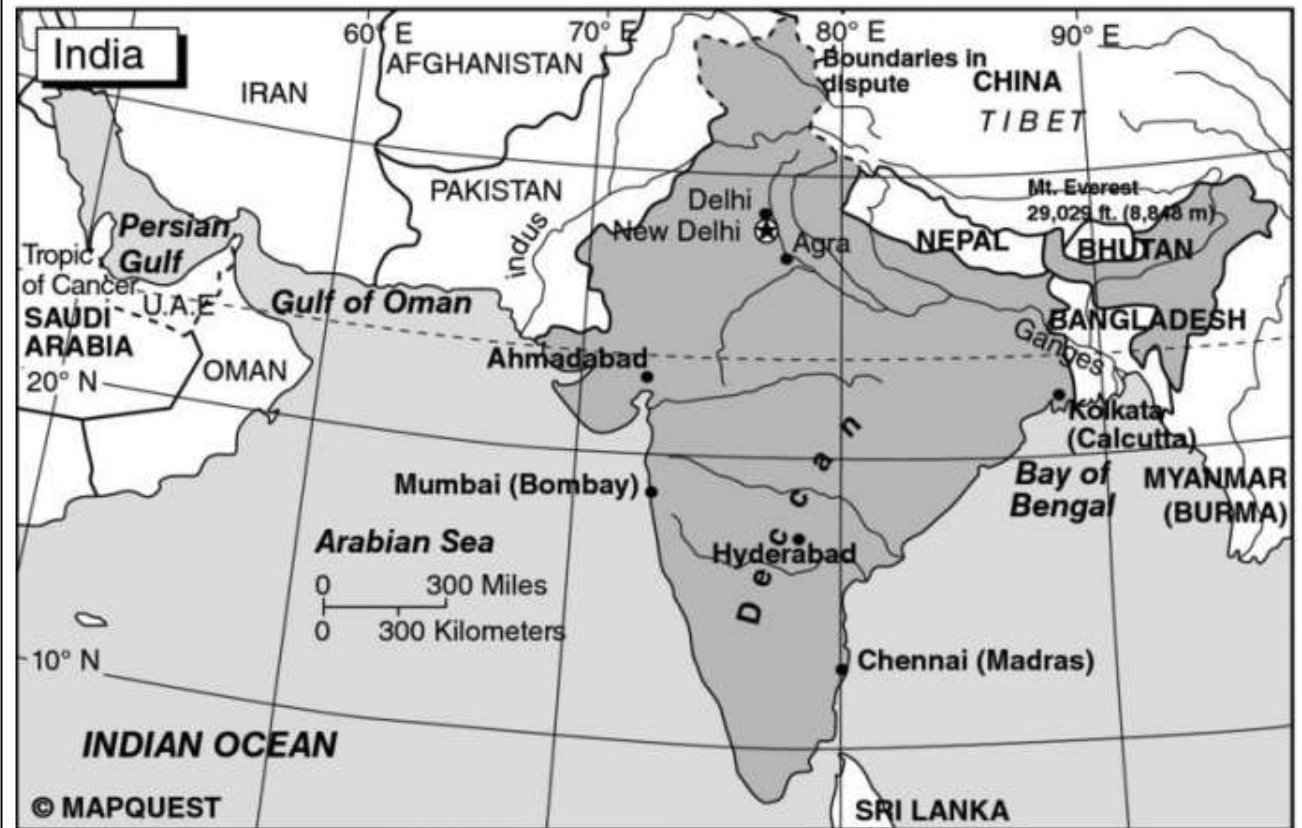
It is important to keep in mind that in countries with poorer service provision, children can be seen as a resource in and of themselves. Therefore pushing individuals in these countries to have more children. Of course, this is not the only factor. Social and cultural norms also play a role.



**Figure 1.4** Population by age and sex in different groups of countries, 2010 (projected)  
 Source: UN Department of Economic and Social Affairs, Population Division, *World Population Prospects: The 2008 Revision* (2009).



On pp. 12-13 of your reading the discussion turns to the gender demographics of this population growth and how it is determined by socio-cultural factors.



**Map 1.1** India

Many families in India, as in China, Korea, and a number of other East and South Asian countries, value sons because sons usually live with their parents after marriage and contribute to family income. Sons provide vital financial support to elderly or ill parents, who often have no other source of income. Traditionally daughters move away at marriage and transfer their allegiance to their husband's family. At least historically, parents would therefore expect less financial or emotional support from daughters after they leave home.

