



GRADE 12 GEOGRAPHY

UNIT MODULE 2

URBANISATION AND INDUSTRIALISATION

12.2.1: DISTRIBUTION OF WORLD CITIES

12.2.2: INDUSTRIAL GROWTH

12.2.3: IMPACT OF INDUSTRIAL GROWTH



ACKNOWLEDGEMENT

We acknowledge the contributions of all Secondary Teachers who in one way or another have helped to develop this Course.

Our profound gratitude goes to the former Principal of FODE, Mr. Demas Tongogo for leading FODE team towards this great achievement. Special thanks to the Staff of the Social Science Department of FODE who played an active role in coordinating writing workshops, outsourcing lesson writing and editing processes, involving selected teachers of Central Province and NCD.

We also acknowledge the professional guidance provided by Curriculum and Development Assessment Division throughout the processes of writing, and the services given by member of the Social Science Review and Academic Committees.

The development of this book was Co-funded by GoPNG and World Bank.

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PRINCIPAL



Flexible Open and Distance Education
Papua New Guinea

Published in 2017

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ISBN: 978-9980-89-753-4

National Library Services of Papua New Guinea

Compiled and finalised by: Social Science Department-FODE

Printed by the Flexible, Open and Distance Education

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SECRETARY'S MESSAGE

Achieving a better future by individuals, students, their families, communities or the nation as a whole, depends on the curriculum and the way it is delivered.

This course is a part of the new Flexible, Open and Distance Education curriculum. The learning outcomes are student-centred and allows for them to be demonstrated and assessed.

It maintains the rationale, goals, aims and principles of the national curriculum and identifies the knowledge, skills, attitudes and values that students should achieve

This is a provision of Flexible, Open and Distance Education as an alternative pathway of formal education.

The Course promotes Papua New Guinea values and beliefs which are found in our constitution, Government policies and reports. It is developed in line with the National Education Plan (2005 – 2014) and addresses an increase in the number of school leavers which has been coupled with a limited access to secondary and higher educational institutions.

Flexible, Open and Distance Education is guided by the Department of Education's Mission which is fivefold;

- to facilitate and promote integral development of every individual
- to develop and encourage an education system which satisfies the requirements of Papua New Guinea and its people
- to establish, preserve, and improve standards of education throughout Papua New Guinea
- to make the benefits of such education available as widely as possible to all of the people
- to make education accessible to the physically, mentally and socially handicapped as well as to those who are educationally disadvantaged

The College is enhanced to provide alternative and comparable path ways for students and adults to complete their education, through one system, many path ways and same learning outcomes.

It is our vision that Papua New Guineans harness all appropriate and affordable technologies to pursue this program.

I commend all those teachers, curriculum writers and instructional designers, who have contributed so much in developing this course.

UKE KOMBRA PhD

Secretary for Education



Below are the steps to guide you in your course study.

STUDY GUIDE

- Step 1: Start with Heading 12.2.1, study the first sub-heading notes and do the Learning Activities as you go along. Turn to the back of your module to correct the answers of your learning activities.
- Step 2: When you have completed the first sub-heading notes, then, you can move on to the next sub-heading. Continue to do the Learning Activities as you go along. Turn to the back of your module to correct the answers of your learning activities.
- Step 3: If you make any mistake, go back to the notes in your module and revise the notes well and try to understand why you gave an incorrect answer.
- Step 4: Go to Topic 12.2.2 and repeat the same process in step 2 and step 3 until you complete the five headings.
- Step 5: After completing your five headings, go to your Assessment Book and complete each Assessment Task in the Assessment Book.
- Step 7: Check your answers in the Assessment Book again, and when you are satisfied, submit your Assessment Book to your Provincial Centre for marking.

Study Schedule

Here is a sample study schedule that you can follow. It is just a guide to help you plan your work.

WEEKS	HEADING	ASSESSMENT NUMBER	ASSESSMENT TYPE	MARK
1-2	1	Assessment Task 1	Test	20 marks
3- 4	1	Assessment Task 2	Test	20 marks
5- 6	2	Assessment Task 3	Test	20 marks
7-8	2	Assessment Task 4	Test	20 marks
9-10	3	Assessment Task 5	Assignment	20 marks
THE COMPLETED ASSESSMENT BOOK MUST BE SUBMITTED TO YOUR PROVINCIAL COORDINATOR FOR MARKING.				TOTAL: 100 marks

All the best and enjoy your studies with FODE.



UNIT MODULE 12.2: URBANISATION AND INDUSTRIALISATION

Introduction

Welcome to Unit Module 12.2. In this unit, you will learn about the historical perspective of urban growth, which has set the pace for different theories of urban place. You will gather information on urbanisation as a vehicle that generates economic growth, and creates an avenue for urban places to be seen as centres of great social and cultural diversity. As urban places continue to evolve, the structures and functions of parts of them are changing. Hence, in this unit we will examine, identify, compare and explain the location of industries and their impact. We will also analyse and describe the basic concepts in urbanisation and industrialisation.



Objectives or Aims

On successful completion of this module, students will be able to:

- Explain and analyze factors influencing population change and its effect on the environment
- Compare and contrast the factors that influence urbanization and industrialization
- Demonstrate an understanding of key geographical concepts and ideas
- Choose and apply a range of geographical skills
- Communicate geographical information, ideas and issues using appropriate written and/or oral, cartographic and graphic forms



Time Frame

This unit should be completed within 10 weeks.

If you set an average of 3 hours per day, you should be able to complete the unit comfortably by the end of the assigned week.

Try to do all the learning activities and compare your answers with the ones provided at the end of the unit. If you do not get a particular exercise right in the first attempt, you should not get discouraged but instead, go back and attempt it again. If you still do not get it right after several attempts then you should seek help from your friend or even your tutor. Do not pass any question without solving it first.



TOPIC 12.2.1: DISTRIBUTION OF WORLD CITIES

Introduction

Welcome. This is Topic 12.2.1. This is the first topic of Unit 2 on Urbanization and Industrialization. Therefore, we will be discussing the distribution of the world cities, urbanization and urban growth, challenges of cities in the developing countries and relating these discussions to two Case Studies.



Objectives or Aims

On successful completion of this topic, the students will:

- Define cities towns, mega cities, urbanization and urban growth.
- Discuss the distribution of ancient cities and the conditions that attracted people to these cities.
- Identify and discuss factors that contribute to urbanization and high urban growth rates.
- State the social, economic and environmental impacts of high urban growth rates in developing and developed countries.
- Explain challenges of cities in the developing countries.



12.2.1.1: The First Cities in the World

Introduction

This is the first Subtopic of Topic 1 Unit 2. We will be discussing the first cities in the world, their spread and growth into important centers of economic development, business, trade and politics. The first thing we do is to learn some very basic concepts that will help us relate well in our study of the Unit. I will take you back to review the meanings of the following terms: settlements, towns, cities, conurbation, megalopolis, mega cities and urbanization.

Settlement

Settlement is a place where a group of people live, usually in one place or location. Settlements can be small or large, ranging in size from a few dwellings, through to villages, towns and cities. A **rural settlement** refers to all the villages, farmhouses, hamlets and other dispersed settlements whose people are mainly engaged in agriculture. On the other hand, an **urban settlement** refers to towns, cities or conurbations. A town today is often a center of administration, banking, commerce and education. Settlements are part of the 'built environment' which human add to the land surface.

A **town's** population would be over several hundred thousand people but varies with the population density and from place to place. **Cities** are the main towns in a country and would have more people than towns while **conurbation** refers to a region comprising of a number of cities, large towns, and other urban areas that, through population growth and physical expansion, have merged to form one continuous urban and industrially developed area.



Figure 1.1: Tokyo in Japan is the world's largest

A **megacity** is usually defined as a metropolitan area with a total population in excess of ten million people. A megacity can be a single metropolitan area or two or more metropolitan areas that converge. A **metropolitan area**, sometimes referred to as a **metro area** or **metro**, which is a region consisting of a densely populated urban core and its less-populated surrounding territories, sharing industry, infrastructure, and housing.

A conurbation should also be contrasted with a **megalopolis**, where the urban areas are close but not physically bordering and where the merging of labour markets has not yet developed. A **megalopolis** or **mega region** is typically defined as a chain of roughly adjacent metropolitan areas or a clustered network of cities as in USA and South East Japan. It would usually have a population of 25 million people.



Take a look at the table and map below. They show an example of Megalopolis in the United States.

TABLE 1. MEGALOPOLIS IN NORTHEAST USA

Combined Statistical Areas (CSAs) within the Northeast Megalopolis	Rank (U.S.)	Combined Area (CSA)	Statistical	Census 2000	Census 2010	Growth 2000s
	1	New York-Newark-Bridgeport, NY-NJ-CT-PA CSA		21,361,797	22,085,649	+3.39%
	4	Washington-Baltimore-Arlington, DC-MD-VA-WV-PA CSA		7,572,647	8,572,971	+13.21%
	5	Boston-Worcester-Manchester, MA-RI-NH CSA		7,298,695	7,559,060	+3.57%
	8	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD CSA		6,207,223	6,533,683	+5.26%
	Total			42,440,362	44,751,363	+5.45%

On the map below, the Northeast Megalopolis appears almost as a straight line.

The Northeast Megalopolis (also called **Boston-Washington Corridor** or **Bos-Wash Corridor**) is the most heavily urbanized region of the United States, running primarily northeast to southwest from the northern suburbs of Boston, Massachusetts, to the southern suburbs of Washington, D.C. in Northern Virginia. It includes the major cities of Boston, New York City, Philadelphia, Baltimore, and Washington, D.C., along with their metropolitan areas and suburbs as well as many smaller urban centres.



Figure 1.2: Northeast Megalopolis in United States

As of the year 2000, the region supported 49.6 million people, which was about 17 percent of the U.S. population on less than 2 percent of the nation's land area. It has a population density of 931.3 people per square mile (359.6 people/km²), compared to the U.S. average of 80.5 per square mile (31 people/km²). The 2050 projections expect the area to grow to 58.1 million people by 2025.



You have just learnt the meanings of urbanization concepts. In the next segment of the subtopic we will look at how ancient cities came about.

The Formation and Distribution of Ancient Cities

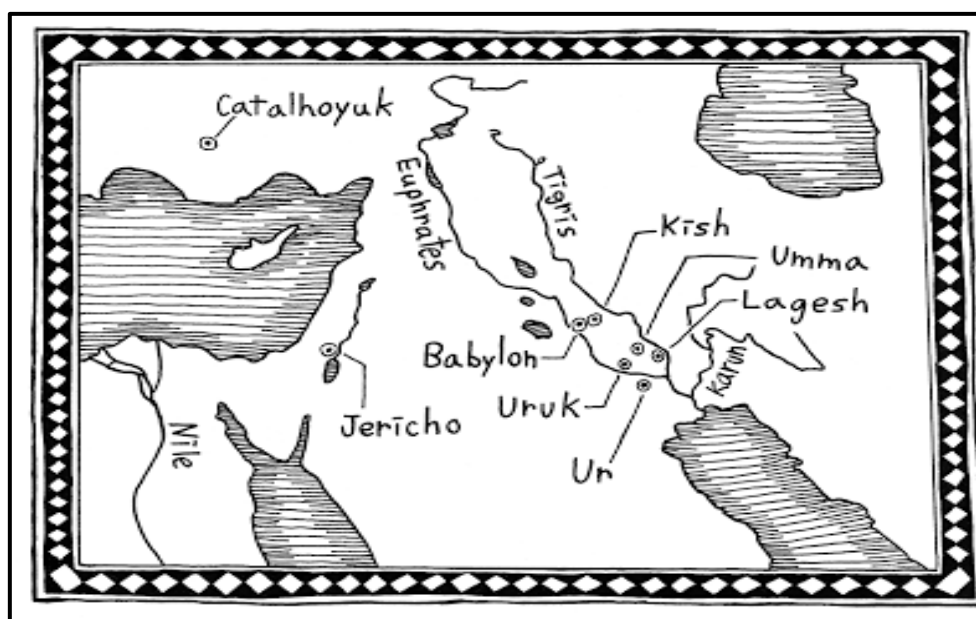
It was not only with the invention of farming that people began to stay in one place. Even tens of thousands of years ago, when people lived only by hunting and gathering, some of the caves and villages they lived in show signs of having been inhabited for many generations. However, in those days, settlements were always very small. If too many people lived in one place, it became hard to gather and hunt enough food to feed everybody. Therefore, the group would divide and some people would go looking for new land.

As people started to keep herds of sheep, goats and cattle, and raise crops of wheat, barley and lentils, it became possible for them to live in larger groups. Instead of being too many mouths to feed, more neighbours meant more people to help work in the fields and watch over the animals.

Ancient or very early cities were notable for their geographical diversity in form and function. Early urbanization was believed to be the result of economic activities, political capitals, trade centers and religious activities. Some cities were sparsely populated while others had large dense populations. Some ancient cities grew to be powerful capital cities and centers of commerce and industry, situated at the centers of growing ancient empires. Examples include Alexandria and Antioch of Hellenistic civilization, Carthage and ancient Rome and its successor Constantinople (later called Istanbul).

The map below shows one of the largest of these early villages called Çatalhöyük [cha-tal-hu-yuk]. It stood in what is now central Turkey. People lived in Çatalhöyük for nearly two thousand years, from 7,400 to 5,700 B.C. It was probably the largest single settlement in the world at that time, with as many as 10,000 people living there.

MAP OF EARLY CITIES





Around the eastern Mediterranean in the areas where farming was invented, people began to build villages with houses made of mud bricks.

Early cities developed in a number of regions, from Mesopotamia to Asia to the Americas. The very first cities were founded in Mesopotamia after the Neolithic Revolution. This was around 7500 BC. Mesopotamian cities included Eridu, Uruk, and Ur. Early cities also arose in the Indus Valley and ancient China. Among the early World cities, one of the largest was Mohenjo-Daro, located in the Indus Valley (present-day Pakistan). It existed from about 2600 BC, and had a population of 50,000. In the ancient Americas, the earliest cities were built in the Andes and Mesoamerica and flourished between the 30th century BCE (Before Common Era) and the 18th century BC.

BC refers to Before Christ, an epoch used in dating years prior to the estimated birth of Jesus. Old World refers to the known world before the discovery of the Americas

From the development of the earliest cities in Mesopotamia and Egypt until the 18th century, an equilibrium existed between the vast majority of the population who engaged in subsistence agriculture in a rural context, and small centres of populations in the towns. Towns have economic activity consisted primarily of trade at markets and manufactures on a small scale. Due to the primitive and relatively stagnant state of agriculture throughout this period the ratio of rural to urban population remained at a fixed equilibrium.

DISTRIBUTION OF ANCIENT CITIES OF GREECE



With the onset of the agricultural and industrial revolution in the late 18th century, this relationship was finally broken and an unprecedented growth in urban population took place over the course of the 19th century. This growth was due to continued migration from the countryside and the tremendous demographic expansion that occurred at that time. In England, the urban population jumped from 17 percent in 1801 to 72 percent in 1891 (for



other countries the figure was; 37 percent in France, 41 percent in Prussia and 28 percent in the United States).

The civilization of Ancient Greece was one of the most brilliant in world history. The civilization of Ancient Greece emerged into the light of world history in the 8th century BC. Normally it is regarded as coming to an end when Greece fell to the Romans, in 146 BC. However, major Greek (or "Hellenistic", as modern scholars call them) kingdoms lasted longer than this. As a culture (as opposed to a political force), Greek civilization lasted longer still, continuing right to the end of the ancient world.

Why Did Cities Form in the First Place?

There is insufficient evidence to state what conditions gave rise to the first cities, but some thinkers have speculated on what they consider as pre-conditions and basic mechanisms that could explain the rise of cities. Agriculture is believed to be a prerequisite for cities, which help preserve surplus production and create economies of scale. It is believed that cities were first formed after the **Neolithic Revolution** with the spread of agriculture.

With the adoption of farming, hunters and gatherers began to abandon their nomadic lifestyles and settled near others who lived by agricultural production. Agriculture yielded more food, which made it possible to feed a larger population and this encouraged and supported the development of cities. Population became settled in one place and food surplus that required storage led to *trade*.

These conditions seem to be important prerequisites for city life. Many philosophers believe that agriculture preceded the development of cities and led to their growth. A good environment and strong social organization is two necessities for the formation of a successful city. A good environment includes clean water and a favorable climate for growing crops. A strong social organization helps work together in times of need. It further allows people to develop various functions to assist in the future development of the city. Without these two conditions, as well as advanced agricultural technology, a newly formed city is not likely to succeed.

NEOLITHIC REVOLUTION or Neolithic Demographic Transition, sometimes called the **Agricultural Revolution**, was the world's first historically verifiable revolution in agriculture
TRADE is the action of buying and selling goods and services.

Cities may have had other advantages too. For example, cities reduced transport costs for goods, people and ideas by bringing them all together in one spot. By reducing these transaction costs, cities contributed to work productivity. It is also believed that in ancient times, cities also provided protection for people and the valuable things they were beginning to accumulate. Some philosophers believe that people may come together to form cities as a form of protection against prowling barbarian armies.

Basically, we have seen that ancient cities developed and grew because of a number of conditions. When settled or sedentary farming developed in many parts of the world, plants and animals were domesticated and people moved away from being nomadic and settled in

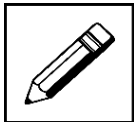


one place. Farming supplied enough food for people to feed themselves so they were able to stay in one place. Cities began to grow and evolve.

The location of the ancient towns and cities were closely tied to places that can fulfill the basic human needs for shelter, good and abundant supply of food and fresh water for drinking, washing and watering animals. Other resources to provide a livelihood include pleasant climate, good transport links and defense of territory also played a part in decisions on where to locate early cities.

Because of change over time and improved technology in transport, engineering and environmental management, it may be difficult to find the original factors that influenced where towns and cities were established.

Now do learning activity 1 below.



Learning Activity 1

1. Distinguish between rural and urban settlement.

2. What is the important prerequisite or condition for the formation of early cities?

3. Explain how the condition stated in Question 2 helped in the formation of early cities.

4. Discuss two conditions necessary for a successful city.

CHECK YOUR ANSWERS AT THE END OF THE UNIT SUMMARY



12.2.1.2: Urbanisation and Urban Growth

Introduction

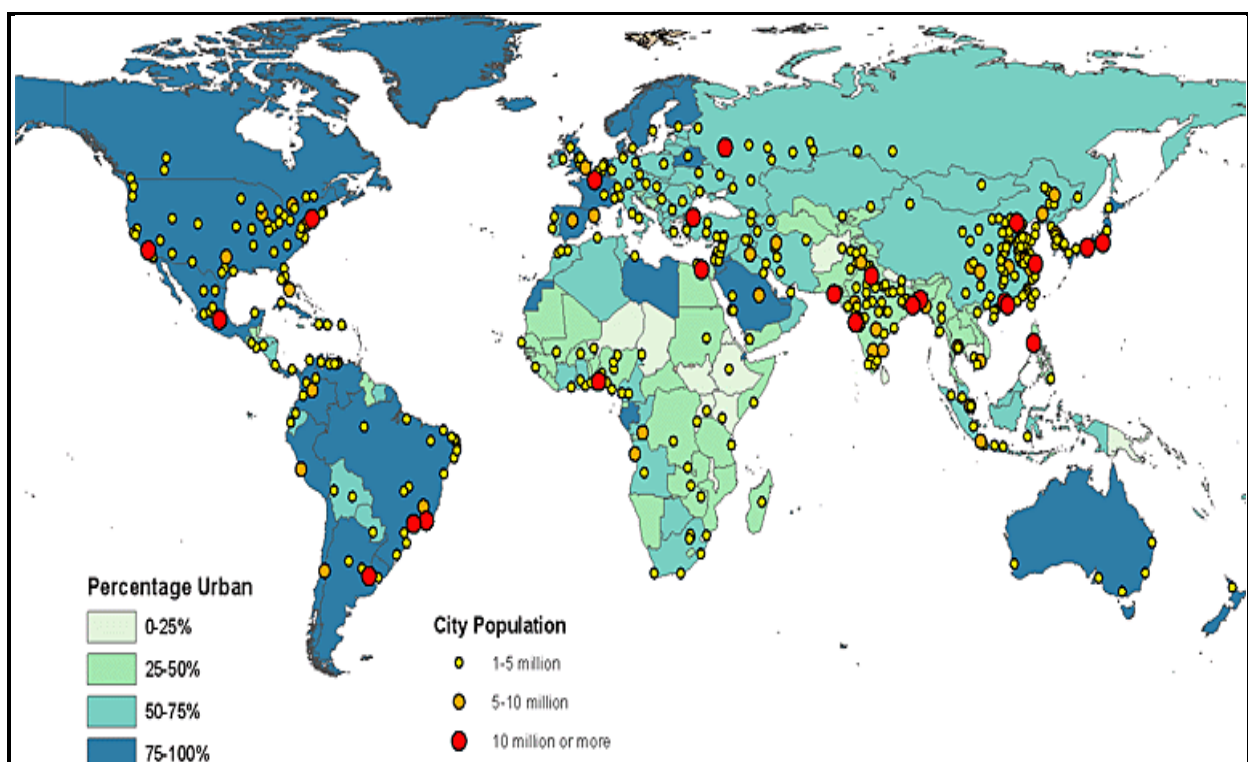
Welcome to Subtopic 2 of Topic 1. You will learn about urbanisation and urban growth in this topic.

What is Urbanization?

Can you see another word in Urbanization? You are correct if you said 'urban'. Therefore **Urbanization** is to do with towns and cities and refers to the process by which the proportion of a country's population in urban area increases. The word proportion in this definition is very important because it indicates that we must judge urbanisation by looking at both the numbers of people living in rural and urban areas. For the first time ever in the history of mankind it is now estimated that more people live in towns and cities than in rural areas. We are now saying that, increasing number of people migrates from rural to urban areas especially in developing countries to live in towns and cities. It mainly results in the physical growth of urban areas, be it horizontal or vertical. The United Nations projected that half of the world's population would live in urban areas at the end of 2008. By 2050 it is predicted that 64.1percent and 85.9percent of the developing and developed world respectively will be urbanized.

Take a look at the map below which shows global urbanisation rates.

WORLD URBANISATION RATES-BY UNITED NATIONS IN 2011

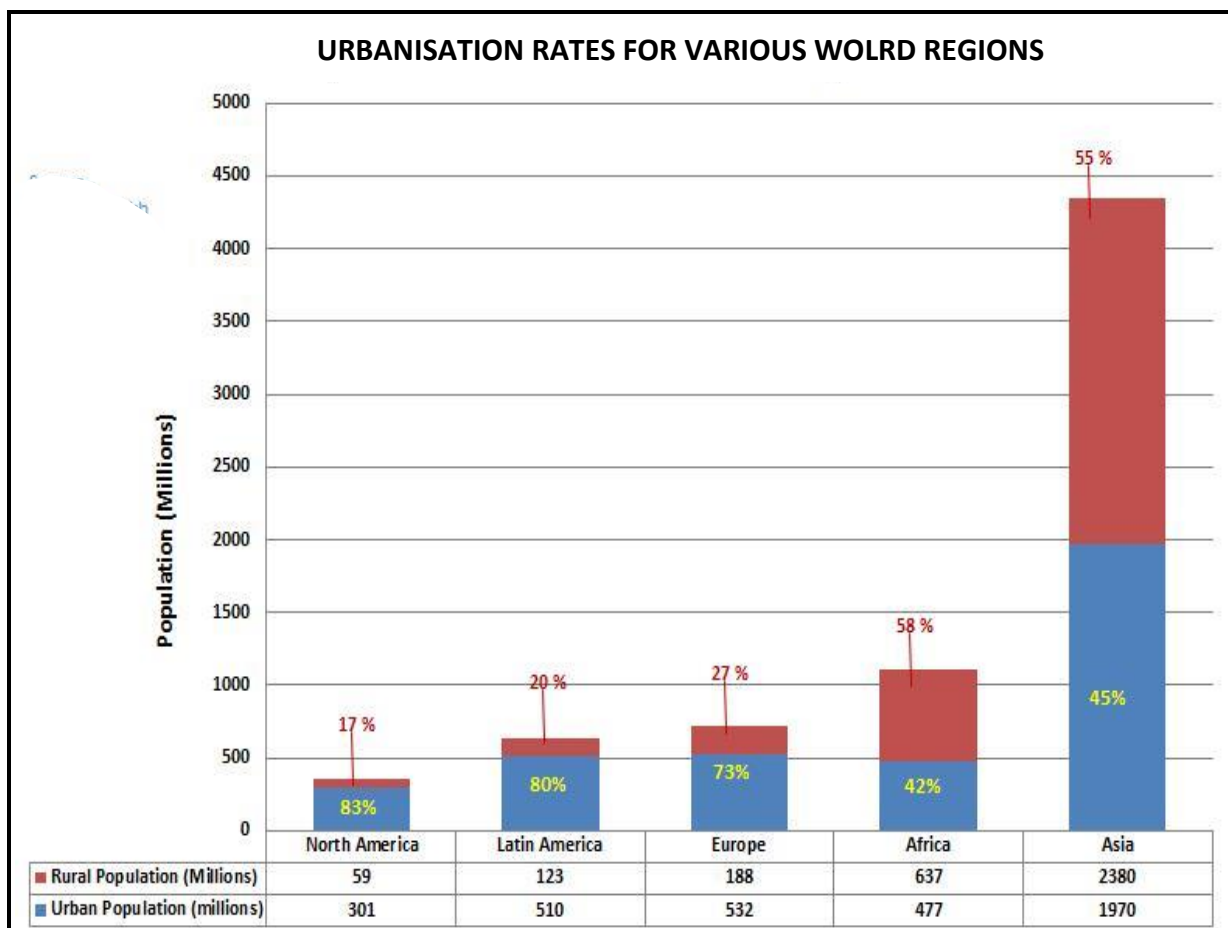




Urbanization is closely linked to modernization, industrialization, and the sociological process of rationalization. It can also represent the level of urban development relative to overall population, or it can represent the rate at which the urban proportion is increasing. It is not simply a modern phenomenon, but a rapid and historic transformation of human social roots on a global scale, whereby rural culture is being rapidly replaced by mainly urban culture.

According to the Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2010 Revision* and *World Urbanization Prospects*, PNG's population is 7,645,000 in the last census. Of this, 977,000 are urban dwellers. This figure could be an underestimation because many squatter settlers in urban centres are not always available for census in cities like Port Moresby.

The graph below shows that Asia has the highest rates of urbanisation. Most developed countries have low rates of urbanisation.



Source: <http://news.bbc.co.uk/1/shared/spl/hi/world/06/urbanisation/html/urbansiation.stm>

What is Urban Growth?

Urban growth is the rate of growth of an urban population. It is the actual number of people of which a city or town's population grows whereas urbanization is the process of changing from rural to urban.

There were the two periods of rapid urbanisation in time and space.

1. During the 19th century, in what are now referred to as the economically more developed countries, industrialization led to a huge demand for labor in mining and manufacturing centers. Urbanization was, in these parts of the world, a consequence of economic development.
2. Since the 1950's, in the less economically developed countries, the twin processes of migration from rural areas and the high rate of natural increase in population have resulted in the uncontrollable growth of cities. Urbanization in developing countries is a consequence of population growth and is not, as previously believed, an integral part of development.

In 1950, there were 83 cities with population exceeding one million. By 2007, this number had risen to 468. The UN forecasts that today's urban population of 3.2 billion will rise to nearly 5 billion by 2030, when three out of five people will live in cities. This increase will be most dramatic on the least-urbanized continents of Asia and Africa. Surveys and projections indicate that all urban growth over the next 25 years will be in developing countries. One billion people which is almost one-seventh of the world's population now live in shanty towns. In many poor countries overpopulated slums exhibit high rates of disease due to unsanitary conditions, malnutrition, and lack of basic health care. By 2030, over 2 billion people in the world will be living in slums. Over 90 percent of the urban population of Ethiopia, Malawi and Uganda, three of the world's most rural countries, already live in slums.



Figure 1.3: Overcrowding and traffic congestion in Lagos, Nigeria - an expanding population does not tell the whole story about migration to and from Africa's urban centres.



SLUMS are distinguished from SHANTY TOWNS in that the latter initially are low-class settlements, where as slums are generally constructed early on as relatively affluent or possibly prestigious communities. The term "shanty town" also suggests that the dwellings are improvised shacks, made from scrap materials, and usually without proper sanitation, electricity, or telephone services.

Simultaneous with urbanization has been the growth of very large cities. By 2025, Asia alone will have at least 10 megacities, including Mumbai, India (31.7 million people), Shanghai, China (32.4 million), Delhi, India (39.5 million), Tokyo, Japan (39.3 million people) and Seoul, South Korea (31.2 million people). Lagos, Nigeria has grown from 300,000 in 1950 to an estimated 12.5 million today.

In contrast, the only cities in the world with a population exceeding 1 million in 1900 were London and Paris. According to the United Nations, there were 70 large cities exceeding 1 million in 1950 and 410 in 2005. Most of these cities are in developing countries including China. 48 had a population of over 5 million with 18 million in the **megacities** exceeding 10 million.

During the last one hundred years the world's population has grown rapidly. As well as the growth in population, there has been an even more rapid growth in urbanization.

How fast is the numbers of people in towns and cities increasing in the world? Well, one estimate suggests that about 3 percent of the world's population were urban dwellers in the 1800? According to the United Nations estimates, this figure has risen to 50 percent (2008) and this is further predicted to rise to 60 percent before 2025. Today, about half of the world's population live in cities. As the world's population grows, so do the size and number of its cities. The world's biggest cities such as Tokyo and New York have more people than the entire population of Australia.

Cities are centres of business and employment. They attract people from rural areas looking for jobs and better opportunities. In large cities, such as Sao Paolo in Brazil, many new dwellers cannot afford housing. They are forced to build temporary homes from scrap materials in shanty towns on the edge of the city.

In the following pages, you will find some photographs of Shanty Towns which are characteristics of cities in LEDCs (Less Economically Developed Countries).



Figure 1.4 a: A shanty town in Jakarta, Indonesia

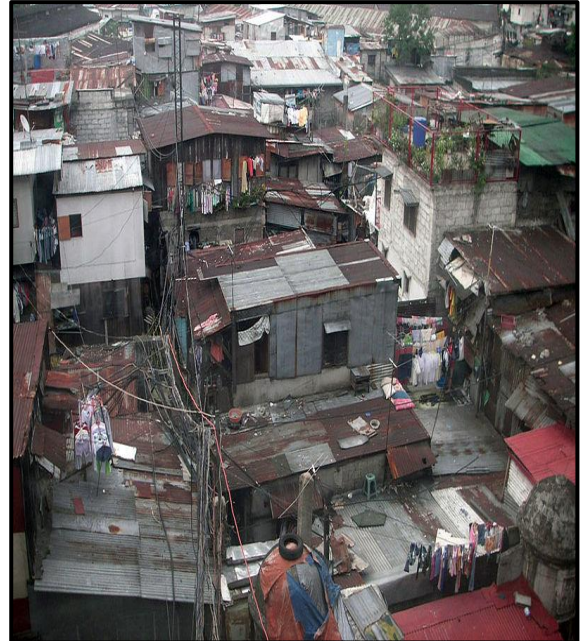


Figure 1.4 b: A shanty town in Manila, beside the Manila City Jail.



Figure 1.4 c: Shanty towns sometimes have an active informal economy, such as garbage sorting, pottery making, textiles and leather works. This allows the poor to earn a livelihood. The above shanty town image is from Ezbet Al Nakhl, in Cairo Egypt, where garbage is sorted manually. Residential area is visible at the top of the image.

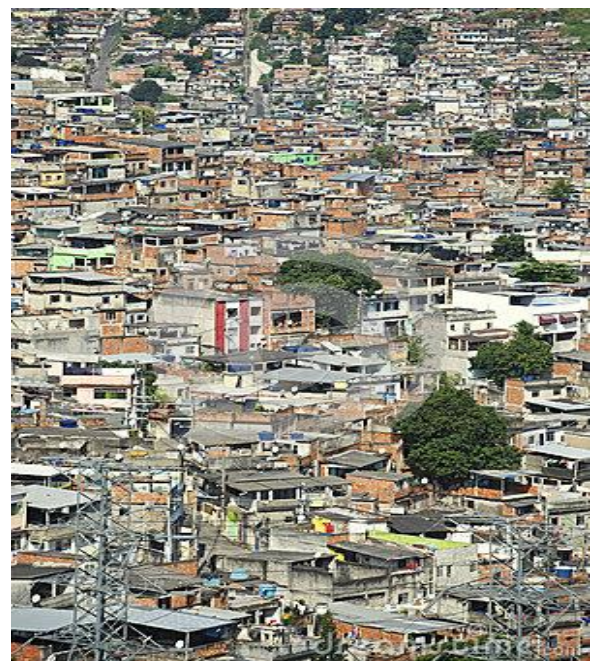


Figure 1.4 d: Crowded Brazilian Hillside Favela Shanty Town Rio De Janeiro Brazil
Royalty Free Stock Photos - Image: 35819528



Factors that Contributes to Urban Growth

Urbanization levels and urban growth are affected by two factors:

- 1) Migration and
- 2) Natural Increase

Migration

Migration is the movement of population from one area to another. Some migrations are forced, voluntary, permanent and temporary, International and regional. The type of migration that we are principally interested in this unit is Rural to Urban migration, which is the movement of people from countryside to city areas.

This type of migration happened in More Economically Developed Countries (MEDC) from the 18th Century onwards on a large scale, and has gradually slowed down. In fact in many MEDCs, the movement of people has reversed, and people are moving from urban areas back into the countryside as they search for the quiet life (this is known as counter-urbanisation).

However, many Less Economically Developed Countries (LEDCs) cities are experiencing massive rural to urban migration, mainly of young males, into the major cities. The major reasons for this movement can be classified into **push** and **pull** factors.

A **Push factor** is something that can force or encourage people to move away from an area. Push factors can include famine (as in Ethiopia in the 1980s), drought, war, flooding (as in Bangladesh, where people are becoming climate change refugees and having to move to Dhaka; tribal warfare and sorcery (as in the Highlands of PNG), a lack of employment opportunities, population growth and over population, and civil war (as in Darfur, Sudan). A **Pull factor** is one in which encourages people to move to an area. Pull factors include the chance of a better job, better access to education and services and a higher standard of living. These factors have contributed to millions of people in LEDCs moving to cities in LEDCs, creating mass urbanisation and consequently high urban growth rates.

Therefore, a major reason for the growth of large cities especially in the poorer countries of the developing world is the rural-urban migration. People move from rural areas to the cities because of 'push factors' and pull factors. They are also attracted to the 'bright lights' of the city where they hope to find employment and services and the opportunities that the cities can offer.

Natural Increase

Cities' growth is also boosted by natural population increase within the cities. This also has a major effect on rates of urbanization. During the initial urbanization phase, natural increase in poorer parts of the world can increase as Death Rates fall in cities as people having access to better medical care, improved water supplies, improved sanitary conditions, improved wealth and food supply.



Birth rates usually take longer to fall and indeed more babies survive as infant mortality falls in cities. Birth rates are also boosted as young people move to towns and cities. These combined factors can fuel the rate of urbanization.

Tokyo, with the population of over 30 million, is the world's largest city. About 25 percent of Japan's population live in the Tokyo area.

Problems of High Urban Growth

Urban areas are growing faster in Least Economically Developed Countries (LEDC) than anywhere else in the world. This growth brings problems and challenges, all of which require good management and solutions.

There are many problems associated with the rapid growth. These include unplanned housing (squatter settlements/shanty towns), unemployment, providing basic needs, dealing with urban waste, pollution and stress on the *infrastructure* and the city's services.

Poverty, overcrowding, high housing costs, pollution and traffic congestion are serious problems in cities in the developing countries. Urban development also leads to valuable agricultural land being lost.

The photographs below shows examples of overcrowding and the challenges of waste management in shanty towns.



Figure 1.5 a: Collectors of waste in a shanty town in Jarkata, Indonesia.



Figure 1.5 b: A view of some houses in the Kibera Slum. Nairobi, Kenya. Garbage removal services are typically unavailable in slums. So solid waste piles up in different corners. Major wind or floods wash these away into rivers and natural ecosystems.



Let us examine some of these issues in detail.

1) Urban Poverty

The most widely observed and acutely felt urban problem in developing countries is the large number of poor and unemployed people in the cities. The extent of poverty in the economy as a whole depends on the degree of economic development. Urban poverty is viewed as part of overall poverty; the rural poor move to urban areas, which tends to broadly equilibrate real incomes across locations. Poverty is related in great measure to the size of the low-skilled population, which is distributed among urban and rural areas according to economic and other considerations that affect the entire population.

2) Housing

In terms of housing, most authorities have been unable to provide adequate shelter and services for the growing urban population. Hence, the majority of the poor have to fend themselves and to survive by their own efforts.

Estimates suggest that one third of urban dwellers in developing countries cannot find accommodation that meets their basic health and safety standards. As a result of these, they either; sleep on the pavements, or in public places, rent a single room if they have enough money or they build themselves a shelter on unused land which they have no permission to build. Overtime, squatter settlements may develop into illegal residential areas.

3) Services

Only small areas within many developing cities have running water and main sewerage. Rubbish dumped in the streets is rarely collected. When heavy rains fall especially in monsoon countries, the drains are inadequate to carry the excess water away. Lack of electricity, shortage of schools, teachers, health services including overcrowding and strain on existing clinics and hospitals and the numbers of doctors and nurses available to see the sick adds to problems.

4) Pollution and Health

Examples of problems include contaminated drinking water giving rise to sicknesses such as cholera, typhoid and dysentery. Accumulated waste provides breeding grounds for vectors that carry diseases. Many children suffer from malnutrition as they lack proper dieting. Others include air pollution from industrial activities which causes respiratory diseases. Constant struggle for living further leads to stress-related illness. Thus, we have high rates infant mortality and life expectancy is low in these areas of the urban areas.



Figure 1.6: Air pollution in China –Tuesday 25 February 2014

Beijing and broad swaths of six Northern provinces have spent the past week blanketed in dense pea-soup smog as you can see in the photographs above. Beijing's concentration of PM 2.5 particles – those small enough to penetrate deep into the lungs and enter the bloodstream – hit 505 micrograms per cubic metre on Tuesday night. The World Health Organisation recommends a safe level of 25 micrograms.