# Asia's Missing Millions: How Policy and Social Pressure Made Millions of Women Disappear

[The SIGI describes son bias](#) as unequal intrahousehold investments in caring for, nurturing, and allocating resources to sons and daughters reflecting the lower value given to girls. A family preference for sons over daughters can manifest itself in different ways, including higher mortality, worse health status, or lower educational attainment among girls

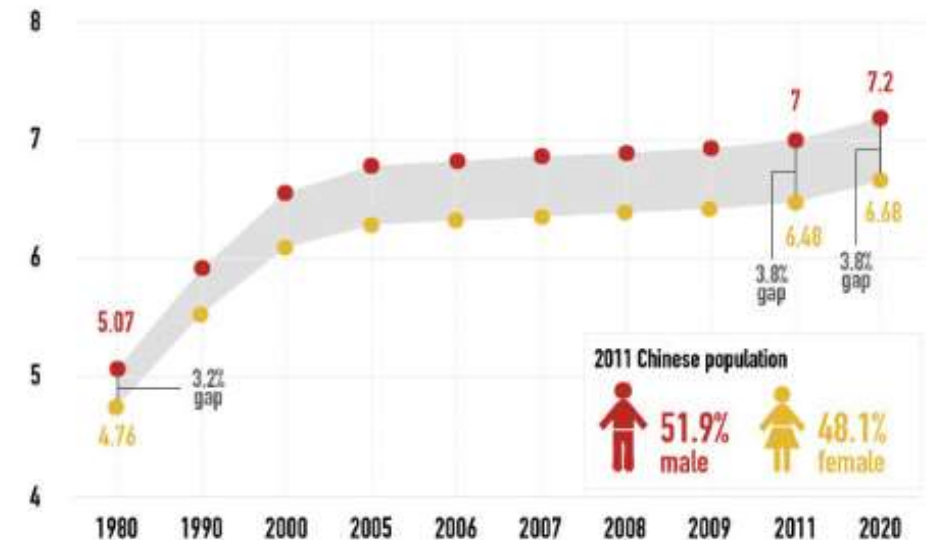


Shyam Sundar Paliwal swore that each time a girl child was born in the village, the community would plant 111 fruit trees in her honor. Shyam Sundar Paliwal (center in white) surrounded with women and girls from the village of Piplantri.

Source: CJ website at <https://tinyurl.com/ybs3xjmk>.

In 1990, Nobel Prize-winning Indian economist Amartya Sen noticed something remarkable. By his count, there were approximately 100 million “missing women” in Asia. They hadn’t been kidnapped or stolen or died as the victims of a female-specific plague or war . . . Yet a population equivalent to every single girl and woman in the United Kingdom, France, and Italy was missing. Using records collected by governments, Sen observed that there were far too few women relative to the number of men. He estimated that 100 million girls who should have been born, and grown into women, had simply never existed.<sup>1</sup>

## CHINA'S GENDER GULF (in hundred millions)



Source: United Nations Development Programme

Infographic from the United Nations Development Programme on the *Understanding Modern China* website at <https://tinyurl.com/yatdg8ha>.

”The vast majority of the global population will be in less wealthy countries. From 2013 to 2100 about one-half of the annual growth is expected to occur in eight countries – India, Nigeria, Ethiopia, United States, Democratic Republic of the Congo, Tanzania, Niger and Uganda.”

Main takeaway: population growth is not just taking place in general. Global demographics are changing in specific ways.

1. Population increase is far more rapid in certain countries. The ten that were listed on the last slide are an example of this.
- 2 (a) Within countries – rural to urban migration is increasing rapidly. Its rates mirror those of global population increase. (Take a look at the table on the following slide). By 2009, for the first time in human history, more people lived in urban areas in the world than in rural areas.
- 2 (b) This means that more and more people are living in substandard housing and in informal settlements as cities, particularly in the Global South, simply do not have the infrastructure and resources to support this immense population growth.



Look at the cities represented as the largest in 1990. What trends can we observe between 1990 and the (projected) biggest cities for 2030?

- that an increase in the rate of population growth in some cities is accompanied by a slow down (in that same rate) others.

**Table 1.2** Ten largest cities in the world, 1990, 2014, and 2030 (projection)

<b>Population in 1990 (millions)</b>		<b>Population in 2014 (millions)</b>		<b>Population in 2030 (projected) (millions)</b>	
Tokyo, Japan	32	Tokyo, Japan	37	Tokyo, Japan	37
Kinki M.M.A. (Osaka), Japan	18	Delhi, India	24	Delhi, India	36
New York-Newark, USA	16	Shanghai, China	22	Shanghai, China	30
Mexico City, Mexico	15	Mexico City, Mexico	20	Mumbai, India	27
São Paulo, Brazil	14	São Paulo, Brazil	20	Beijing, China	27
Mumbai, India	12	Mumbai, India	20	Dhaka, Bangladesh	27
Kolkata (Calcutta), India	10	Kinki M.M.A. (Osaka), Japan	20	Karachi, Pakistan	24
Los Angeles, USA	10	Beijing, China	19	Cairo, Egypt	24
Seoul, Republic of Korea	10	New York-Newark, USA	18	Lagos, Nigeria	24
Buenos Aires, Argentina	10	Cairo, Egypt	18	Mexico City, Mexico	23

Cities are formally called “urban agglomerations” in UN publications.

Source: Based on data from UN Department of Economic and Social Affairs, Population Division, *World Urbanization Prospects: The 2009 Revision*; *World Urbanization Prospects: The 2014 Revision, Highlights*.

# Causes of the population explosion (according to your main reading)

1. Agricultural revolution (which explains why the graph begins to change in about 8000 BCE). What does the agricultural revolution have to do with population?



Humans domesticated plants and animals, thus increasing their food supply.

Before the industrial revolution, this growth was still tempered by factors like disease and lack of access to diverse food sources (which lead to malnutrition).



# Continued: Causes of the population explosion (according to your main reading)

2. The industrial revolution. Generally understood as “waves” in which the first one involves the shift from agricultural production to manufacturing between 1760 and 1840. However, for this course, it is more useful to look at it as a longer process that unfolded through the 19<sup>th</sup> century and resulted in advances in industry, that were also used to push forward agricultural production and improve transportation. Why would this affect population?

Because it would produce improvement in living conditions. Do you agree with your reading?

And the condition of the working-class during this period? There was temporary improvement even for the great mass. But this improvement always was reduced to the old level by the influx of the great body of the unemployed reserve, by the constant superseding of hands by new machinery, by the immigration of the agricultural population, now, too, more and more superseded by machines.

A permanent improvement can be recognised for two “protected” sections only of the working-class. Firstly, the factory-hands. The fixing by Act of Parliament of their working-day within relatively rational limits has restored their physical constitution and endowed them with a moral superiority, enhanced by their local concentration. They are undoubtedly better off than before 1848. The best proof is that, out of ten strikes they make, nine are provoked by the manufacturers in their own interests, as the only means of securing a reduced production. You can never get the masters to agree to work “short time,” let manufactured goods be ever so unsaleable; but get the work-people to strike, and the masters shut their factories to a man.

Secondly, the great Trades’ Unions. They are the organisations of those trades in which the labour of *grown-up men* predominates, or is alone applicable. Here the competition neither of women and children nor of machinery has so far weakened their organised strength. The engineers, the carpenters and joiners, the bricklayers, are each of them a power, to that extent that, as in the case of the bricklayers and bricklayers’ labourers, they can even successfully resist the introduction of machinery. That their condition has remarkably improved since 1848 there can be no doubt, and the best proof of this is in the fact that for more than fifteen years not only have their employers been with them, but they with their employers, upon exceedingly good terms. They form an aristocracy among the working-class; they have succeeded in enforcing for themselves a relatively comfortable position, and they accept it as final. They are the model working-men of Messrs. Leone Levi & Giffen, and they are very nice people indeed nowadays to deal with, for any sensible capitalist in particular and for the whole capitalist class in general.

But as to the great mass of working-people, the state of misery and insecurity in which they live now is as low as ever, if not lower. The East End of London is an ever-spreading pool of stagnant misery and desolation, of starvation when out of work, and degradation, physical and moral, when in work....