5) Unemployment and Underemployment

New arrivals to a city far outnumber the jobs available and so high employment rates results. Full time jobs are usually in the service industry such as police, army, civil service, security guards and office jobs. Majority of the people who do work are in the informal sector. This means their find their own employment such as shoe cleaning and repair, betel nut sales in Port Moresby, street selling of food and drinks and local crafts (furniture, jewelry, clothes, bags and baskets). Most of these people are underemployed and live in subsistence level.

6) Transport

Traffic congestion is often a major problem characterized by heavy pollution from car fumes and high accident rates.

Now do learning activity 2 on the next page.



Learning Activity 2

1. What is the difference between Urbanisation and Urban Growth?

2. Calculate the percentage of PNG's urban population if the current population is 7,645 000 people with an urban population of 977 000 people.

PNG's % of urban population = _____

3. Describe the two periods in history that brought about rapid urbanisation.

4. List the two main sources of Urban Growth.

i) _____

ii) _____

5. List six problems of high urban growth?

i) _____

ii) _____

iii) _____

iv) _____

v) _____

vi) _____

CHECK YOUR ANSWERS AT THE END OF THE UNIT SUMMARY



12.2.1.3: Challenges of Cities in the Developing Countries

Welcome to Subtopic 3 of Topic 1. You will learn about the challenges of cities in the developing countries in this topic.

In this topic, we will look at issues such as urban land use zoning models, urban decay, urban renewal and decentralisation. We will also examine the causes of urban decay and urban renewal and the possible solutions to these urban issues.

Introduction

What do we really mean when we say challenges of cities in the developing countries? The situation of big cities in the developing or third world is however not comparable to each other for the following reasons:

- the range of growth reaches completely different dimensions
- the urbanisation boom in most cases does not come along with industrialisation and corresponding job opportunities in the cities
- parts of the big cities belong to the modern sector and are integrated into the world economy (Blotevogel 2003).

A United Nations (UN) official, Joan Clos Executive Director of UN-HABITAT outlined challenges facing cities amid rapid urbanization in the following way. On the 3rd November 2010, the new head of the United Nations agency tasked with promoting sustainable cities today outlined the challenges facing urban centers around the world. He said, they were hosting increasingly large populations but had limited resources for critical services.

Pointing out some of the issues he will be addressing as the Executive Director of the UN Human Settlements Programme (UN-Habitat), Joan Clos told reporters in New York that although cities hosted industries and businesses that create much of the world's wealth, they were not always able to raise the resources required to deal with the problems associated with expanding population.



Figure 1.7: UN-HABITAT,
Executive Director Mr Joan Clos

“We need to understand better the economic role of urbanization,” Mr. Clos said, adding that he will balance “continuity and renewal” during his term as head of the organization.

“We need to produce some changes and improvements in our organization in order to be more focused and more efficient inside the overall objective of the United Nations of delivering-as-one and being more efficient in general,” Mr. Clos said.



We can see from Mr. Clos' perspective that 'challenges' are really issues, problems, tasks and tests that are faced by the developing countries in the light of rapid urban growth to manage their big cities.

He stressed that while cities in the developing world continue to be plagued by problems associated with poverty, underdevelopment, poor health and standard of education and insecurity, new challenges to urban areas in both poor and richer countries were arising. They included cities as emitters of greenhouse gases that contribute to climate change and the risk of the collapse of transit systems due to inadequate planning and rapid expansion. UN-HABITAT will be seeking solutions to the new challenges facing urban authorities with a view to helping them as well as governments in their efforts to seek solutions to them, Mr. Clos said.

UN-Habitat says that a staggering 95 per cent of the expected global population growth to be seen over the next two decades will be absorbed by cities in the developing world. What that means is that by 2030, another two billion people from the developing world will be living in cities (only 100 million from the developed world meanwhile will be doing the same). Currently, 75 per cent of world's poorest people which is 1 billion live in cities.

It added that when it comes to poor cities, bigger is by no means always better. According to UN Habitat, the mega-cities of the future, (those with more than 10 million residents) will be "giant potential flood and disaster traps" if insufficient action is taken on behalf of their residents. Already, 75 per cent of the world's 21 mega-cities are based in the developing world. It is estimate that 27 of the 33 mega-cities expected to exist by 2015 will be in developing countries."

Rapid economic growth brings substantial problems of its own, notably increased pollution. Already, 16 of the 20 most polluted cities in the world are in China, which is arguably undergoing the most rapid industrial and economic transformation the world has ever seen.

What Is Urban Decay?

Some of the most promising cities and towns have now turned into neglected wastelands that breed criminals and diseases. This is a phenomenon observed the world over and has various causes. Sociologists refer to this phenomenon as **Urban Decay** (also known as **urban rot** and **urban blight**).

Urban decay, in simpler terms, refers to the gradual falling apart of a previously functional city, or part of a city or town that falls into disrepair and is in ruins. Urban decay has no single cause but it results from combinations of inter-related socio-economic conditions. This includes the city's urban planning decisions, tight rent control, the poverty of the local populace, the construction of freeway roads and rail road lines that bypass the area, depopulation by suburbanisation of peripheral lands and many more.



Urban infrastructure basically falls into a state of disrepair and buildings are left empty for long periods of time.

It can also be caused by deindustrialization, depopulation or change of population, restructuring abandoned buildings, economic breakdown, and failure of businesses. This in turn leads to increasing crime rates, growing unemployment, fragmented families, political disenfranchisement, rising poverty in the area and a desolate, inhospitable city landscape. This condition is evident from abandoned buildings, overrun sewers, trash and rubble on the streets, and a desolate landscape.

Deindustrialization (also spelled deindustrialisation) is a process of social and economic change caused by the removal or reduction of industrial capacity or activity in a country or region, especially heavy industry or manufacturing industry. It is the opposite of industrialization.

Below are some photographs of buildings in disrepair in an inner city in USA.

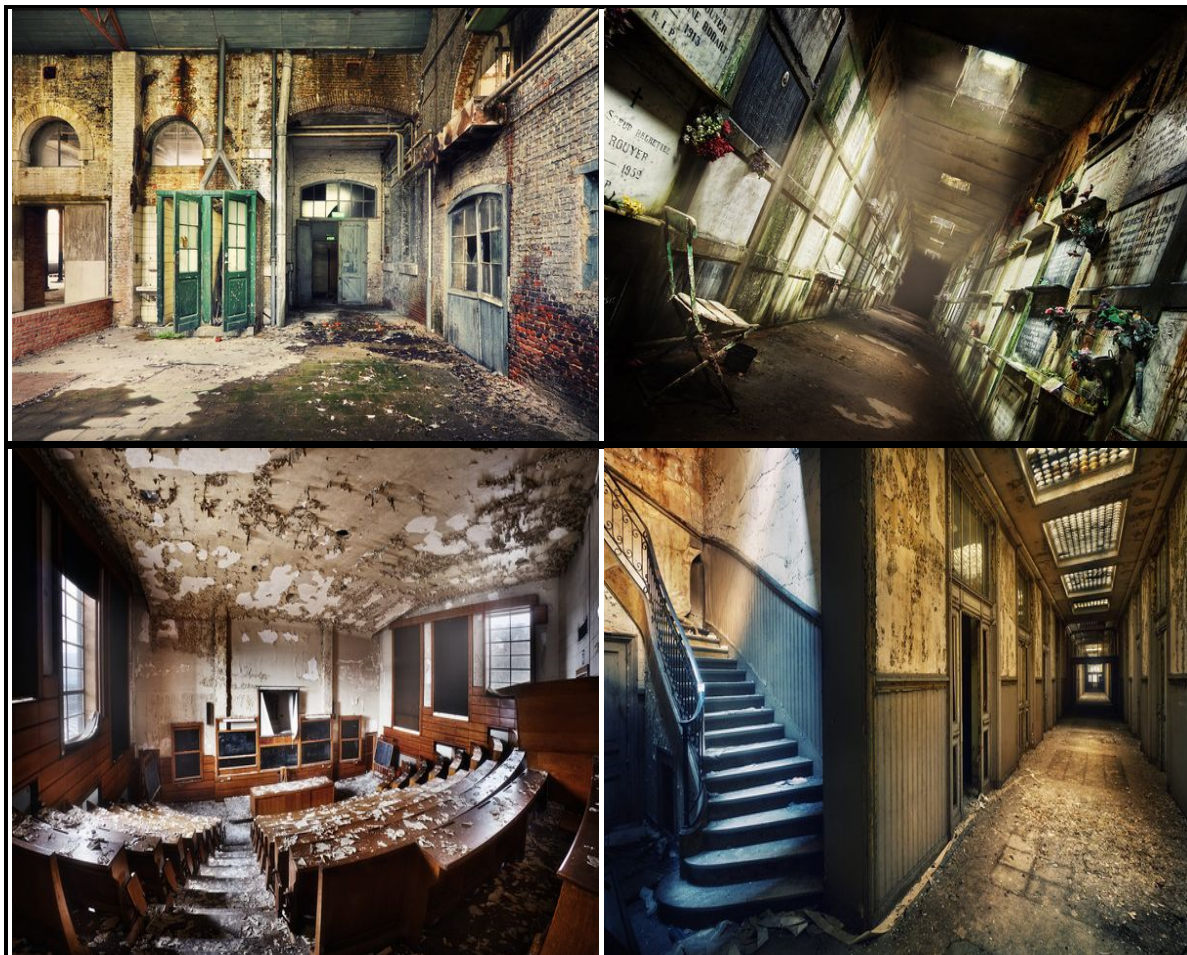


Figure 1.8: Examples of buildings in disrepair in an inner city in USA



Disenfranchisement (also called Disfranchisement) is the revocation of the right of suffrage (the right to vote) of a person or group of people, or through practices, prevention of a person exercising the right to vote. Disfranchisement may be accomplished openly by law or completely through requirements applied in a discriminatory way, intimidation, or by placing unreasonable requirements on voters for registration or voting.

Urban decay also occurs in smaller cities. There are a number of reasons behind urban decay, as well as ongoing attempts to reverse the process. However, urban decay can prove to be difficult to reverse, especially if a given area has been in a state of blight for an extended period of time.

The following is an account of a journalist in the city of Johannesburg in South Africa, in March 3, 1997.

“Downtown Johannesburg is in bad shape. Buildings are decaying, heaps of rarely collected rubbish line street corners, and industry and motor cars belch thick, toxic fumes each day.

Just outside the central business district, areas such as the red-light and entertainment hotspot of Hillbrow and the once trendy and cosmopolitan suburb of Yeoville are fast catching up in the rush towards urban decay. Further away, the former blacks-only townships and the shack dwellings mushrooming in just about every piece of free land are over-crowded and poorly serviced”.

It is against this backdrop that a new community programme seeks to complement local environmental initiatives in urban development here. The worldwide Local Facility for Urban Environment (LIFE) programme will soon be launched in South Africa with a view to helping community-based and non-governmental organisations deal with the consequences of urban development.

Let us now examine ways to combat the problems of urban decay by discussing the process of Urban Renewal.

What is Urban Renewal?

Urban Renewal is the process of redeveloping dilapidated or no longer functional urban areas. It is the rehabilitation of city areas by renovating or replacing ruined or disused buildings with new housing, public buildings, parks, roadways and industrial areas, often in accordance with comprehensive plans.

This involves improving and rehabilitating these non-functional urban areas. They also include programs designed to clear, rebuild, and redevelop urban slums. Critics argue that although they bulldoze slums, urban renewal programs often have led to their replacement by office buildings and by apartment houses for the well-to-do. The renewal process can include demolishing old or run-down buildings, constructing new, up-to-date housing, or adding in features like a theater or stadium. Urban renewal is usually occurs for the purpose of persuading wealthier individuals to come live in that area.



Figure 1.9: Examples of Urban Renewal- repairing old buildings

Basically Urban Renewal aims to bring a change in functional role of the area and improvement in the quality of living for residents.

Urban renewal is redevelopment of run down areas. It may involve clearing away decayed parts of the city, improving transport and commercial facilities, community services, landscaping and renovating or rebuilding dilapidated structures. Urban renewal can involve creating a new identity for a city by gutting and renovating industrial buildings to create medium and high density housing, or constructing large community buildings such as stadiums or theatres. Intervention of governments and involvement by large property developers is common, and can result in the demolition of problem neighborhoods.

Generally, a city's central business district is constantly being renewed in parts because it is the focus of the city. The city is commonly the location of old or obsolete buildings and is also where there are investment opportunities for developers.

Gentrification is a form of urban renewal. It usually involves renovation of heritage buildings. As a result, the surrounding urban environment changes character. More affluent groups of people move into a suburb, thus changing the nature of suburb and pushing up property prices. Wealthy people and double-income couples, mostly without children compete for high rents and purchase prices. As they renovate the old terrace house or cottage they live in the house and gain access to inner-city life.

Affluent refers to the group or persons having a large amount of money and owning many expensive things. Basically, it is a lifestyle of being wealthy and rich.

Urban renewal also include comprehensive scheme to redress complex urban problems, including unsanitary, deficient or obsolete housing, inadequate transportation, sanitation, and other services and facilities, haphazard land use, traffic congestion and the sociological correlates of urban decay, such as crime. Early efforts usually focused on housing reform and sanitary and public-health measures. This was followed by growing emphasis on slum clearance and their location of population and industry from congested areas to less-crowded sites, as in the garden-city and new-towns movements in Great Britain.

The government usually sponsors the destruction of slum housing with a view to the construction of new housing. Large-scale urban renewal was engaged during the 1960s and



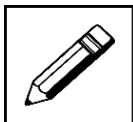
1970s, after the departure of the rich and the middle class for America's suburbs. This left many United States cities in decay and disrepair.

Decentralisation

Decentralisation means to spread, redistribute or reorganize urban settlement patterns away from city centre. It is a government policy which attempts to reduce the concentration of businesses, services and population in major city centres, and to increase population size in small regional centres. It is closely linked to the process of counter-urbanisation. Problems with counter-urbanization include fewer job opportunities, particularly for women, inconvenience and cost of moving residence, and dislocation from family. In addition, there is a risk that people who move out of the city may be forced to continue to commute to major cities for work. This would increase car dependence and traffic congestion.

Counter-urbanization is the relocation of people and employment from large urban centers to smaller urban centers or rural areas. Incentives for people to relocate include transport subsidies, low interest loans, and cheap land. People may choose to move from the city as a response to overcrowding and expensive housing. Factors which have contributed to counter-urbanization are developments in transport and information technologies. It is generally only a phenomenon in the More Economically Developed Countries (MEDCs).

Now do learning activity 3 below.



Learning Activity 3

1. Explain the process of Urban Decay.

2. List the new challenges arising in urban areas of both rich and poorer countries.

3. Briefly discuss Urban Renewal.

CHECK YOUR ANSWERS AT THE END OF THE UNIT SUMMARY



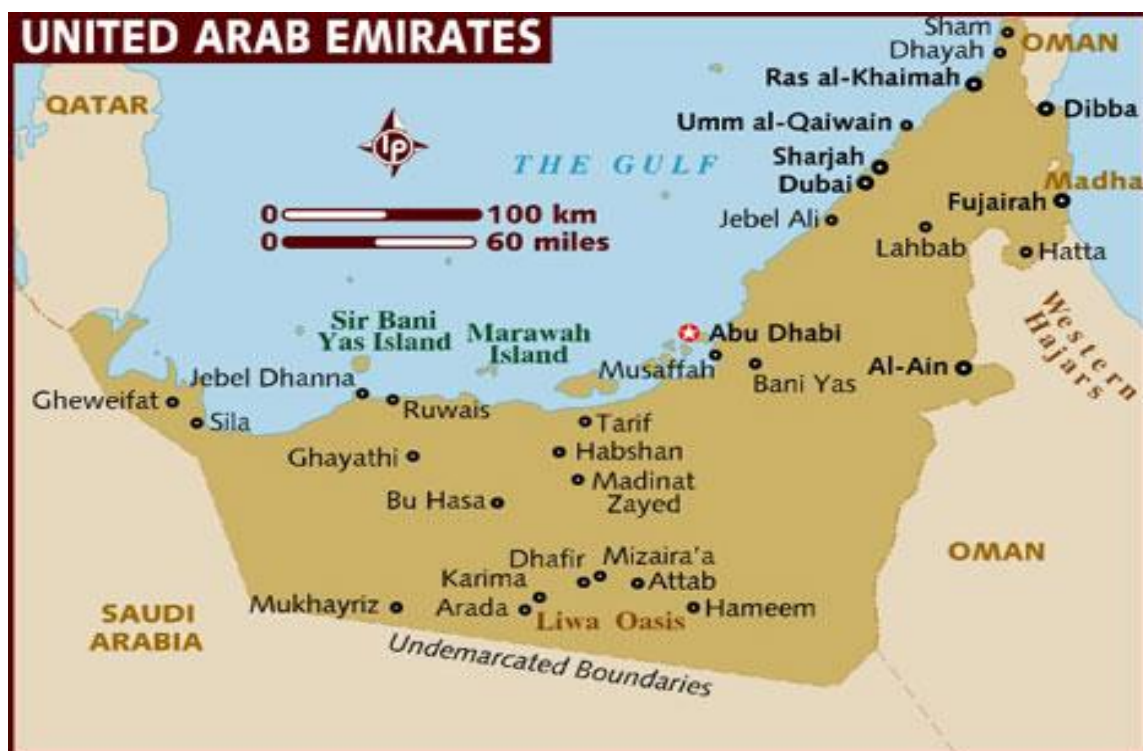
12.2.1.4: Case Study: Dubai (United Arab Emirates), a City in the Developed Country

Welcome to subtopic 4 of topic 1. In this subtopic, we will examine the process of urbanisation in the city of Dubai in United Arab Emirates. It is an example of a city in the developed country.

Introduction

The United Arab Emirates (or the U.A.E as it is commonly referred to as) is located in the Southwest Asia within the Arabian Peninsula. It has Saudi Arabia and Oman as its neighbors. There are seven emirates or states in the United Arab Emirates and they are: Fujairah, Ras al-Khaimah, Umm al-Quwain, Ajman, Sharjah, Dubai and Abu Dhabi. Abu Dhabi is the capital city of the country and it is also the second largest city of the U.A.E. in terms of population size. Abu Dhabi is considered to be the industrial, cultural and political center of the country.

MAP OF UNITED ARAB EMIRATES



Dubai is located on the Persian Gulf, in the northeast of the country. It is the second largest emirate with an urban area of 3,885 square kilometer and the city is roughly 35 square kilometers. However, it will expand to twice that size with the addition of the man-made islands; the Waterfront, the three Palms, the World, the Universe, Dubailand, as well as the construction in the desert.



Giant Man Made Islands of Dubai AKA 3 Palm Islands in Dubai

Here are some great pictures and details about the three gigantic palm tree shaped islands known as the giant man made islands of Dubai. These are being built on the coast of Dubai.



Figure 1.10 a: Palm Jumeirah

Figure 1.10 b: Palm Jebel Ali

Figure 1.10 c: Palm Deira

Each of the Dubai islands (Palm Jumeirah island, Palm Jebel Ali Island, and Palm Deira island) are being built in the shape of a date palm tree that is native to this part of the world. So the islands consist of a trunk, a crown with fronds, and are surrounded by a crescent island that acts as a breakwater. The biggest island of it, the Palm Deira Island which when completed will be the world's largest artificial island. Because of these extraordinary engineering feats they have also been named one of 'The Eighth Wonder of the World'.



Figure1.11: The World Dubai: A Man-made Archipelago of Private Islands

One of the most fascinating geographical aspects of Dubai, is its Creek, which divides the city into two regions. Dubai Creek is made up of a natural 9.5 mile inlet in the Persian Gulf, around which the city's trade developed. North of the Creek is called Deira, and Bur Dubai refers to the south where it joins the tourist and residential developments of Jumeirah along the coast.



Here are some pictures of Dubai Creek and its environment.



Figure 1.12 a: Dubai



Figure1.2 b: Current view of Dubai Creek overlooking the Rigga Al Buteen area of Deira.

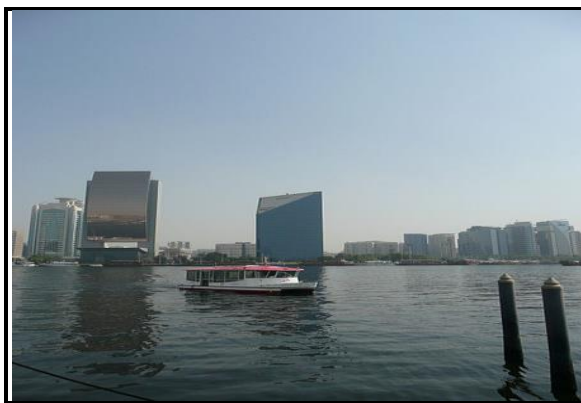


Figure 1.12 c: Water taxi in Dubai Creek, with the National Bank of Dubai and the Dubai Chamber of Commerce and Industry in the background.



Figure 1.12 d: Sunset at Dubai Creek Waterfront.

Dubai also has the highest population, sharing its borders with Abu Dhabi in the south, Sharjah in the northeast and the Sultanate of Oman in the southeast. Due to the city's unique geographical location it enjoys a strategic position which allows it to connect to all local Gulf States, as well as to East Africa and South Asia.

There are about 4.8 million people living in the country and of this number, only about 22 percent are the citizens of the countries and the remaining people are foreigners. In the Middle East, the United Arab Emirates is said to have the most diverse population. As the standard of living is high in this nation, it has attracted people from different countries like Philippines, India, Egypt, Sri Lanka, Yemen, Jordan, Bangladesh and Pakistan. Dubai is the most populous city in the country as it has about 1.6 million people living in it.



Climate

The United Arab Emirates experiences a dry and hot climate, with the hottest months being July to August. The land is mainly arid, much of it is classified as hyperarid (Boer 1997) with a harsh climate of high temperatures, low and irregular precipitation and consequent high evapo-transpiration rates.

Nonetheless, it is a country of contrasting landscapes, with a wide range of habitats including mountains, sand and gravel deserts, salt flats and mangrove forests. The diverse fauna and flora exhibit a fascinating range of adaptations to survive in this harsh and forbidding landscape.

Historical Overview

The United Arab Emirates (UAE), 'Al Emarat Al Arabiyah Al Mutahidah' in Arabic, was established on 2 December, 1971. It is a federation of the seven emirates: Abu Dhabi, Ajman, Dubai, Fujairah, Ras Al Khaimah, Sharjah and Umm Al Quwain.

From the 1850s until the union of the emirates in 1977, the British Colonial Administration maintained influence in the region, and each emirate entered into separate treaties with Britain. The emirates were then collectively known as the Trucial States or Sheikhdoms.

Each emirate was led by **sheikha** who belonged to a particular tribe which was usually the most influential tribe in the area. The tribe often branched into several smaller clans, and each also had its own leaders who would work closely with the **sheikhs** on political matters and clan related matters.

A SHEIKH is an Arab leader, in particular the chief or head of an Arab tribe, family, or village. It is associated with royalty. Usually, the person is a leader in a Muslim community or organization.

An EMIRATE is a political territory that is ruled by a dynastic Arab monarch styled *emir*. It also means *principality*.

EMIR (pronounced [e'mi:r], sometimes translated *Amir*, *Amier* or *Ameer* is a title of high office used in a variety of places in the Arab world. Literally it means *commander*, *general*, or *prince*. The feminine (female) form is *Emira* (*Amīrah*). When translated as *prince*, the word "*emirate*" is analogous to a sovereign principality.

The growth of Dubai began in the early part of the nineteenth century when members of the BaniYas tribe led by Sheikh Maktoum Bin Butti left Abu Dhabi and migrated north to establish an independent Sheikhdom in the area now known as Dubai. When a maritime agreement was later signed with the British, this area became known as the Trucial Coast.

By the early part of the 20th century, Dubai came to be known as the principal port on the Trucial Coast and established itself as the main centre for trade. Dubai attracted traders from India, Europe and neighbouring Arab countries, and the city was quickly established as

a leading centre for trade in gold and pearls. The British remained in the area mainly to protect the merchant vessels until 1968.

Following Britain's withdrawal, steps were taken by the late Sheikh Zayed bin Sultan AlNahyan of Abu Dhabi and the late Sheikh Rashid bin Saeed Al Maktoum of Dubai to bring the individual Sheikhdoms together into a single federation. This resulted in the formation of the United Arab Emirates in 1971.

Culture

Despite the development and progress of Dubai during the last 30 years into one of the most urbanised and modern cities in the world, the local population remains firmly conscious of their heritage, legacy and culture. The late President of the UAE, Sheikh Zayed bin Sultan Al Nahyan once famously said, 'A country that knows not its past has neither present nor future' and that phrase adequately describes the Emirates of today.

People of the UAE are extremely proud of their heritage. The traditional Arabic family values are encompassed in respect, hospitality, religious tolerance and pride. Ancestral customs remain strongly rooted among local people and in all spheres of Emirati society.

Islam is ever present in the UAE and is captured in its foundations. Dubai city has vowed to ensure that no one in the emirate is more than 500 meters away from a mosque, and the call to prayer (or athaan) reaches out five times a day.



Figure 1.13: Craftwork and artefacts in UAE.

Below are photographs of the dressings of a *sheikh*.



Figure 1.14 a: Somali Sheikh Muhammad Dahir Roble reading a Muslim sermon.



Figure 1.14 b: Pakistani Sheikh Syed Abdul Qadir Jilani, a prominent Sunni scholar.



Urbanization in Dubai

Dubai is experiencing the most startling and rapid urbanization seen in current day. In the past 25 years alone, Dubai has transformed from a small Middle Eastern city into a global market with a skyline rivalling New York.

With such rapid urbanization, questions about the environmental impact of development and the structural integrity of buildings have risen. Due to the desert climate, The United Arab Emirates needs to desalinate water and has a heavy use of air conditioning. Economic and environmental factors such as these have been compounded by the recent boom in construction and development

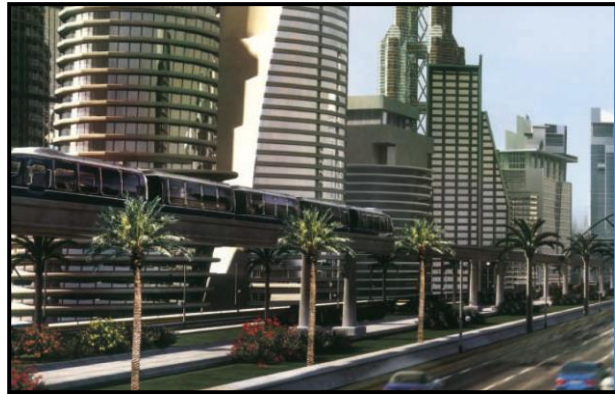


Figure 1.15: Urban Buildings in Dubai

Urbanization has occurred so quickly that proper planning has not been completed. For example, until 2010, a single water waste treatment plant treated nearly 17 million cubic feet of waster daily, nearly twice the size the plant was designed to hold and properly treat.

All at the same time, construction continued for hundreds of skyscrapers with little regard for environmental standards. With easy access to an abundance of resources, construction within Dubai was made cheap and easy. However, like all natural recourses, once reserves were depleted, there was not an inexpensive way to obtain more. Since then there has been a large shift in thinking. New regulations now dictate all construction, energy consumption, and water usage in the city.

The photograph below shows the contrast in two different stages of time in the development of Dubai.



Figure 1.16: Dubai has undergone massive changes as seen in this photograph



Despite efforts, creating a sustainable city in a desert is challenging. Urbanization requires an abundance of energy that Dubai is struggling to find. The easiest option would be turning to nuclear power, but that process is hardly sustainable itself, using large amounts of water and producing radioactive waste.

Instead, Dubai has turned to creating some of the most structurally unique buildings seen to date. A rotating skyscraper, powered by wind turbines placed between each floor is scheduled to be built in the heart of Dubai. Not only does the building harness enough energy to power itself, but the surplus generated powers five other buildings of the same size.



Figure 1.17: Known as the “Dynamic Tower,” this apartment complex is entirely self-sufficient.

Dubai is also a home to the world’s tallest building, *BurjKhalifa*. Standing over 2000 feet tall, this building BurjKhalifa is so tall it was constructed with GPS tracking to monitor that the sway to ensure it is no more than 12 feet in any direction. With 163 floors, the building is used as a hotel, apartment building, and corporate office building.



Figure 1.18: Dubai skyline in 2013



Similar to Dubai, Abu Dhabi, the second largest city in The United Arab Emirates, is also experiencing rapid urbanization. Though, less than Dubai, Abu Dhabi also has a beautiful skyline with many buildings unlike any other in the world. Sherwood Design Engineers helped develop a green building rating system for Abu Dhabi called The Pearl Rating System. Specifically, Sherwood developed the water calculator for the community rating system and helped write all the Stormwater credits.

The methodology used in the Pearl Rating System is similar to that of LEED certification but awards up to 5 pearls for sustainable building development practices. This new system became successful with a movement to plan and build new structures in Abu Dhabi by 2030 to create a skyline to compete with Dubai.

These two dominating cities in The United Arab Emirates are experiencing unprecedented urbanization in the structural development. Structurally unique buildings already form breathtaking skylines and more urbanization and construction is still to come. With these plans, the UAE is taking impressive initiative to build green and sustainable structures.



Figure 1.19: Abu Dhabi Skyline

High Rates of Urbanisation in Dubai: Causes and Effects

Until the discovery and exploration of oil and gas in the mid-20th century, the human population of the UAE was small and the impact of the human economy on the natural environment was very limited. Over the last few decades, UAE has witnessed a great economic revival resulting in massive urbanization. Since then, the influx of huge wealth, and the economic development that this has allowed, has drastically altered this situation. The human population has risen exponentially from an estimated 86,000 in 1961 (Environment Agency, Abu Dhabi) and is expected to top five million in 2009. One consequence of this has been the extremely rapid emplacement of a modern infrastructure including an extensive highway and road network, residential areas, shopping malls, golf courses, airports and



industrial facilities. The scale of such ambitious developments (often referred to as ‘mega projects’) has been incredible and incomparable on a world scale.

As a country, the United Arab Emirates has developed very rapidly from a developing country with a largely nomadic population, to a modern and wealthy country with a Western lifestyle. This economic progress has brought undoubted social benefits and opportunities for UAE citizens, including a high and increasing life expectancy. However, rapid modernization and urbanization have contributed to a significant problem with chronic diseases, particularly obesity-related cardiovascular risk. In response the Health Authority of Abu Dhabi has significantly strengthened its data systems to better assess the baseline and measure the impact of targeted interventions.

The huge constructions have raised many debates amongst environmental researchers and activists. They argue that artificial islands threaten the marine ecosystems due to increased pollution and the absence of policies to protect the environment has increased the risk.

Anyone who’s ever seen a photo of Dubai knows how quickly the city has turned desert into a metropolis. Similarly, anyone who has ever stepped foot in the city knows that photos do not do justice to the massive scale of the city’s ambition. Ski slopes sit adjacent to man-made islands, not far from aquariums encased in enormous shopping malls, and hundreds of high-rise condos, many still awaiting residents. Dubai city itself now claims the world’s tallest building, largest shopping mall, longest indoor sky loop and largest artificial island.

Now, finding a Dubai hotel with fewer than five stars is harder than it was to find Dubai on a map 30 years ago. That was before the city state, de facto culture capital of the United Arab Emirates found oil, leveraged its oil, then realized the oil would not be sustainable, so it diversified its economy into tourism and real estate.

However, the cornerstone of Dubai’s economy is not oil, it is logistics. That is getting people and materials into a city that not long ago was just overheated expanse of desert. The Al Maktoum International Airport, is Dubai’s second busiest passenger airport. The current busiest is Dubai International, home of Emirates, one of the world’s biggest airlines. Dubai International will be expanded too, but Al Maktoum, which is part of an even bigger complex called Dubai World Central, will ultimately be bigger and busier.

Dubai’s ruler Mohammed bin Rashid Al Maktoum has recently endorsed a \$32 billion influx of money to start building the world’s largest travel hub. Under an ambitious plan to grow Al Maktoum, the airport aspires to accommodate 200 million people, far bigger than the current busiest airport in Atlanta (94 million passengers a year), as well as Beijing (83 million), and London (72 million). Dubai’s project will take six to eight years and, when finished, is likely to be the go-to crossroads for international travellers, goods, and money.

What allows Dubai to grow this fast? The common answer is oil, but it is not entirely true. Its leaders wisely knew in the early 2000s that oil would not last more than a few decades. Hence, it invested in trying to build a more stable economy that would bring in money the old fashioned way, by building a city attractive enough to entice people to come, stay, and cash their paychecks.

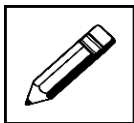


Dubai's competence is impressive, yet not entirely to its own credit. Heightened security on travel to the west after September 11, 2001, in combination with big, populous countries like India and China building new classes of consumers eager to spend their new money, has created a perfect storm for Dubai to cash in.

Ninety percent of Dubai's population is comprised of guest workers from places like India, Bangladesh, and Vietnam, a strange imbalance explored at length in the January 2014 issue of the National Geographic Magazine. On top of that, there simply are not enough tourists yet.

The wisdom of Dubai's ruler Mohammed bin Rashid Al Maktoum is that building a bigger airport will maintain and he hopes, increase the inflow of foreign cash. It is hard to imagine Dubai becoming even bigger, even flashier, accommodating even more people. Ultimately, no matter how badly he wants it, Sheik Mohammed will not be the one who decides Dubai's fate. It will be the newly-middle class Bangladeshi who decides to vacation in Dubai, or buy goods shipped through the UAE, or invest in a company with business dealings in the Emirates. Millions of people will soon be looking for places to bring their increasing income. Dubai's big bet is whether it will be the most attractive place to spend it.

Now do learning activity 4 below.



Learning Activity 4

1. What is an Emirate?

2. How many emirates make up the United Arab Emirates? Name them.

3. There are about 4.8 million people living in UAE. Only 22 percent are citizens of the country while the rest are foreigners. How many people are citizens of UAE?

4. Which country colonised UAE before 1977 and what significant historical event happened in this year?



5. What is the disadvantage of using nuclear power as an energy source in Dubai?

6. What economic activity in the mid-20th century led to a rapid population growth in the urban areas?

CHECK YOUR ANSWERS AT THE END OF THE UNIT SUMMARY



12.2.1.5: Case Study: Mumbai (India), a City in the Developing Country

This is subtopic 5 of topic 1. In this subtopic, we will look at the process of urbanisation in the city of Mumbai in India. It is an example of a city in the developing country. We will also compare and contrast urbanisation in Mumbai with Dubai.

Historical Overview

Bombay, now known as Mumbai, is home to around 14 million people. It is a thriving cosmopolitan, multi-cultural city, and is the centre of India's entertainment industry. Mumbai has been growing for five hundred years, even though it was built on what initially looked like very weak foundations.

At first, there were just seven islands separated by swamps. The land was dangerous and not conducive for human habitation. A thousand years ago the islands were part of the Magadhan Empire. Later they belonged to the Silhara family and in 1343 they became part of the lands of the Sultan of Gujarat.

In 1534, the Portuguese captured the islands and established a trading centre (or 'factory') there. The Portuguese called the place *Bom Bahia*, meaning 'the good bay', which the English pronounced *Bombay*.

This trading place grew slowly, with local people trading products such as silk, muslin, chintz, onyx, rice, cotton and tobacco. By 1626, there was a great warehouse, a friary, a fort and a ship building yard. There were also new houses for the general population, and mansions for the wealthy.

The English Arrive

The first Englishmen to visit Mumbai were raiders. In October 1626, whilst at war with Portugal, English sailors heard that the Portuguese had "got into a hole called Bombay" to repair their ships.

They attacked Bombay, but the ships had already left. The English burned down buildings, and destroyed two new Portuguese ships "not yet from the stocks".



Figure 1.20: Portrait of an Englishman-the first arrivals.

In May 1662, King Charles II of England married Catherine of Braganza, whose family offered a large dowry (a gift made by the father of the bride to the groom). Part of this gift was the Portuguese territory of Bombay. However, Charles II did not want the trouble of ruling these islands and in 1668 persuaded the East India Company to rent them for just 10 pounds of gold a year.



As Bombay was a deep water port, large vessels were able to dock there. Bombay needed a fort and a garrison of soldiers to protect it from Dutch fleets and Indian pirates.

In Roman Catholic Church, a FRIAR is a member of a religious order, especially the mendicant orders of Franciscans, Dominicans, Carmelites, and Augustinians. A FRIARY is a monastery of friars and a FORT is a castle with strong foundation while a GARRISON refers to a defence force.

Unfortunately, it was an unhealthy climate for the English because it was said of Bombay that "three years was the average duration of European life; two mussoons (i.e. monsoons, there was one every year) are the age of a man; and of children born there not one in twenty live beyond their infant days". Men who lived there were encouraged to marry local women, although English women were also "sent out".

The Company's City Schemes

Within a few years, the Company had transformed Bombay. Governor Gerald Aungier set about building up the port, with a new quay, warehouses and a customs house. The Company supported him and encouraged him to build a new city. They even sent him the plan of London as it was to be rebuilt after the Great Fire of 1666.



Figure 1.21: Busy port of Bombay.

In this "city which, by God's assistance, is intended to be built", people could buy land and build their own houses. Aungier started a complex building programme: that is causeways to link the islands; forts and a castle to protect people; a church, a hospital, and a mint where coins were made.

Settlers came from many local communities, as well as from Britain. In the 1670s, the Company had 1,500 soldiers in Bombay (both English and local) to protect people living there. By 1675, the population was around 60,000. In 1687, the Company made Bombay their Indian headquarters. The headquarters stayed there until 1708.

The Mughals Attack

English, Dutch and Portuguese ship captains regularly raided and captured foreign ships, if they thought they could get away with it. In 1688, during a conflict between the English and the Mughals, fourteen Mughal ships were captured and taken to Bombay harbour. A fleet of barges was also captured. The Mughals responded and in February 1689, a force entered Bombay harbour and landed Mughal men. Since most people lived outside the Castle they rushed there for safety. They must have been frightened as it was said of them that "the poor ladies, both black and white, ran half naked to the fort and only carried their children with them".