PENGUIN CLASSICS

FRIEDRICH ENGELS

*The Condition of the Working Class in England*

The flipside of the argument presented in your reading. The image on the left is an excerpt from Engels’ book. The conclusion – population growth represented prosperity for some groups, but for more precarious groups, meant a decrease in the quality of life.

# Continued: Causes of the population explosion (according to your main reading)

3. By the mid 1940s the industrial revolution also pushes scientific innovation. More food and dramatic improvements in disease control are the outcome. However, can this be attributed to science alone?

It was only after WWII that you saw major improvements in life expectancy. What changed?

- Public health measures (including the use of vaccines). This was the result of better government intervention (the ability to make and implement policy that could be globally coordinated). This intervention helped coordinate the global control of diseases like smallpox, tuberculosis, yellow fever and cholera.

Leadership and governance was the most important factor identified in international collaboration between countries. In addition, knowledge and information sharing were seen to help avoid repetition of negative situations experienced in other countries. Moreover, controlling COVID-19 on a global scale is more likely to be achieved when there are sufficient structures and resources and when appropriate communication between countries, health systems and communities is used. This collaboration can also greatly benefit low- and middle-income countries where resources and expertise are often limited.

[Public Health](#). 2022 Nov; 212: 95–101.

Published online 2022 Sep 9. doi: [10.1016/j.puhe.2022.08.017](https://doi.org/10.1016/j.puhe.2022.08.017)

PMCID: PMC9458694

PMID: [36272205](https://pubmed.ncbi.nlm.nih.gov/36272205/)

### Factors influencing international collaboration on the prevention of COVID-19

[M. Hameed](#),<sup>a,\*</sup> [M. Najafi](#),<sup>b</sup> [S. Cheeti](#),<sup>c</sup> [A. Sheokand](#),<sup>d</sup> [A. Mago](#),<sup>e</sup> and [S. Desai](#)<sup>f</sup>

Case study: Control of COVID and international collaboration. (Peer reviewed article summary copied above).

- Challenges: the review piece found that while richer countries had committed more resources, they were not maintaining their commitments to equity.(This links to your recommended readings on climate change). Simultaneously, the authors of this piece found that the resource constraints of poorer countries limited their capacity building efforts to reduce COVID 19. In this case “capacity” refers to things like building immunization centres, having more staff to deal with this issue, building systems to reach out to citizens etc.

Does population growth contribute to poverty? (think back to your last lecture). Both are related, but getting international players to talk about them is always a political issue.

- Your reading gives the example of a 1974 conference held by the UN in Romania in which an argument broke out between rich and poor countries over whether the poorer countries needed more birth control measures or more economic development.
- At the end of this conference: both needed to be worked on together. Reducing population growth is not sufficient.
- Your reading then discusses three other conferences.
  1. The 1984 UN conference in Mexico City in which the US (under Reagan) pulled funding for population control because they said that private enterprise lead economic growth would do that automatically.
  2. In 1992 at the United Nations Conference on the Environment and Development, (Earth Summit at Rio) population was barely discussed because there was North South conflict over who was responsible for environmental destruction. The Vatican had also exerted pressure because the Catholic Church opposed contraceptives and abortion.
  3. International Conference on Population and Development held in 1994 in Cairo, Egypt. Vatican and conservative Islamic governments discussed abortion and sexual norms, but the conference agreed (and this was new) that women needed more autonomy for population to be managed. **Challenges:** However, limited resources and competing demands on those resources limited the priority given to population control programs.

### **Lowering fertility rates drastically in just 10–15 years – can it be done?**

The answer is yes it can be done. We know it can because countries such as Iran, Tunisia, and Algeria have done it under a four-part strategy:

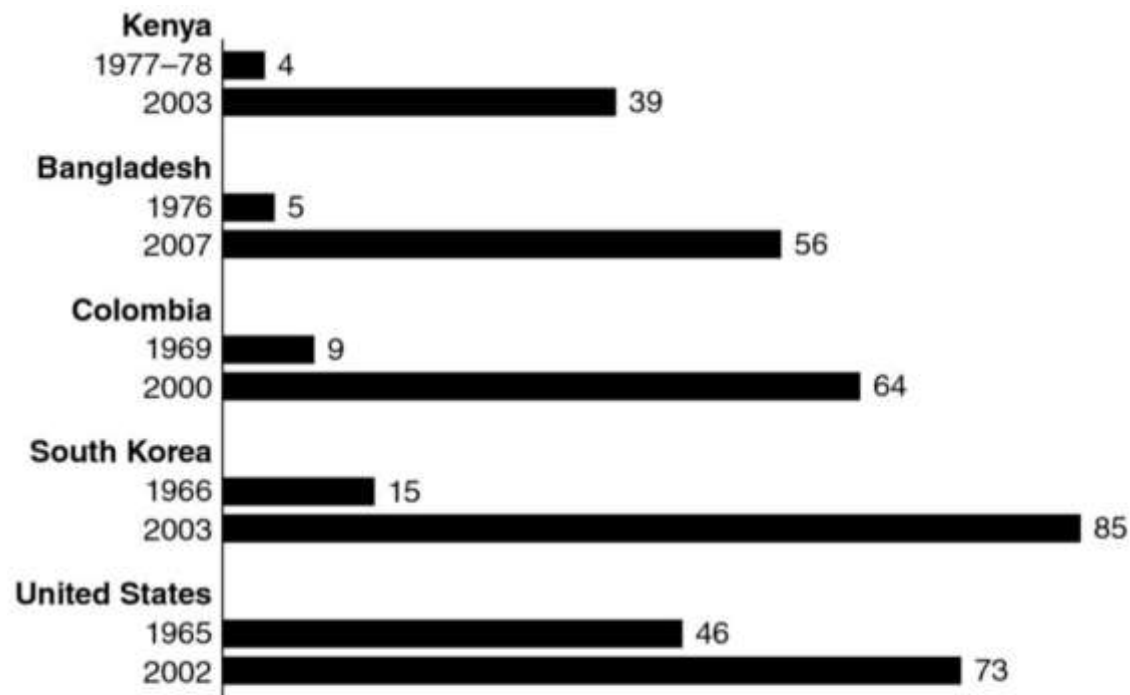
1. Promote child survival
2. Promote girls' education and gender equality
3. Promote availability of contraceptives and family planning, especially for the poor who cannot afford them
4. Raise productivity on the farm so mothers use scarce time in income-earning employment rather than childrearing

Source: Jeffrey D. Sachs, "Lower Fertility: A Wise Investment," *Scientific American*, 295 (September 2006), p. 42.

Use the case study describing how fertility rates were lowered in places like Iran, Tunisia and Algeria to explain their cause. What factors contribute to high birth rates?



Again, it is government policy and support for population control measures that really determines their success. However, forceful sterilization measures have produced political conflict and impinged on human rights.



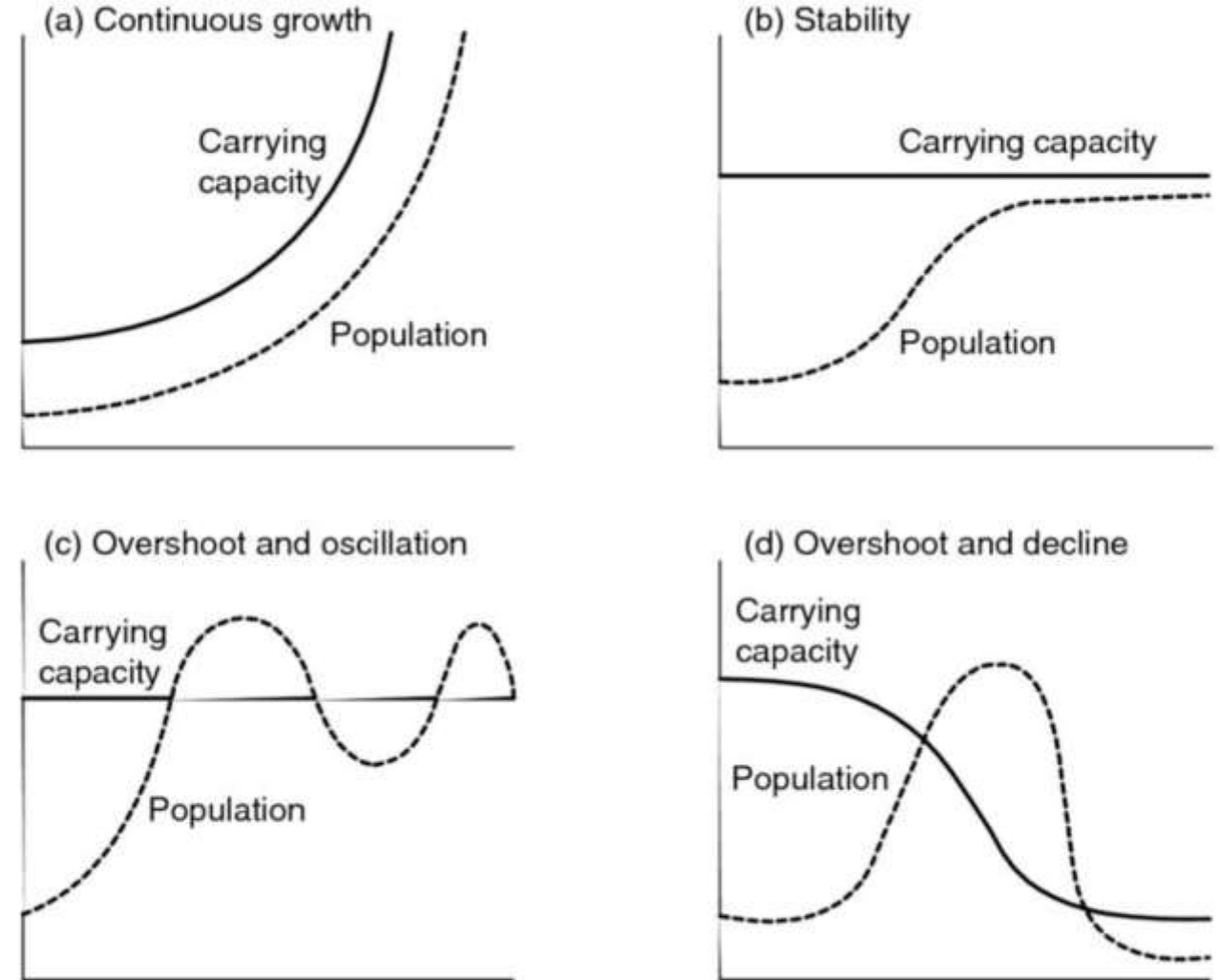
**Figure 1.9** Increases in modern contraceptive use in selected countries Percentage of married women aged 15–49 using a modern contraceptive method. US figures are for women aged 15–44. Modern contraceptives include sterilization, oral contraceptives, IUDs, condoms, diaphragms, Depoprovera, Norplant, and other barrier and chemical methods.



**Plate 1.5** Advertisement for contraceptives in Costa Rica

Source: George Shiflet.

The divergent perspectives of Paul Ehrlich (who believed that the “carrying capacity” of the Earth had already been exceeded) and Julian Simon (who believed that human ingenuity can infinitely increase this carrying capacity). This partially overlapped with the Marxist perspective (that more equitable distribution of resources would mean greater production). What perspective do you agree with?



**Figure 1.10** A growing population and carrying capacity

Your main reading was the chapter on population that we have just covered. The same book [John L. Seitz & Kristen A. Hite . *Global Issues: An Introduction*, 5<sup>th</sup> edition, (Wiley- Blackwell, 2016)] also has a chapter on Climate Change which the rest of the slides provide a summary of. You can read the whole chapter by following this link (you will have to sign in to the SFU library):

<https://ebookcentral.proquest.com/lib/sfu-ebooks/reader.action?docID=7104342&ppg=205>

So we have reached a position where the majority of the world is moving toward the cities especially in the global south...

### **Climate injustice**

The study found that, on average, more than one in three heat-related deaths can be pinned on climate change. But in some South American countries, Kuwait, Iran, and parts of southeast Asia, the human toll is much higher: as much as 77 percent in Ecuador, or 61 percent in the Philippines. This disparity emerges not just because these places are particularly hot, but because there is often less access to air conditioning, well-constructed housing that manages heat distribution better, and other factors that can lower people's vulnerability to heat.

## **The World's Fastest-Growing Cities Are Facing the Most Climate Risk**

A new UN report warns that rapid urbanization in Asia and Africa could expose billions of people to the impacts of global warming. But urban growth presents opportunities as well as threats.





One of the earliest factors, (that we discussed in this lecture), that contributed to population growth was an increase in the food supply. This chapter (on climate change) tells us that crop destruction will limit access to food for some people.