The Castle was laid siege, and it did not go well for the Company. In December, men were sent to the Mughal court to seek peace. They got peace but at great cost to the Company.

The population of Bombay fell to a fraction of its earlier size. Many people, both Indian and English, lost their lives. Plantations were devastated and houses destroyed. Bombay became known as a "dismal desert".



Figure 1.22: The Castle Painting.

Trading Capital

Bombay soon grew again. By the end of the 1700s it was "The Gateway to India". Early in the century the Company sent ships to patrol the sea off the Malabar (West) coast of India. It needed protection from the many dangers posed by foreign ships.

The Company built up a fleet, called the Bombay Marine, which brought some peace to the West coast of India in the first half of the century. The Bombay Marine eventually became the Indian Navy.



Figure 1.23: Trading items in Bombay.

Bombay was a secure place offering a range of employment opportunities. Hence, people with all sorts of skills moved there to start a new life. There were goldsmiths to make fabulous jewellery, weavers to create extraordinary textiles, merchants to trade the goods, and money-lenders in case the merchants or anybody else needed cash, as well as ironsmiths, planters, and servants. Bombay did not only trade in local products but many other goods were brought from all over India and beyond. In the 1730s, ship builders moved into Bombay, creating a new industry.

Raw cotton was shipped from Bombay to England where it was manufactured into cloth prior to being sent back to India for sale. In 1854 the first Indian cotton mill was opened.

The Empire and Afterwards

In the early 1800s, much engineering work was carried out in Bombay. The city's swamps were completely filled in, and by 1845 the seven small islands that had previously made up Bombay had been turned into one large island.

In 1853, the first Indian railway opened, which stretched from Bombay to Thana. The employment created by the new railway attracted more people to settle in Bombay. To keep



control, the Company created a number of government buildings. These were in a style very similar to city halls built in England at the time.

The city had continued to grow. In 1864, there were 816,562 living there. By 1991, the population of the whole of Bombay (which had spread beyond the islands) was 9,900,000.

The city changed its name in 1995 to Mumbai, after Mumbadevi, the stone goddess of the deep-sea fishermen who originally lived on the islands were driven out by the East India Company.

Urbanisation in Mumbai Today

Mumbai is a megacity and a World city. It has grown enormously since the 1950's and gives a great case study of urbanisation and its issues within an LEDC. This case study will explore how urbanisation, suburbanisation, counterurbanisation and now re-urbanisation processes have occurred in the Mumbai region and how those processes have been managed.

MAP OF MUMBAI



Mumbai is located on a peninsular on the Western coast of Maharashtra state in western India, bordering the Arabian Sea. It is a thriving megacity that has had an economic boom in recent years. It is home to Bollywood and the film "Slumdog Millionaire" which was based there. Indeed, property in Mumbai is becoming some of the most expensive in the world. One 28 story structure for one family cost £2 billion. However, many of the residents of Mumbai live in illegal squatter settlements (known as bustees in India). Despite the poor conditions in the slum, Prince Charles thinks that the people of Dharavi "may be poorer in material wealth but are richer socially".



Indeed, in terms of population size Mumbai is India's largest city, and is the financial capital of the country, being home to the Mumbai Stock Exchange. Up until the 1980s, Mumbai owed its wealth to its historical colonial past, textile mills and the seaport. However, the local economy has since been diversified and now Mumbai is home to most of India's specialised technical industries. This included a modern industrial infrastructure and vast, skilled human resources. Industries include aerospace, optical engineering, medical research, computers and electronic equipment of all varieties, shipbuilding and renewable energy.

Mumbai serves as an important economic hub of India, contributing 10 percent of all factory employment and 40 percent of India's foreign trade. Many of India's numerous Trans National Corporations (including the State Bank of India, Tata Group, Godrej and Reliance) are based in Mumbai. Other formalized workers include many state and government workers. Alongside this incredible wealth is large unskilled and informal workforces, who are self-employed and often unregulated workers. Many of these people earn their living as street hawkers, street sellers, taxi drivers, mechanics and other such occupations.

Bollywood and other Media Industries also employ huge numbers of people. Most of India's major television and satellite networks, as well as its major publishing houses, have headquarters here. The centre of the Hindi movie industry, Bollywood, produces the largest number of films per year in the world.

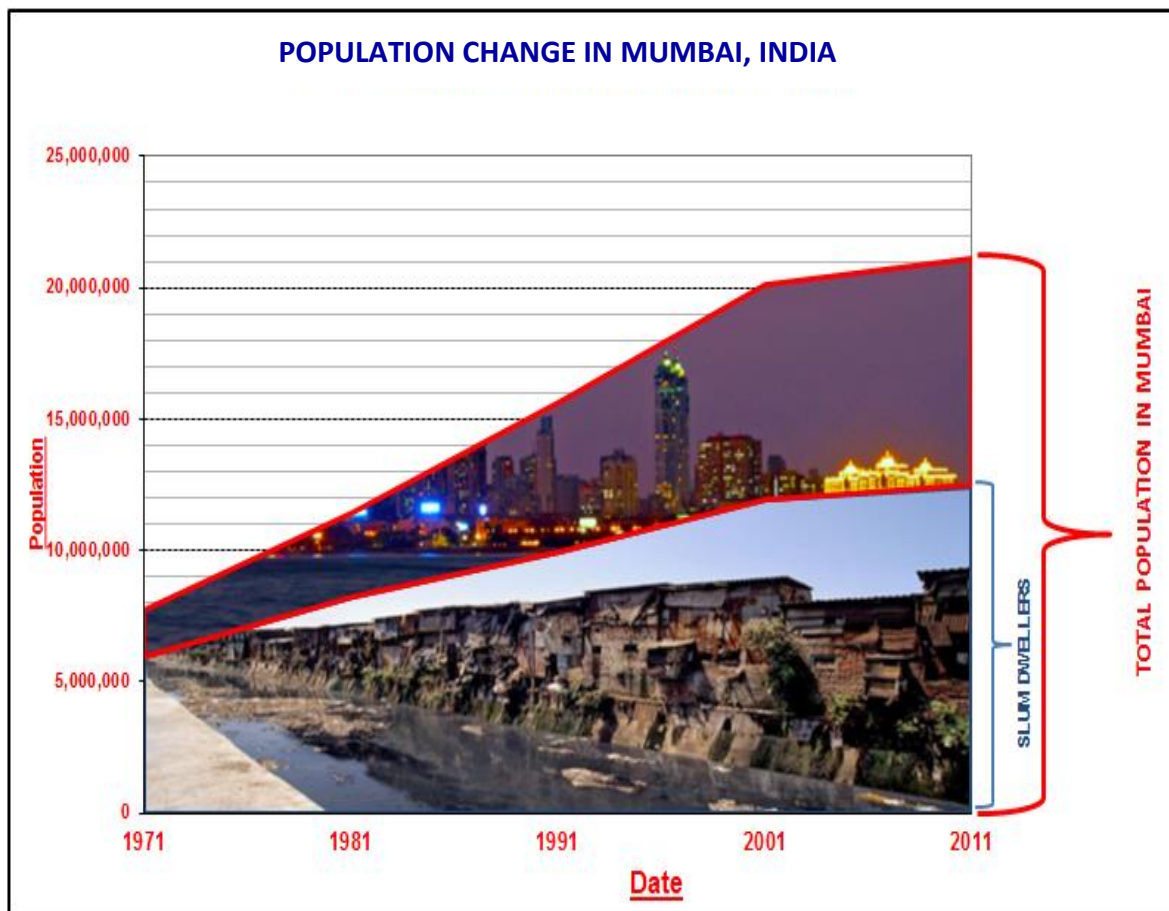
Bollywood is a name for the Indian popular film industry based in Mumbai

Urbanisation and its Impacts

Mumbai has urbanised over the past 60 years and urbanized rapidly from its origins as a fishing village. The site of the fishing village soon became a port region as the site favoured development. Protected from the Arabian Sea by a peninsular at the southern end of Salsette Island, it had access to sea on two sides. The British colonial administration in India developed the sheltered inlet into a major port.

The British viewed the port and surroundings as the "Gateway to India". This made it the closest port of entry to subcontinent for travellers from Europe, through the Suez Canal. As with many major global ports, the area around the port became industrialised, processing goods for export and handling imports. The city grew during British rule as variety of services grew up around the port and continued to grow after British left in 1947.

The graph below shows the inevitable rise in the population of Mumbai, since 1971, from 8 million in 1971 to 21 million in 2011. The other significant factor to note is that slum dwellers make up an ever increasing proportion of the population. This created numerous problems for people and planners. It should be noted that the original urbanisation phase of Mumbai focussed upon the southern tip of Salsette Island, and outside of this the city suburbanised in a Northern direction.



The causes of urbanisation are multiple, but involve a high level of natural increase within Mumbai itself and in-migration principally from the surrounding district of Maharashtra but also from neighbouring states. Mumbai booming economy means that migrants come for job opportunities in the expanding industries, financial institutions and administration.

Mumbai has grown in a Northern direction limited by physical Geography as shown in the satellite image on next page. It is limited in where it can grow with creek systems to the North and East, the Arabian Sea to the West and its harbour to the south East.

Mangrove swamps further complicate the picture, and these marginal lands often form the location for the poorest people who live illegally in slums. One such slum is Dharavi, in the heart of Mumbai. In the following pages, we will hear the story of Kevin McCloud and his account of the Dharavi slum.

Have a look at the map on the next page. It shows the location of Dharavi which is just north of Nariman Point.

**MAP OF MUMBAI**

The following notes are based upon Kevin McCloud's TV documentary titled "Slumming it", published on December 3, 2012. Kevin McCloud's travelled to the world's biggest slum, Dharavi in Mumbai'. He followed hot on the heels of 'Slumdog Millionaire', 2008's Oscar-winning film set in the same shanty town focused on the extreme day-to-day poverty endured by the local residents.

Despite the hardships of life in the area, Kevin discovers an extraordinary sense of spirit and community and reflects on the lessons Western cities could learn from its sustainable society. This also shows the consequences of rapid urbanisation in poorer countries, where the pace of urbanisation makes it difficult to maintain services essential for an acceptable standard of living.

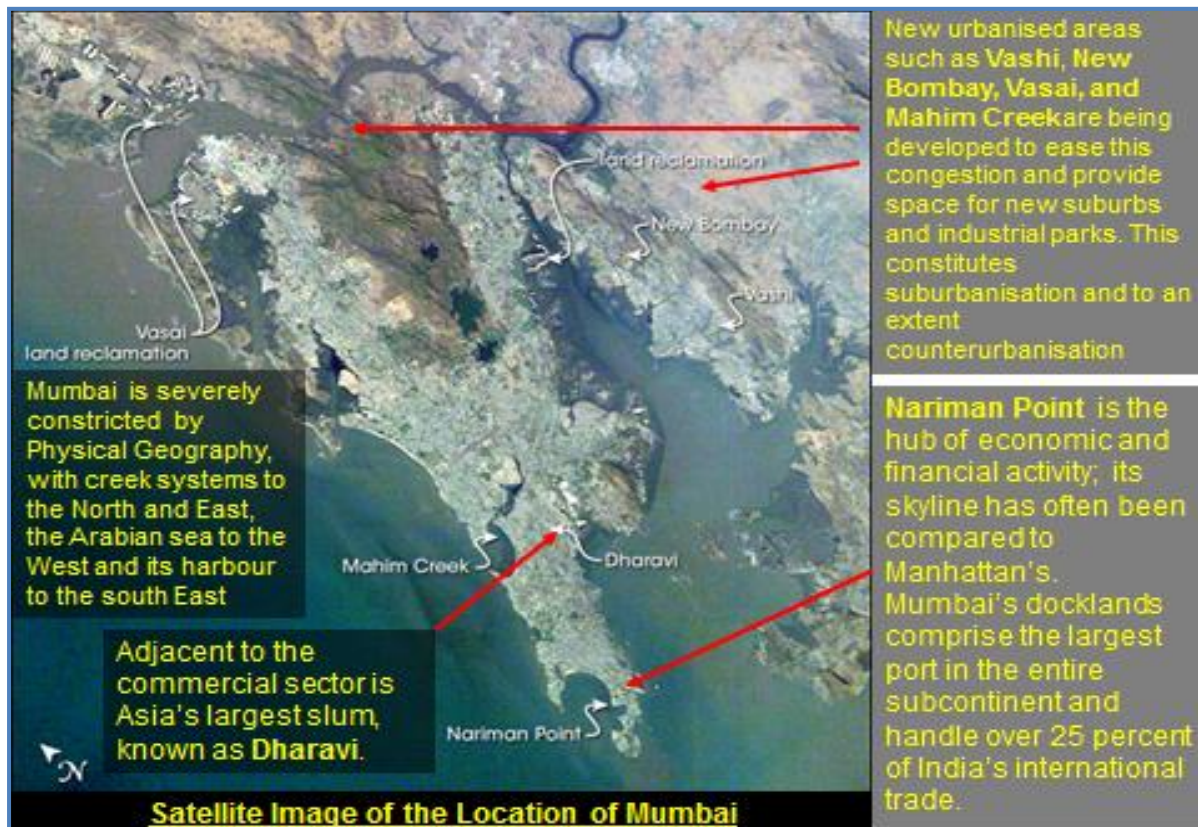
Episode 1: 'Slumming it'**Dharavi: The World's Biggest Slum**

Dharavi slum is located in Mumbai (formally Bombay) in India. It is India's and Mumbai's biggest slum. There are a million people crammed into one square mile in Dharavi. At the edge of Dharavi the newest arrivals come to make their homes on waste land next to water pipes in slum areas. They set up home illegally amongst waste on land that is not suitable for habitation. In the wet monsoon season, these people have huge problems living on this low



lying marginal land. Many of the people here come from many parts of India as a result of the *push and pull factors* of migration.

SATELLITE IMAGE OF THE LOCATION OF MUMBAI



Conditions in the Slum

In the slum people have to live with many problems. People have to go to the toilet in the street and there are open sewers. Children play amongst sewage waste and doctors deal with 4,000 cases a day of diphtheria (A rare bacterial infection) and typhoid. Next to the open sewers are water pipes, which can crack and take in sewage. Dharavi slum is based around this water pipe which is built on an old rubbish tip. The people have not planned this settlement and have no legal rights to the land. There are also toxic wastes in the slum including very dangerous heavy metals. Dharavi is made up of 12 different neighbourhoods and there are no maps or road signs. The further you walk into Dharavi from the edge, the more permanent and solid the structures become. People live in very small dwellings (e.g. 12X12ft), often with many members of their extended families.

Many architects and planners claim this slum could hold the solution to many of the problems of the world's largest cities.

Have a look at the photographs on the next page. They show the slum conditions of Dharavi Slum.



Figure 1.24 a: Mumbai's Shadow City: Some call the Dharavi Slum an embarrassing eyesore in the middle of India's financial capital. Residents call it home.



Figure 1.24 b: An entrance to the largest slum in Mumbai, and in all of Asia. Home over 1 million people.

Water is a big problem for Mumbai's population. The standpipes come on at 5:30am for two hours as water is rationed. These standpipes are shared between many people. Rubbish is everywhere and most areas lack sanitation. Excrement and rats are found on the street while 500 people share one public *latrine*.

A LATRINE is a communal outdoor toilet which is usually a hole dug in the ground



The famous cloth washing area also has problems. Despite its social nature the sewage water filters into the water used for washing clothes.

The Positives of Dharavi Slum

Here are some positives sides of the slum.

There exist informal shopping areas making it possible to buy anything you might need. There are mosques catering for people's religious needs and a pottery area which has a community centre. The pottery area was established by potters from Gujarat 70 years ago and has grown into a settlement of over 10,000 people. It has a village feel despite its high population density and has a central social square.

Family life dominates, and there can be as many as five people per room. The houses often have no windows, made of asbestos roofs (which are dangerous if broken) and no planning to fit fire regulations. Rooms within houses have multiple functions, including living, working and sleeping.

Many daily chores are done in social spheres because people live close to one another. This helps to generate a sense of community. The buildings in this part of the slum are all of different heights and colours, adding interest and diversity. This is despite the enormous environmental problems with air and land pollution. 85 percent of people have a job in the slum and work *locally*, and some have even managed to become millionaires.

Recycling and Waste Management in Dharavi

Kevin McCloud found that people seemed genuinely happy in the slum. However, toilets are open holes above a river and are hardly hygienic. This could lead to dengue fever, cholera and hepatitis.

Dharavi has a recycling zone. It is claimed that Dharavi's recycling zone could be the way forward to a sustainable future. Everything is recycled from cosmetics and plastics to computer keyboards. 23 percent of plastic waste gets recycled in the UK, and in Mumbai it is 80 percent. However, it is humans who work to sift the rubbish in the tips where children and women sift through the rubbish for valuable waste. They have to work under the hot sun in appalling conditions. They earn around a £1 a day for their work.



The photographs below shows recycling of plastics in Dharavi Slum, Mumbai.



Figure 1.25: Recycling plastics in Dharavi Slum, Mumbai (photo: courtesy of Reality

At the edge of the tip the rag dealers sort their haul before selling it on to dealers. The dilemma is that people have to work in poor conditions to recycle waste. From the tip it arrives in Dharavi where it is processed. It is sorted into wire, electrical products, and plastics. Plastics in India are continuously recycled. People work in dangerous conditions with toxic substances without protective clothing and this could affect people's life expectancy. Even dangerous hospital waste is recycled.

One private enterprise makes the metal cages inside suitcases, making 700 pieces per day and is paid 3 rupees per piece. There are 15,000 one room factories in Dharavi of which 300 are feeding most of Mumbai. Many of the products from Dharavi end up around the world based upon very cheap labour. Many of the people work in very poor working conditions,



and this includes children. Indeed, Dharavi is trying to do in 20 years what the west did in 200 years to develop.

Reurbanisation and Changes to Dharavi Slum

Re-urbanization is the process whereby towns and cities in MEDCs which have been experiencing a loss of population, are able to reverse the decline and begin to grow again. Some form of redevelopment is often required to start re-urbanization.

Let us now take a look at the following episode which explains the concept of reurbanisation.

Episode 2: A Place to Live (2012)

How have humans transformed our world in a generation? Dallas Campbell visit the world's largest and most ambitious engineering projects, exploring the power of human creativity and the making of the modern world. The important lesson in this episode is an example of how humans can manage and improve squatter settlements.

Large Scale Redevelopment

A \$2 billion development project threatens the recycling district and part of Dharavi. The land upon which Dharavi is built is next to Mumbai's financial district. This makes it a prime target for redevelopment. The people who are relocated will be put into smaller housing in apartment blocks. An ancient fishing village is also threatened. These areas have strong safe neighbourhoods that have low crime and communal areas. Also at risk are the local shops and markets and the community spirit which has taken generations to develop. The locals would prefer small improvements to the existing slum such as improvements in drainage. The value of land is so high that redevelopment is now a real threat. The alternative accommodation is very small.

The slum dwellers face 14 story apartments as accommodation as proposed by the cities Slum Rehabilitation Authority. This will separate communities and make people work away from where they live. Only people who have lived in the slum since 2000 will be relocated. Current redevelopment projects are densely populated and house lots of people. They are not good for community cohesion.