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An effort by the US government in 2000 to predict changes in food production in the country found that it was likely that crops would increase in the northern plains, where much of the country's wheat and corn is grown, but decrease in the southern states because of droughts and floods caused by heavy rains. The authors of the study admitted that many unknowns exist – for instance, they were unable to calculate the possible effects of flourishing weeds or migrating insect pests.<sup>[25](#)</sup>

# Political will and what is to be done?

At the 1992 conference, nations pledged to reduce their greenhouse gases to 1990 levels by 2000. This was not done. Can you explain why?

Similarly, the reading discusses the 1997 Kyoto agreement. This example is of setting a bad precedent. Can you explain why?

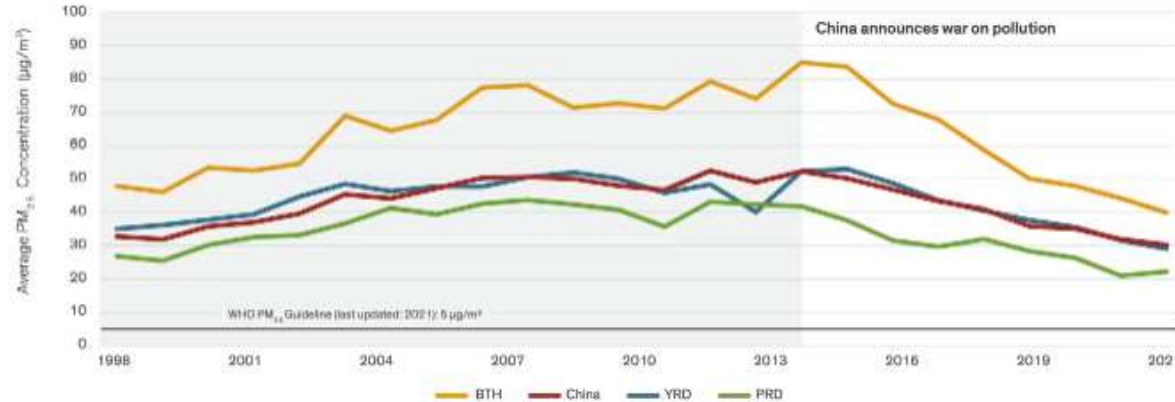
In 1997 many nations met at Kyoto, Japan, and agreed to a proposed treaty that did place legally binding limits on developed nations. No limits were placed on developing nations because they had historically produced few greenhouse gases and were making efforts to reduce their widespread poverty. The country-specific targets set in the 1997 treaty (called the Kyoto Protocol) meant that developed nations would reduce their greenhouse gas emissions by about 5 percent from their 1990 levels by 2008–12. As of 2014 the United States – the second largest annual producer of greenhouse gases (China is now the largest) – had still not ratified this treaty and there was no effort being made in the country to do so. The European Union did ratify it, and by 2002 the United Kingdom and Germany had reduced their emissions below their Kyoto targets. By 2005 enough nations had ratified the Kyoto Protocol to bring it into force. But by 2012 some high emitting countries such as Canada and Japan decided to withdraw from the treaty.