Local Based Improvements

There is an alternative to large scale redevelopment and that is to allow *local people* design the improvements to the slum.

The Society for the Promotion of Area Resource Centres, better known as SPARC, is an NGO that supports the efforts of local people to get better housing for their many members. Ideas generated from local people supported by this charity include adding an extra floor to buildings so that all family members can be accommodated in the same building. These flats also had 14-foot high ceilings and a single tall window so are well ventilated, bright, and less dependent on electric fans for cooling. The spaces add extra room without seeming crowded, and include small spaces for bathing. Toilets are placed at the end of each of the



building's four floors, and kept clean by the two or three families who use each one. These ideas only work when water is running in Dharavi.

Architecture students have also been hard at work. One student has created a multi-storey building with wide outer corridors connected by ramps "space ways in the sky," to replicate the street. These space ways allow various activities to be linked, such as garment workshops, while maintaining a secluded living space on another. Communal open space on various levels allows women to preserve an afternoon tradition, getting together to do embroidering.

One student also tried to help the potters of Dharavi. He designed into existing houses the living space at one end and a place to make the pots at the other. Each has an additional open terrace on which to make pot. These are then fired in a community heating system.

As the National Slum Dwellers Federation has repeatedly proven, housing the poor works best, costs less and is better for the environment, when the poor themselves have a say in what is being built.

Dharavi could also follow the Brazilian model, as evidenced in Rocinha in Rio de Janeiro. Within the Favelas the government has assisted people in improving their homes. Breeze blocks and other materials (pipes for plumbing etc) were given as long as people updated their homes. This is an approach known as Site and Service. The Brazilian government also moved a lot of people out of shanty towns and into low cost, basic housing estates with plumbing, electricity and transport links. The waiting list for these properties was huge.

Suburbanisation in Mumbai

Suburbanisation is the process by which, factories, offices and shops move out from the central areas of cities and into the suburbs. Suburbanized Villages and Towns are dormitory or commuter villages and towns with a residential population who sleep in the village or town but who travel to work in the nearby large urban area. The suburbanized village has increasingly adopted some of the characteristics (new housing estates, more services) of urban areas.

Mumbai now has a long history of suburbanisation, and many key events have occurred in the suburbanisation process. Initially in a Northwards direction along major transport routes such as roads and rail links, and now in an Eastward direction. This suburbanisation has involved not just the growth of residential areas but also the relocation and growth of new industrial areas.

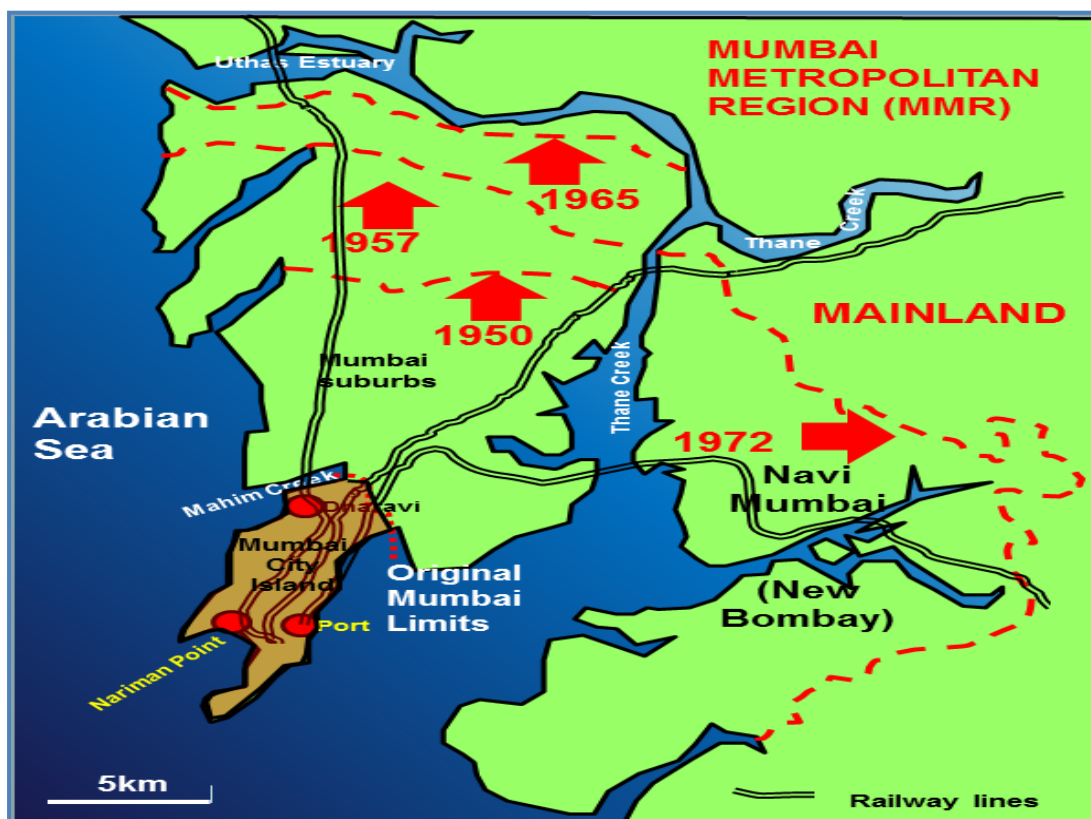
The table below shows the growth and rise of suburbanisation in Mumbai.

TABLE 2: SUBURBANISATION IN MUMBAI

1930s to 1940s	The rise of Shivaji Park area, Matunga and Mahim as the outlying suburbs.
1960s (post independence)	Inner suburbs in southern Salsette and Chembur-Trombay had emerged.
1970s	Assimilation of the 'extended suburbs' beyond Vile-Parle and Ghatkopar.

As with other major cities, other towns and villages have been swallowed up by Mumbai in the process of suburbanisation. In the last decade, Thane, Vashi and Belapur have become extended suburbs despite being planned as individual towns. All of these developments are summarised in the map below.

MAP OF SUBURBANISATION IN MUMBAI



The northwards movement along rail and road corridors comes first. Next, the areas around these communication links are developed. Thirdly, these areas extend outwards and can involve reclaiming land next to creeks and mangrove, and slopes in the hills of Salsette can be colonised too. The major railway stations have areas around them that have become shopping fronts. The reclaimed areas house the wealthier middle and upper classes, but poorer people will build huts in and amongst these areas and full shanties can grow on the poorest quality land.



This suburbanisation has had consequences:

1. People are economically stratified into those that can afford better housing and those that cannot, rather than historical caste, religious or linguistic stratifications.
2. Less than a third of the population of Mumbai lives in the 'island' city.
3. The centre of density of population has shifted from the island city well into suburban Salsette.
4. The commuter traffic has changed. Rather than being just one way into the Central Business District (CBD) in the south of the city in the mornings there is an increasing movement of people in the opposite direction. Increasing industrialisation of the suburbs is increasing this movement.

Counterurbanisation in Mumbai

Counterurbanisation refers to the movement of people from the MEDC cities to the countryside seeking a better quality of life. Many still commute into the city to work, but increasing numbers are moving to completely change their lifestyle and work in the rural area, often by teleworking.

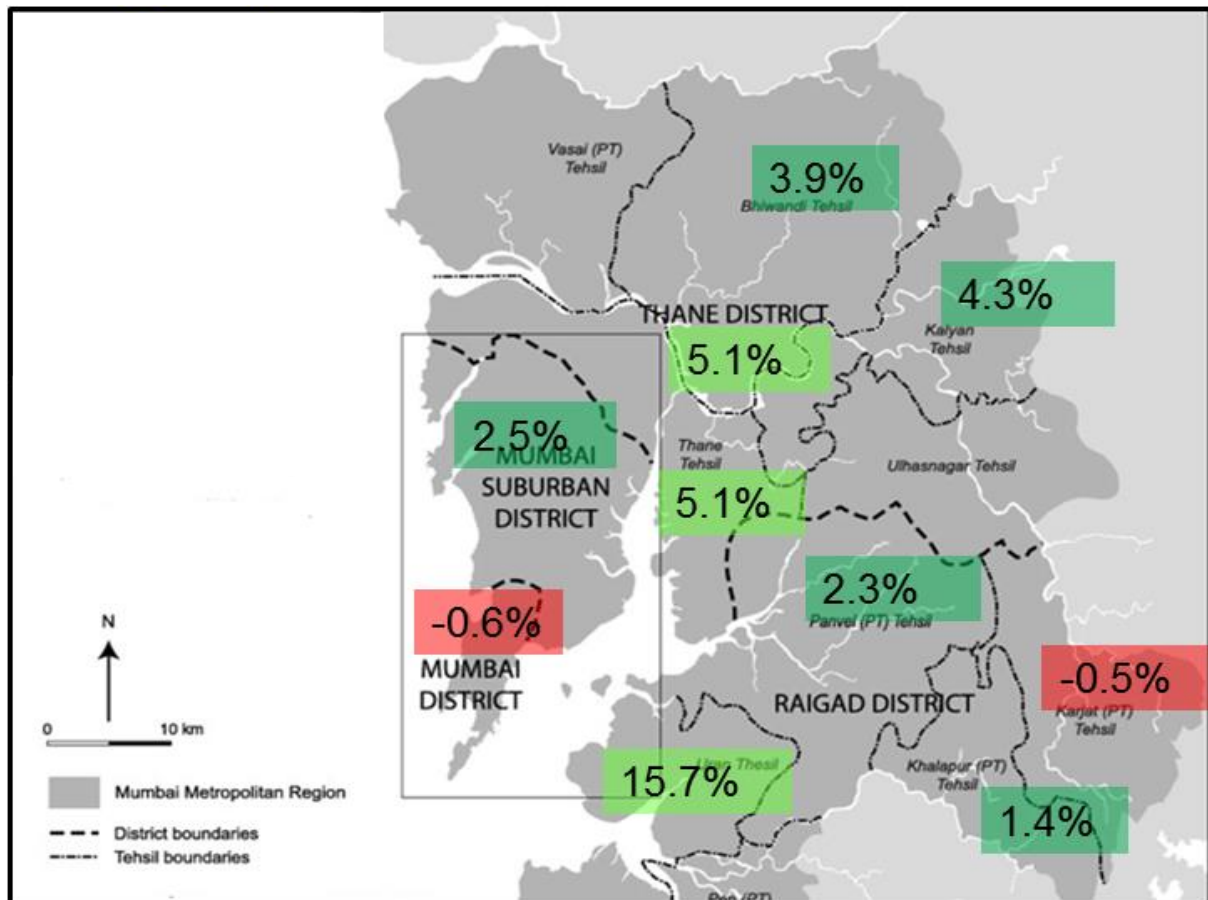


Figure 1.26: Navi Mumbai is a planned township of Mumbai on the west coast of the Indian state of Maharashtra.

Navi Mumbai is a planned township directly to the East of Mumbai and was designated in 1972. It is the largest new town in the world. The town was developed to reduce congestion and population densities in Mumbai, which itself were restricted by its physical geography. The new town now has a population of 1,111,000 people. It is linked to Mumbai by road and rail bridges and an international airport. It also has an extensive bus network, an international airport and many IT and software firms in areas such as the International Infotech Park at Vashi and the New Millennium City near Mahape.

Take a look at the map on the next page. It shows that some of the population of Mumbai is also counterurbanising, with a decline in population over a 20 year period within the original heart of the city in Mumbai district. The largest growth is in those districts directly to the East of Salsette Island. Districts 50 or more kilometres from Mumbai are also growing. One such phenomenon fuelling this growth is that of planned towns.

ANNUAL PERCENTAGE GROWTH RATES ACROSS MUMBAI METROPOLITAN DISTRICT, 1991-2011



Mumbai: A Contrast with Dubai

We have learnt in the Dubai Case study that UAE has developed very rapidly from a developing country with a largely nomadic population, to a modern and wealthy country with a Western lifestyle. This economic progress has brought undoubted social benefits and opportunities for UAE citizens, including a high and increasing life expectancy. Ninety percent of Dubai's population is comprised of guest workers from places like India, Bangladesh, and Vietnam, a strange imbalance explored at length in the January 2014 issue of the National Geographic Magazine.

With such rapid urbanization, questions about the environmental impact of especially the rapid infrastructural development and the structural integrity of buildings have risen. Dubai is mostly desert and so most of its water has to be desalinated for the excessive use of air conditioning. There is also a significant problem with lifestyle chronic diseases, particularly obesity-related cardiovascular risk. In response the Health Authority of Abu Dhabi has significantly strengthened its data systems to better assess the baseline and measure the impact of targeted interventions.

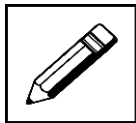
Mumbai also had rapid urbanization but sourced principally by rural-urban drift and natural increases. A typical megacity in a developing world, it is characterized by slum dwellers that



make up an ever increasing proportion of its population, creating numerous problems for people and planners.

From these discussions we can see that many factors contributed to the rapid urbanization processes in both cities. The socio-economic and environmental problems and challenges both cities face also varies.

Now do learning activity 5 below.



Learning Activity 5

1. Why Bombay did needed a fort and a garrison?

2. Who were the first Europeans to visit India and when did that happen?

3. What was the chief reason behind the *Mughal Attack*? What was the consequence of this attack on the population of Bombay?

4. What was the Bombay Marine?

5. When and why was Bombay changed to Mumbai?



6. Briefly describe the Dharavi slum Recycling Zone.

7. Distinguish between suburbanisation, counterurbanisation and reurbanisation.

CHECK YOUR ANSWERS AT THE END OF THE UNIT SUMMARY



TOPIC 12.2.2: INDUSTRIAL GROWTH

INTRODUCTION

Welcome to the second topic of Unit 2. We will be discussing Industrial Growth, its influence on urbanisation and Industrial Development in Europe and Asia. We will also study the Growth and Influence of Key Industries and the Growth of Small Scale Industries in Papua New Guinea.



Objectives or aims

- Define Industrial Revolution and Growth
- Discuss industrial growth and key industries in developing and developed countries
- Describe factors that enhance or hinder rapid industrial growth
- Summarise the effects of industrial growth on people and environment

This topic should be completed within 10 weeks.

If you set an average of 3 hours per day, you should be able to complete the unit comfortably by the end of the assigned week.

Try to do all the learning activities and compare your answers with the ones provided at the end of the unit. If you do not get a particular exercise right in the first attempt, you should not get discouraged but instead, go back and attempt it again. If you still do not get it right after several attempts then you should seek help from your friend or even your tutor. Do not pass any question without solving it first.



Topic 12.2.2.1: Industrial Growth and Its Influence on Urbanization and Industrial Development in Europe and Asia

This is subtopic 1 of topic 2. In this subtopic, we will examine the influences of Industrial Growth on Urbanisation and Industrial Development in Europe and Asia.

Beginnings of the Industrial Revolution and Growth

A revolution in agriculture in the 1700s created conditions that favored the Industrial Revolution. Farmers began growing new crops and using new technology such as the seed drill and the iron plow. Jethro Tull invented the seed drill in 1701. It was used for drilling holes into the ground and burying seeds all at once. It was created in multiple areas because he traveled to many places. The seed drill was a more efficient way of planting seeds.

Increased food production improved people's diet and health, which in turn contributed to rapid population growth. Better farming methods meant that fewer people were needed to farm. As a result, unemployed farmers formed a large new labor force.

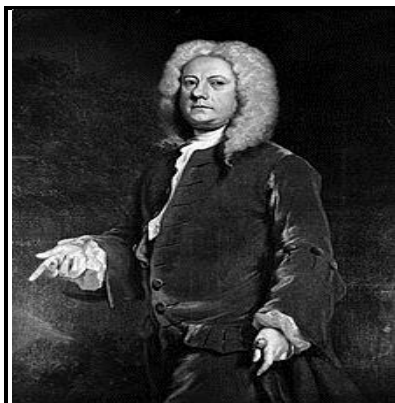


Figure 2.1a: Jethro Tull, 1674



Figure2.1b: Jethro Tull's Seed Drill

The Industrial Revolution was the transition to new manufacturing processes in the period from about 1760 to sometime between 1820 and 1840. This transition included going from hand production methods to machines, new chemical manufacturing and iron production processes, improved efficiency of water power, the increasing use of steam power, and the development of machine tools. It also included the change from wood and other bio-fuels to coal.

The Factory System

The Industrial Revolution began in the textile industry in Britain, where a series of inventions created new demands for labourers. It remained the dominant industry of the Industrial Revolution in terms of employment, value of output and capital invested. The textile industry was also the first to use modern production methods.

Between 1733 and 1793, inventors produced new machines, such as the flying shuttle, the spinning jenny, and a water-powered loom, that speeded up the spinning and weaving of wool and cotton. Many new machines were powered by running water, so inventors built spinning mills near rivers and hired many workers to run the machines. The new machines



led to the growth of the factory system, which brought workers and machines together in one place to manufacture goods. By the late 1700s, steam began to replace water as a source of power. Inventors such as Thomas Newcomen and James Watt improved the steam-powered engine.



Figure 2.2a: Thomas Newcomen (1663 – 1729) was an ironmonger by profession, but made a significant contribution to the Industrial Revolution with his invention of the atmospheric steam engine.

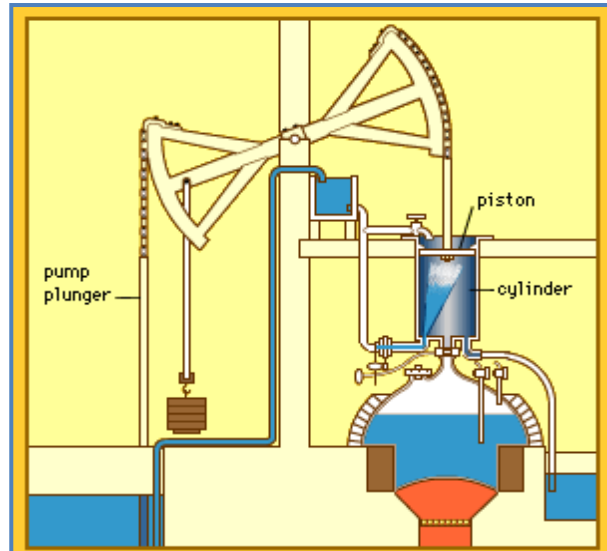


Figure 2.2b: The 1712 Atmospheric Steam Engine built by Thomas Newcomen and John Calley was driven by steam at near-atmospheric pressure.

Steam engines gave a boost to two other industries that were essential to the Industrial Revolution; coal and iron. New processes were developed to produce stronger iron. In the mid-1800s, Henry Bessemer developed a process to improve the production of steel, a mixture of iron and other materials. Steel triggered the growth of still other industries.

Improvements in Transportation and Communication

During the Industrial Revolution, advances were made in transportation and communication. In Britain, roads made of longer-lasting surfaces and canals connected all parts of the nation. A mining engineer, George Stephenson, developed the first steam-powered locomotive, opening the way for the building of railroads. Railroads and steam-powered ships improved transportation around the world. In 1837, an American inventor, Samuel F.B. Morse, devised the *telegraph*, which revolutionized communications.

TELEGRAPH is a system for transmitting messages from a distance along a wire, especially one creating signals by making and breaking an electrical connection



Figure 2.3a: Iron and Coal, 1855–60. William Bell Scott illustrates the central place of coal and iron working in the industrial revolution and the heavy engineering projects they made possible.



Figure 2.3b: A Watt steam engine. The steam engine, made of iron and fuelled primarily by coal, propelled the Industrial Revolution in Great Britain and the world.

Why Britain Took the Lead

The Industrial Revolution began in Great Britain and spread to Western Europe and the United States within a few decades. The precise start and end of the Industrial Revolution is debated among historians. Eric Hobsbawm held that it 'broke out' in Britain in the 1780s and was not fully felt until the 1830s or 1840s, while T. S. Ashton held that it occurred roughly between 1760 and 1830.

The First Industrial Revolution evolved into the Second Industrial Revolution. This happened in the transition years between 1840 and 1870, when technological and economic progress continued with the increasing adoption of transport steam (steam-powered railways, boats and ships), the large-scale manufacture of machine tools and the increasing use of machinery in steam powered factories.

Great Britain enjoyed many advantages that helped it take the lead in the Industrial Revolution. It had plentiful iron and coal resources and a good transportation system. It was a leading commercial power so merchants had the capital to invest in new enterprises. It had colonies that supplied raw materials and bought finished goods. The British government encouraged improvements in transportation and used its navy to protect British trade. Finally, the British accepted the idea that people could move ahead in society by hard work and talent.

The Industrial Revolution marks a major turning point in history. Almost every aspect of daily life was influenced in some way. In particular, average income and population began to exhibit unprecedented sustained growth. Some economists, such as Robert E. Lucas, Jr., argue that the real impact of the Industrial Revolution was that "for the first time in history, the living standards of the masses of ordinary people have begun to undergo sustained growth ..."



Factors that Contributed to Industrial Revolution

There were many factors that allowed for the industrial revolution to occur. The significance of each can be argued to be greater than the other. It is also believed that the rural situation played a major role in the industrial development of the time. Firstly, *proto-industrialization* had begun in rural areas which led to the rise of *capitalism*, a major driving force of the Industrial Revolution, in the countryside. Secondly, a change in farming methods during the *Agricultural Revolution* also cannot be overlooked. This is because increased amounts of food also led to a growth in the British population with increasing numbers of younger population every day. Yet, this began a vicious cycle; improved agricultural technology meant that less people were required to work the lands; yet, at the same time, there were more and more population reaching working age. This compelled agricultural potential labourers to seek employment elsewhere. They started to migrate to the cities where they could find employment in the industries that were established.

PROTO-INDUSTRIALISATION (also spelled **proto-industrialization**) is a phase in the development of modern industrial economies that preceded, and created conditions for, the establishment of fully industrial societies. It was marked by the increasing involvement of agrarian families in market-oriented craft production, mainly through the putting-out system organized by merchant capitalists.

CAPITALISM refers to an economic system in which investment in and ownership of the means of production, distribution, and exchange of wealth is made and maintained chiefly by private individuals or corporations, especially as contrasted to cooperatively or state-owned means of wealth.

AGRICULTURAL (or Agrarian) **REVOLUTION** was a period of agricultural development between the 18th century and the end of the 19th century, which saw a massive and rapid increase in agricultural productivity and vast improvements in farm technology.

Causes and Effects

A. Transportation

The Industrial Revolution began to change England, and subsequently the rest of the Europe, into the modern world we live in today. Beginning in mid-late 18th to early 19th century, different means of transportation began developing. Originally, the primary focus was on the construction of canals which began on an unprecedented scale during this time. This period is now called 'Canals Mania'. Canals were very functional as they provided an inexpensive means to connect landlocked regions to the sea where trade can occur.

The Bridgewater Canal in the photograph on the next page connects Runcorn, Manchester and Leigh, in North West England. It was commissioned by Francis Egerton, 3rd Duke of Bridgewater, to transport coal from his mines in Worsley to Manchester. It was opened in 1761 from Worsley to Manchester, and later extended from Manchester to Runcorn, and then from Worsley to Leigh.



Figure 2.4a: Worsley Packet House, overlooking the Bridgewater Canal in Worsley, Greater Manchester



Figure 2.4b: The Royal Canal in rural County Westmeath north of Kinnegad, Ireland

This growth in infrastructure allowed for improved connections from one place to another where they previously isolated from each other. This was vital in two different ways. Firstly, time-space compression began taking place as the time required to travel from one area to another was decreased and in sense, shrinking the Earth. More importantly, the area of influence of cities, the hinterlands was further developed, because of the greater ease of transportation.

Yet, technology was always developing and the 19th century trains had begun replacing smaller canals as the predominant method of transport. There were heavy investments in trains and in order to further their process, train companies began buying canals and halting their transportation. This allowed trains to begin monopolizing the transportation market.

B. Knowledge

Education was one of the fields most influenced by the Industrial Revolution. This improvement can be best accredited to the increased accessibility of books and the enlightenment that had occurred soon before. As the technology of printing and publishing matured, the amount of books and journals being published reached record highs. This led to an enhanced spread of new ideas within the general public. Information recorded by industrialists and technicians of the period provided a great amounts of information inexpensively compared to previous ages.

Even during the time, people had begun noticing this change. Jean le Rond d'Alembert, a French mathematician, physicist, philosopher and music theorist was one of the people who began noticing the social change during the 18th century before the beginning of the Industrial Revolution. He remarked in "Preliminary Discourse to the Encyclopaedia of Diderot" that "if one looks at all closely at the middle of our own century, the events that occupy us, our customs, our achievements and even our topics of conversation, it is difficult not to see that a very remarkable change in several respects has come into our ideas; a change which, by its rapidity, seems to us to foreshadow another still greater.



To summarize, there were several major evolutions in learning and knowledge during this period of time. Firstly, technological improvements had led to the development of science in the modern sense. With their faith in the new technologies, people began to view the universe as being ordered. This meant that institutions are becoming increasingly secular and scientific. Secondly, the importance of education had changed drastically over the past hundred years from the 16th to the 17th century. This is because the availability of books have increased literary rate. This is significant as this period also coincided with rapid economic growth. New wealthy individuals and the recently emerging middle classes without an *aristocratic* upbringing required another method to demonstrate their improved social statuses. The only possible way was to pursue and support scientific study and ventures. This led to third major evolution, which was the enhanced spread of scientific ideas. Wealth began pouring into academies and publications which directly increased the speed with which knowledge could be transferred from one individual to another.

ARISTOCRACY is a broad term that usually refers to people in a particular social order that considers to be the highest social class of that society. **ARISTOCRATIC** upbringing refers to people who were brought up under this high social class conditions.

The thinkers of this era were united under a common objective: social reform. They trusted science to transfer Europe from a *feudal* society to the modern society we have today. With this mind, it is obvious that they perceived themselves as social engineers from a New and modern Europe. It is important to remember that despite the emergence of additional riches and hence, more prosperous individuals than the previous one, many of these people had an *affluent* upbringing. However, their abundance also reflected the limitations and social injustices of Europe at the time. Examples of this include the exploitation of working-class people into estates which is particularly true in the countryside. Furthermore, *nepotism* and corruption was the norm because democracy and *liberty* simply did not exist. Instead, *absolutism* ruled the day. The primary purpose behind this new age of thinkers was to overthrow the system of the day and appoint a new form of government and society, one that is guided by *liberal* and democratic factors. The best way to do is this through science and education.

FEUDAL refers to a system of ownership usually associated with pre-colonial England, in which the king or other sovereign is the source of all rights. **AFFLUENT** refers to a group or area having a great deal of money and is very wealthy. **NEPOTISM** is the practice among those with power or influence of favouring relatives or friends, especially by giving them jobs. **ABSOLUTISM** refers to a form of government in which all power is vested in a single ruler or other authority. **LIBERAL** means to be willing to respect or accept behavior or opinions different from one's own or being open to new ideas.



C. Technology and Engineering

With increased knowledge comes improved technology. Unlike previous times, innovations had allowed for the appearance of mechanical energy on demand. Man and animal power no longer placed a limitation upon production. This became possible with the invention and usage of steam power in 1712 with the invention of the Atmospheric Engine. Particularly, steam energy significantly enhanced the efficiency of cotton spinning and iron manufacturing. While these two industries may seem insignificant today, they were the staple industries of the time because of these two fields that steam power spread across Europe piecemeal. This new technology allowed the creation of powered, automatic and continuous machines. This meant that industrial production was no longer done in small homes but instead development of large-scale factories.

The usage of factory greatly improved the means of production of the day. The original spread of mechanical production was small but by 1850, it had permeated through all layers of industry and not just iron and cotton production. While water power was still the norm in most industries, the invention of steam power had made industrial expansion spread into areas where other forms of power cannot supply. This meant that production can occur away from rivers in areas with little wind. Production on a large scale in such environments was previously impossible as the only source of power was man and animal.

This was perhaps the greatest cause of the industrial Revolution. New technology and its potential for significantly increasing output signalled the change to come. The social engineers and reformers of the previous age had their wish. That is science and technology effectively changed the relationships between the people in Europe. The end result was a creation of an entirely new social class, the urban population. This began a cultural change that continues well in the 1900s and persists to this day in underdeveloped regions. Yet all of this was begun by the British Industrial Revolution that started in the 18th century.

The Rise of Industrial Cities

One of the defining and most lasting features of the Industrial Revolution was the rise of cities. In pre-industrial society, over 80 percent of people lived in rural areas. As migrants moved from the countryside, small towns became large cities. By 1850, for the first time in world history, more people in a country, lived in cities than in rural areas. This happened in Great Britain. As other countries in Europe and North America industrialized, they too continued along this path of urbanization. By 1920, a majority of Americans lived in cities. In England, this process of urbanization continued persistently throughout the 19th century. The city of London grew from a population of two million in 1840 to five million forty years later (Hobsawm, Industry and Empire 159).

Industrial Revolution aided urbanisation in Britain and other parts of the world. People who lived and worked in the countryside moved to the city for new employment opportunities. Peasants and farmers moved to the city to realise dreams of wealth and steady employment. Upon arriving in the city and taking on a new job, the peasants were met with exploitation and disappointment.



Rapid growth brought urban problems, and industrial-era cities were rife with dangers to health and safety. Rapidly expanding industrial cities could be quite deadly, and were often full of contaminated water and air, and communicable diseases. Living conditions during the Industrial Revolution varied from the splendour of the homes of the wealthy to the uncleanness of the workers. Poor people lived in very small houses in cramped streets. These homes often shared toilet facilities, had open sewers, and were prone to *epidemics* worsened by persistent dampness. Disease often spread through contaminated water supplies.

Workers were housed close to the factories to minimise transportation time and cost. This allowed the factory owners to exert more control over the workers. Poorly built cheap and unsanitary settlements were erected to accommodate these *peasants*.

In the 19th century, health conditions improved with better sanitation, but urban people, especially small children, continued to die from diseases spreading through the cramped living conditions. Tuberculosis (spread in congested dwellings), lung diseases from mines, cholera from polluted water, and typhoid were all common. The greatest killer in the cities was tuberculosis (TB). Archival health records show that as many as 40 percent of working class deaths in cities were caused by tuberculosis.

An EPIDEMIC refers to the rapid spread of infectious disease to a large number of people in a given population within a short period of time, usually two weeks or less. A PEASANT is a member of a traditional class of farmers, either laborers or owners of small farms, especially in the Middle Ages under feudalism, or more generally, in any pre-industrial society.

Changes in Social and Living Conditions

The industrial and economic developments of the Industrial Revolution brought significant social changes. Industrialization resulted in an increase in population and the phenomenon of urbanization, as a growing number of people moved to urban centres in search of employment. Some individuals became very wealthy, but some lived in horrible conditions. A class of prosperous industrialists, ship owners and merchants dominated, accumulating great wealth, but at the same time the working classes had to live with minimum comforts in overcrowded environments. Children were sent to work in factories, where they were exploited and ill-treated; women experienced substantial changes in their lifestyle as they took jobs in domestic service and the textile industries, leaving the agricultural workforce and spending less time in the family home. This period also saw the creation of a middle class that enjoyed the benefits of the new prosperity. People started spending their free time entertaining themselves in theatres, concert halls, sports facilities or enjoying the countryside in long walks.



Figure 2.5: Child labour was unfortunately integral to the first factories, mines, and mills in England.

The 19th century Britain experienced political unrest as the industrialization and urbanization of the country created a need for social and political change. There were increasing demands for improved social welfare, education, labour rights, political rights and equality, as well as for the abolition of the slave trade and changes in the electoral system. As a result, the slave trade was abolished in 1807 and the Great Reform Act was passed by Parliament in 1832. After this Reform Act, manufacturing cities such as Birmingham and Manchester could be represented in Parliament for the first time, thereby substantially changing the character of parliamentary politics.

Now do learning activity 6 below.



Learning Activity 6

1. Which event preceded the Industrial Revolution?

2. What is the Industrial Revolution?



3. Name the three new machines that speeded up production in the textile industry during the Industrial Revolution.

i) _____

ii) _____

iii) _____

4. Discuss the advantages Great Britain had to lead the Industrial Revolution.

5. Study the picture below and answer the questions that follow.



i) What social issue does this picture portrays about the industrial cities?

ii) Briefly describe the events that led to the rise of industrial cities.

CHECK YOUR ANSWERS AT THE END OF THE UNIT SUMMARY



Topic 12.2.2.2: The Growth and Influence of Key Industries

This is subtopic 2 of topic 2. In this subtopic, we will examine the Growth and Influence of Key Industries.

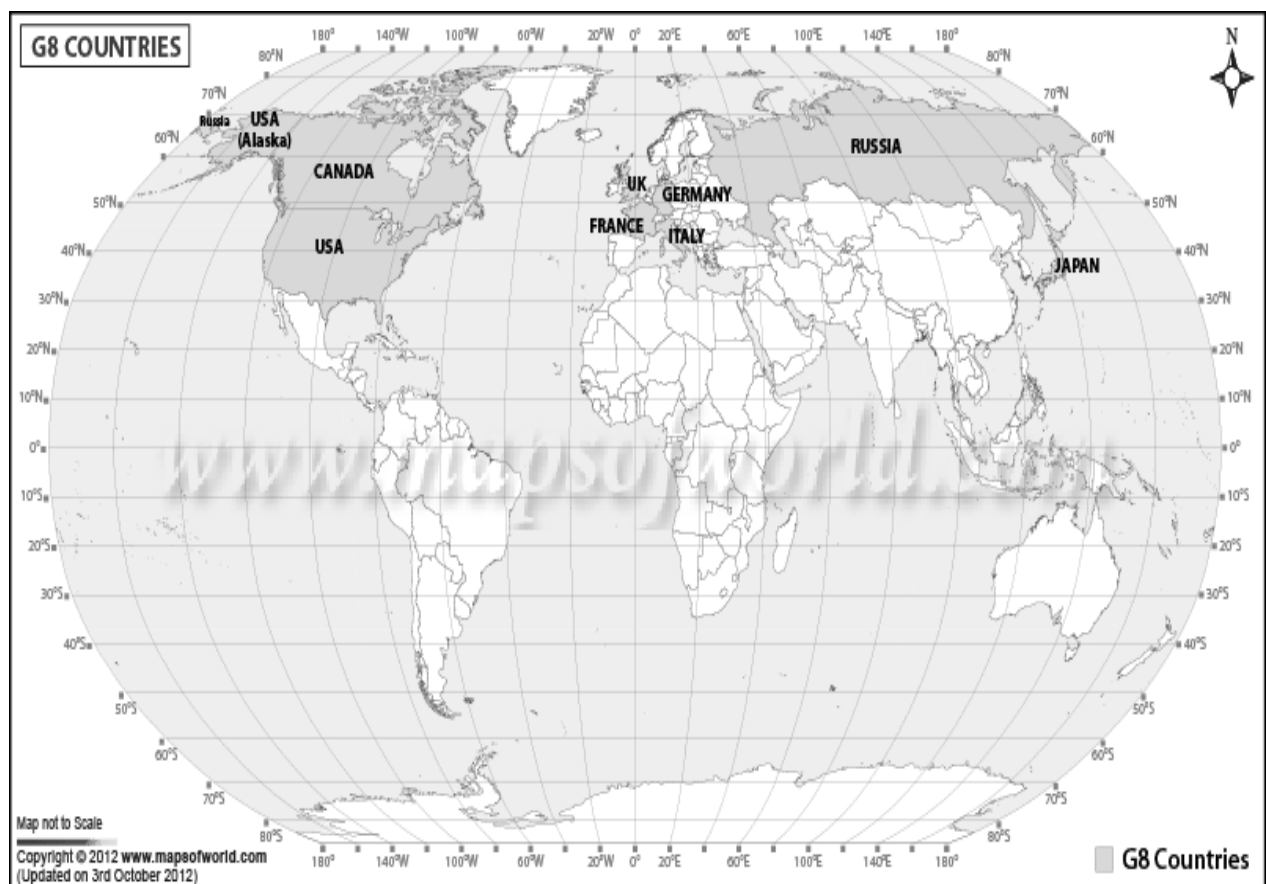
First of all we will identify the main industrialised nations of the world today and their key industries. We will also study how the key industries in these industrialised nations have grown to dominate the world market.

Introduction

The **Group of Seven (G7, formerly G8)** is a governmental forum of leading advanced economies that are also highly industrialized nations in the world today. The Group of Eight (G8) was originally formed by six leading industrialized countries and subsequently extended with two additional members, one of which, Russia, is suspended. Since 2014, the G8 in effect comprises seven nations and the European Union as the eighth member.

Have a look at the map below. It shows the G8 countries around the world.

THE G8 COUNTRIES





On March 24, 2014, the original G7 nations voted to, in effect; suspend Russia from the organization in response to the country's annexation of Crimea.

Membership

The forum originated with a 1975 summit hosted by France that brought together representatives of six governments: France, West Germany, Italy, Japan, the United Kingdom, and the United States, thus leading to the name **Group of Six** or **G6**. The summit became known as the **Group of Seven** or **G7** in 1976 with the addition of Canada. The G7 is composed of the seven wealthiest developed countries on earth (by national net wealth or by GDP, and it remained active even during the period of the G8. Russia was added to the group from 1998 to 2014, which then became known as the G8. The European Union was represented within the G8 since the 1980s but could not host or chair summits. The 40th summit was the first time the European Union was able to host and chair a summit.

They hold an annual meeting to foster consensus on global issues like economic growth and crisis management, global security, energy, and terrorism. The forum enables presidents and prime ministers, as well as their finance and foreign ministers, to openly discuss pressing international issues.

The table below shows the G8 countries, their country or government heads and the name of the country leaders.

TABLE 3: LIST OF G8 COUNTRIES

G8 Country Name	Country Govt. Heads	Name of Country Leaders
Canada	Prime Minister	Stephen Harper
France	President	François Hollande
Germany	Chancellor	Angela Merkel
Italy	Prime Minister	Matteo Renzi
Japan	Prime Minister	Shinzō Abe
Russia	President	Vladimir Putin
United Kingdom	Prime Minister	David Cameron
United States	President	Barack Obama

In 2012, the G8 nations collectively composed 50.1 percent of the 2012 global nominal GDP and 40.9 percent of global GDP. In each calendar year, the responsibility of hosting the G8 summit is rotated through the member states in the following order: France, United States, United Kingdom, Russia, Germany, Japan, Italy, and Canada. The holder of the presidency sets the agenda, hosts the summit for that year, and determines which ministerial meetings will take place. Both France and the United Kingdom have expressed a desire to expand the



group to include five developing countries, referred to as the **Outreach Five (O5)** or the **Plus Five**. They are: Brazil (7th country in the world by nominal GDP), People's Republic of China (2nd country in the world by GDP), India (10th country in the world by GDP), Mexico, and South Africa. These countries have participated as guests in the meetings that are sometimes called G8+5.