# Case study: air pollution. [source](#)

## China's efforts 'a remarkable success'

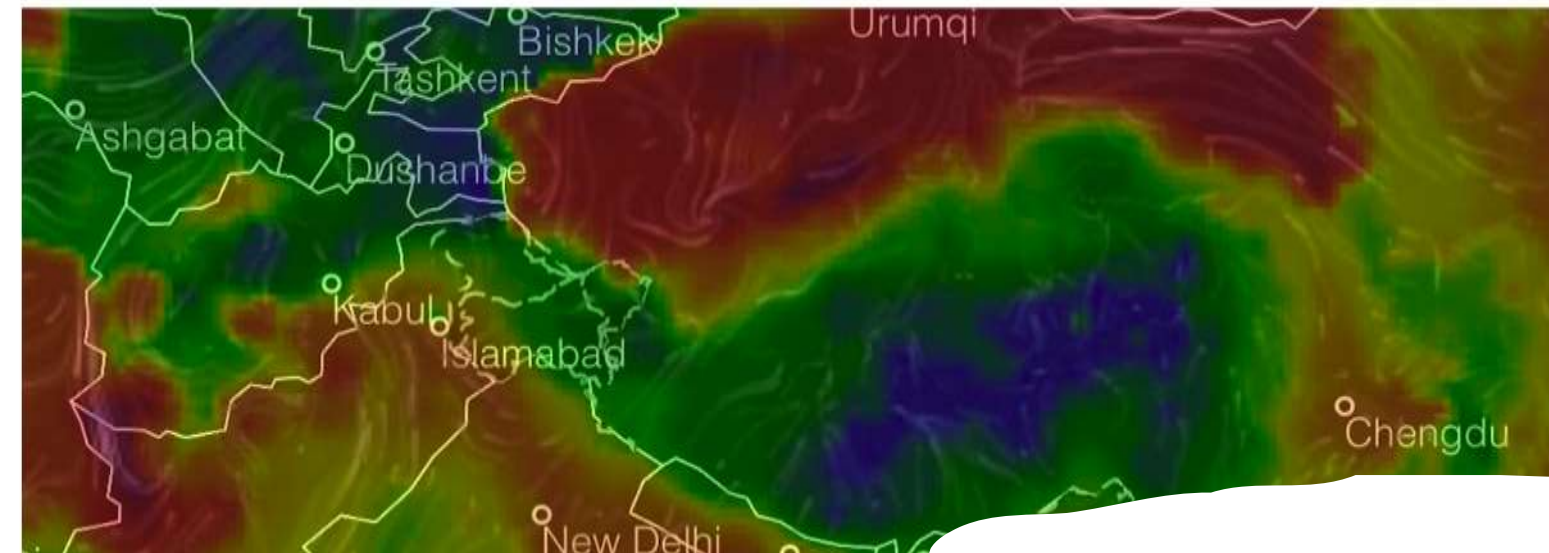
Across China, pollution levels in 2021 were down by 42.3 per cent compared to 2013 – the year before the country began its war on pollution – and the average Chinese citizen can expect to live 2.2 years longer because of the improvements in air quality, the report said. “In fact, the small decline in global pollution levels from 2013 to 2021 is entirely due to China’s progress,” it said.



Annual average PM<sub>2.5</sub> concentrations in major regions in Mainland China, 1998-2021. China has seen significant improvements in its air quality since launching a “war on pollution”. In the graph, PRD stands for Pearl River Delta, YRD stands for Yangtze River Delta and BTH stands for Beijing-Tianjin-Hebei. Source: [Air Quality Life Index 2023](#)

# 'Global epicentre for pollution': South Asia bears greatest health burden for dirty air

Can India follow in China's footsteps and bend the curve with its declared war on pollution? Latest data shows that political will and strong policies are needed to bring about air quality improvements.



ear face masks to protect themselves from toxic smog in Lahore before the government  
a four-day school shutdown [File: Arif Ali/AFP]



Thick, toxic smog blankets Delhi

3 days ago | 2:01

## This past week in South Asia

A concluding remark – to always look at systemic causes. From your recommended reading by Laleh Khalili – “What will ultimately determine...the future of the planet itself, will be popular politics, not formal meetings at beachside resorts.”

COP27 was held in the Egyptian resort town of Sharm El-Sheikh, at the tip of the arid Sinai Peninsula, just around the corner from the world's busiest shipping lane. Ursula von der Leyen showed up early to make deals for the European Union. She signed a contract to buy rare minerals from Kazakhstan; made a timber deal – presented as a plan for the ‘sustainable development and management’ of forests – with Congo, Guyana, Mongolia, Uganda and Zambia; bought hydrogen from Egypt, and lithium and cobalt from Namibia. Egypt's minister of petroleum and mineral resources signed seven memoranda of understanding with Bechtel, Shell, General Electric and others, covering things like the development of decarbonisation technologies and feasibility studies for producing ammonia. Egypt is setting up a carbon trade market in Africa, and Singapore was looking to buy carbon credits from Morocco (if you are a major emitter, you can buy carbon credits from a neutral emitter to offset your pollution). In side meetings, Caribbean engineers gave lessons on ways to secure funding from the Global Climate Fund and oil companies, and how to build carbon capture and storage units.

The whole thing took place in the vast grounds of the Tonino Lamborghini convention centre. The presidency occupied the permanent buildings and most of the rest of the conference was held in temporary structures. It's amusing that a climate change conference was held in a venue named after a gas-guzzling sports car, though for the duration of the conference it was rebranded as the