Let us now have a look at few key industries that dominate the world market.

Key Industries

Non-Life Insurance Industry

The G8 Non-Life Insurance industry guide provides the top-line qualitative and quantitative summary information including the market size (value 2010 to 2014, and forecast to 2019).

The G8 countries contributed \$1,411,579.3 million in 2014 to the global non-life insurance industry, with a Compound Annual Growth Rate (CAGR) of 3.8 percent between 2010 and 2014. The G8 countries are expected to reach a value of \$1,539,512.2 million in 2019, with a CAGR of 1.8 percent over the 2014 to 2019 period.

The US is expected to lead the non-life insurance industry in the G8 nations with a value of \$825,250.4 million in 2016, followed by Germany and the UK with expected values of \$149,690.7 and \$125,497.7 million, respectively.

The Non-life Insurance market consists of cereals, roots and tubers, sugar crops, accident and health insurance and the property and casualty insurance sector.

Agricultural Products Industry

Among the G8 nations, the US is the leading country in the agricultural products industry, with market revenues of \$157,322.9 million in 2014. This was followed by Japan and Russia, with a value of \$107,823.4 and \$55,808.5 million, respectively.



Figure 2.6: Representatives of BRICS

Brazil, Russian Federation, India and China (BRIC) are the emerging and fast growing countries within the agricultural products industry and had a total market value of \$1,286,087.0 million in 2014. China was the fastest growing country with a CAGR of 11.1 percent over the 2010 to 2014 period.

Within the BRICS agricultural products industry, China is the leading country among the BRIC nations with market revenues of \$1,062,548.1 million in 2014. This was followed by India, Russia and Brazil with a value of \$116,211.7, \$55,808.5, and \$51,518.7 million, respectively.



These BRICS countries provide a great example of four countries with very little natural geographical, cultural or historical ties, which have come together to focus on mutual opportunities and challenges. BRICS expert David Thomas outlines how Papua New Guinea and other Pacific nations could learn from the BRICS.

The four original BRICS nations are Brazil, Russia, India and China, which have now been joined by South Africa. In early 2014, they set up their own BRICS Development Bank, believing the IMF, World Bank and other western influenced institutions are not doing enough to support and invest in developing countries.

Here are five things Papua New Guinea could learn from the BRICS nations:

1. Choose your Friends Carefully

PNG policymakers and leaders must think hard about the countries that can and/or will have the most impact on their future and progress. Then work hard to establish a tight knit group of like-minded leaders who meet regularly to make things happen. This can be achieved (as with the BRICS) without upsetting or excluding existing relationships with other countries which are important from a trade or investment perspective.

2. Attract Foreign Investment

China is the most significant investor in the region, with a well-developed “Going Out” strategy to focus on energy and food security. PNG is very well placed to attract substantial investment from China, particularly in the mining resources, food and agricultural sectors.



Figure 2.7: David Thomas is the CEO of Think Global Consulting

PNG has a history with Chinese investment, with local stories of cultural misunderstandings, poor execution and even corruption. This is perhaps not focusing as much on China as it could. Regular visits, via sister-city relationships are welcomed in China, as are regular visits by all political leaders, particularly the prime minister.

3. Accelerate Urbanization

Urbanization is a driving force for economic growth and expansion and can produce an increase of 20 percent GDP per capita. It is critical for the government to speed up its ‘National Urbanization Policy 2010-2030. It increases rural productivity, boosts demand for resources, commodities, energy and drives domestic consumption (urban residents spend 3.6 times more than rural dwellers).



On PNG's doorstep, Indonesia is the fastest urbanizing country in the world and is witnessing growth in the numbers of middle class consumers. All the BRICS are benefiting from rapid urbanization, notably China and India. By contrast, PNG is a rural and agricultural economy with only around 18 percent of the population currently living in urban centers.

Furthermore, Port Moresby, PNG's capital, is ranked as the world's third worst city for likeability by *The Economist* magazine, with 50 percent of the estimated population of 700,000 living in poor conditions. PNG towns and cities are under major stress from unmanaged urbanization and, unless properly managed, quality of life issues including urban security, customary land development and affordable housing issues will further deteriorate. It is critical for the government to speed up its *National Urbanization Policy 2010-2030*.

4. Stability is the Key

Brazil is a good example of how political and fiscal stability can lead to substantial economic growth by comparing two periods in Brazil's recent history:

From 1980 to 1994, Brazil had:

- 5 presidents
- 15 finance ministers
- 14 CB presidents
- 6 currencies
- 7 percent average annual inflation
- Inefficient public sector
- Closed economy
- Balance of payment crisis
- Incipient monetary policy
- Fiscal mess

From 1995 to 2010 (15 years)

- 2 presidents
- 3 finance ministers
- 5 CB presidents
- One currency
- 7 percent average annual inflation
- Privatisation
- A more open economy
- Lower external vulnerability
- Inflation targeting
- Improved fiscal policy

"My advice to PNG is to become a beacon of political stability among the Pacific Islands, and the region as a whole", said David Thomas, CEO of Think Global Consulting.

5. The Importance of Planning

China is an example of a planned economy, which benefits greatly from the existence of a well-developed Five-Year Plan but, more importantly, a long track record for having met and exceeded almost all of the targets, milestones and objectives outlined in each of its 11 Five-Year Plans over the past 60 years.

'.....my advice to PNG is to gain a reputation for not just having a vision, but for execution, implementation and deliverables', said David Thomas, CEO of Think Global Consulting.



Let us now examine the growth and expansion of some key industries in US. The driving force behind the growth and expansion of its key industries is its Export-Import Bank.

Key Industries in the US

Some of the key industries include Oil and Gas, Mining, Agribusiness, Renewable Energy, Construction and Services, Aircraft, Power Generation and Related Services. We will take a closer look at how three of these key industries has boosted industrial growth in US and have grown to dominate the world market.

The Export-Import Bank of the United States was founded to sustain and maintain American jobs by supporting the export of U.S. goods and services to foreign buyers. The Ex-Im Bank is dedicated to creating trade finance programs that help both American exporters and emerging countries that otherwise would not be able to purchase U.S. products. Therefore, Special Initiatives have been formulated to assist industries that have high growth rates, great potential and are highly competitive in the Global Marketplace.

Oil and Gas

Ex-Im Bank views the Oil and Gas sector as a key industry due to its overall size and importance to the U.S economy and high employment rates (supporting 9.2 million jobs in the U.S, according to the American Petroleum Institute). Presently, more than 10,000 U.S companies, ranging from small businesses to global-scale enterprises, provide the goods and services that support petroleum exploration, drilling, refining and other operations, both domestically and internationally. Although U.S companies have maintained their traditional technological leadership in the industry, they face increasing competitive challenges from manufacturers and service providers in Western Europe, Canada, Asia and South America.

For many years, the Petroleum Sector (including oil and gas exploration, field development, pipelines and distribution, refineries and petrochemical operations) has represented a major element of Ex-Im Bank's range of activities and annual financing commitments. From fiscal year 2001 to the present, Ex-Im Bank has provided commitments totaling \$14.8 billion dollars for 78 transactions (projects) in the Petroleum Sector. This included 49 transactions in Latin American, fourteen in Africa, six in Russia/FSU, five in the Middle East and four in Asia.

In the fiscal year 2010, Ex-Im Bank provided approximately \$3 billion in financing for the Papua New Guinea Liquefied Natural Gas Project. That complex project included a natural gas liquefaction facility, gas and liquid pipelines and gas field developments in Papua New Guinea. The project will enable gas to be transported to an energy starved Asia while contributing substantially to the economy of Papua New Guinea.

Since the Petroleum Industry is expected to maintain high levels of capital development expenditures for the foreseeable future, annually exceeding \$200 billion worldwide, and with increasing globalization of the industry, Ex-Im Bank's role in supporting jobs associated with the U.S exporters in this sector can be expected to grow even further. Ex-Im Bank will help U.S companies involved in the petroleum sector maintain an edge in the international



marketplace. This will enable them to effectively compete against foreign counterparts who receive support from other export credit agencies.

Mining

The U.S. is the major supplier of large mining and processing equipment to the world mining industry, be it coal, copper, gold or uranium. It is expected to continue to play a major role in this sector, including both surface and underground mining. Domestically produced equipment is based on innovation and incorporates high technology in its design and manufacturing process. This enables the U.S. exporters of mining equipment to remain highly competitive in the international marketplace, along with the continued support of the Ex-Im Bank.

Soon after Ex-Im Bank was taken on in 1934, it became a force in the mining and minerals processing sector, beginning with projects in Latin America. Since then, its financing has supported projects from Canada to Argentina, and from Russia to Africa and Australia.

During the fiscal year 2010, Ex-Im Bank has financed \$900 million in U.S exports in the following mining projects:

- \$18 million for the Sangatta Surface Coal Mine in Indonesia
- \$420 million for the Boleo Underground Copper-Cobalt Mine in Mexico
- \$375 million for Barrick's Pueblo Viejo Surface Gold Mine in the Dominican Republic,
- \$20 million for Ferroexpo's Surface Iron Ore Mine in Ukraine,
- \$62 million financing for Iron Ore Company of Canada's Surface Mine

In addition, Ex-Im Bank has supported numerous smaller export sales for gravel, limestone and sand operations worldwide. As is the case for all industrial sectors, Ex-Im Bank thoroughly evaluates all applications for the financing of mining projects to determine the project's potential environmental and social impacts. It only supports those that are shown to be in compliance with the Bank's environmental guidelines.

Ex-Im Bank currently has several applications of various types of mines across the globe. The Bank's activities over the decades underscore its commitment to maintaining the competitiveness of U.S exporters in the mining sector. In doing so, it helps create and sustain jobs with the suppliers and sub-suppliers of mining exports across the country.

Agribusiness

Ex-Im Bank is active in its support of a broad range of agricultural products. The Bank is able to support the sale of agricultural commodities and consumables, such as grain and soil additives, through the Short-Term insurance program, while assistance is available for the export of livestock through one of Ex-Im Bank's Short or Medium-Term Products. Medium-Term financing has been used extensively by U.S manufacturers and suppliers of new and used agricultural equipment. The range of equipment benefitting from Ex-Im Bank's support has ranged from small items such as disc harrows to more complex machinery such as seeders and combines.



Beyond the sale of equipment and commodities, Ex-Im Bank is also able to assist U.S. exporters and suppliers with the financing for agricultural projects. Examples of projects supported include the export of greenhouses to individual growers to the development of large scale integrated meat processing facilities and everything in between.

Regardless of the size and scope of an exporter's involvement in foreign agricultural activities, Ex-Im Bank has a financing program that will meet their needs.

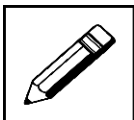
Renewable Energy

According to Clean Edge Incorporated, a leading market analyst, the global clean tech sector is expected to grow approximately by 130 percent over the next decade, from a \$144 billion industry to \$343 billion. Additionally, a study by the Pew Charitable Trust found that jobs in this sector are growing at a rate faster than other sectors. This increased by 9.1 percent compared with 3.7 percent between 1998 and 2007.

Ex-Im Bank is dedicated to helping U.S. exporters grab a share of that market. In fact, Ex-Im Bank has a Congressional mandate to support renewable energy and has been directed that 10 percent of its authorizations should be dedicated to renewable energy and environmentally beneficial transactions. As a result, Ex-Im Bank has had a focus on the environment since 1994 with its Environmental Exports Program (EEP). This has steadily grown its group of transactions. In 2007, the Office of Renewable Energy & Environmental Exports was created. Further in 2010, the Division was expanded to include dedicated credit officers to process renewable energy and environmental transaction. As of June 30, 2010, Environmentally Beneficial authorizations reached approximately \$323 million.

As a key agency involved in the President's National Export Initiative (NEI), which aims at doubling exports over the next five years, Ex-Im Bank and the Office of Renewable Energy & Environmental Exports is committed to meeting the needs of U.S. exporters in this important sector.

Now do learning activity 7 below.



Learning Activity 7

1. What is G7 and explain the main purpose for the establishment of this group of countries.



2. Why was Russia suspended from the G7 countries?

3. Explain the meaning of the acronym BRIC and its importance?

4. Which US Bank is behind the growth of key industries in the US?

CHECK YOUR ANSWERS AT THE END OF THE UNIT SUMMARY



Topic 12.2.2.3: Growth of Small Scale Industries in Papua New Guinea

Welcome to subtopic 3 of topic 2. In this subtopic, we will come closer to home. We will study the growth of small scale industries in Papua New Guinea.

Before we examine the small scale industries, we will take a look at the current trends of urbanisation and industrialisation in PNG. We will also identify and discuss the key industries in the country.

Trends in Industrialisation and Obstacles in Industrial Growth

Industrialization is the process in which a society or country (or world) transforms itself from a primarily agricultural society into one based on the manufacturing of goods and services. Individual manual labor is often replaced by mechanized mass production and craftsmen are replaced by assembly lines. Characteristics of industrialization include the use of technological innovation to solve problems as opposed to superstition or dependency upon conditions outside human control such as the weather, as well as more efficient division of labor and economic growth.

Industry generally refers to all stages and type of economic activity including extraction, construction and services. In its narrowest sense it may only refer to manufacturing or making of goods.

Industries can be grouped into three main categories:

- 1) **Primary:** This involves activities in which natural resources are extracted from the natural environment, be it on land, sea or river. It includes agriculture, fishing, forestry, mining and quarrying.
- 2) **Secondary:** Or manufacturing industry include activities in which natural resources at the primary level are made into final products for public consumption or semi-finished products to be used as raw material for producing other products. This is also called the manufacturing industry.
- 3) **Tertiary:** Or Service industry include activities in commercial services of transport, wholesaling and retailing.

The factors that have hindered the development of the industrial property systems in less developed countries such as Papua New Guinea include the lack of resources and expertise. This contributes to the maintenance of a low level of creativity and industrial activity in the less developed economies within the Asia and Pacific region.

Industrial development in Papua New Guinea is also hindered by a number of structural and institutional factors such as poor infrastructure, a small and fragmented domestic market,



inadequate and costly transport and communication, lack of adequate skilled labor and local entrepreneurship, and inadequate training and education facilities and programs.

The government holds to the belief that it has an active and dynamic role to play in removing these obstacles to growth and to assist in the creation of an environment which is conducive to industrial growth. With this in mind, the government has taken various policy measures to alleviate such barriers to economic development. The implementation of the industrial development program is one of the new policy initiatives which the Government has committed itself to pursuing. In an endeavour to nurture its technological capabilities and to improve its industrial base the transition must be made from light industries to knowledge-intensive industries. An important factor in the industrial development program is to encourage industrialization and investment for commercial economic development, through the provision of infrastructure facilities for the benefit of Papua New Guinea and its people.

PNG Urbanisation Trends in Light of Pacific Island Countries

In June 2011, the Pacific Region had a population of just over ten million persons. Based on the most recent census undertaken in Pacific Islands Countries (PICs), the average percentage share of urban populations in PICs was approximately 51 per cent. Just over 2.1 million persons resided in Pacific urban areas in 2011, or nearly 21 percent of the regional population. In other words, approximately one in every five Pacific islanders resides in a Pacific town or city.

While PNG is the least urbanised of the PICs, approximately 13 percent of its population are urban dwellers at the 2000 census. It has the largest urban populations in the Pacific Region. It also has the greatest numbers of people living in squatter and informal settlements in the Pacific Region. The PNG Office of Urbanisation estimated the total urban population of PNG was approximately 1.2 million persons in early 2012 which is nearly twice as high as the total sub-regional populations of Polynesia (668,470 persons) and Micronesia (546,491 persons). PNG comprises approximately 45 percent of the urban population of PICs. In other words, about 1 in every 2 urban residents in PICs resides in PNG.

According to a 2012 UN Habitat study on Port Moresby Urban Profile, population growth in the urban areas is exceeding national growth rates and the availability of economic development opportunities. The study concludes that the increasing population in urban areas has presented, many challenges such as increased unemployment, squatter settlements, the lack of service provision, and increased crime.

There have, however, been global efforts to highlight the importance of sustainable urbanization. Particular to our region, in May 2012, the Papua New Guinean Government launched the National Urbanization Policy (NUP). This provides a framework focused on maximizing the positive impacts of urbanization while addressing its potential negative consequences. The NUP calls for the provision of crucial infrastructure and services alongside improved capacity to better manage urbanization and development. This process must be fostered through just and democratic governance as well as transparent partnerships with the private sector. PNG has taken an assertive step in the right direction



but, at this point, we are a long way from alleviating the pressure urbanization places on developing communities globally. As there is no likelihood that urbanization will reverse any time soon, we should consider urban health a potential gap in development. This is an opportunity for public and private sector investment to build and sustain safe urban centres for present and future generations. Sustainable communities are built from the ground up and planned urban development is an increasingly difficult task as areas are inhabited by squatter populations.

Introducing effective and accessible services to slum or informal settlements would prove more costly and disruptive. Early measures should be taken to establish basic amenities and infrastructure around which urban settlements can grow; their populations supported by investment in necessary health and education facilities. A proactive approach to urban health will provide opportunities for both the public and private sector while working to mould our growing cities into sustainable, inclusive and healthy environments.

The table below shows the 2012 UN Habitat study showing the current framework for PNG urban development, planning and management.

TABLE 4: CURRENT INSTITUTIONAL FRAMEWORK FOR URBAN DEVELOPMENT, URBAN PLANNING AND URBAN MANAGEMENT

FUNCTION	LOCAL LEVEL	PROVINCIAL AND DISTRICT LEVEL	NATIONAL LEVEL	SPECIALIZED AGENCY
Land registration		- Provincial lands office - District lands office	- Ministry of Lands and Physical Planning (Office of Land Administration) - National Provincial Lands Office	
Land use, subdivision and development plans	Port Moresby	Provincial planning boards in four provinces - Port Moresby, Morebe, East New Britain, Milne Bay, and Sandaun	National Physical Planning Board	
Land development	Port Moresby	Provincial Physical Planning Boards - for example Morebe and East New Britain	- National Physical Planning Board - Papua New Guinea Land Board	National Housing Authority
Public Housing				National Housing Authority
Public Health and Social Welfare	- Local level government - Port Moresby	Provinces and districts	- Department of Health - Department of Rural Development	
Building	- Local level government - Port Moresby		- Department of Health - Building Boards (State Lands)	
Roads and drainage	- Local level government - Port Moresby	Provinces and districts	- Department of Works, Transport and Civil Aviation	
Power				Papua New Guinea Power
Water and Sanitation	- Local level government Port Moresby	Provinces and districts	- Department of Works, Transport and Civil Aviation - Papua New Guinea Water Board - Department of Health	Eda Ranu
Urban Management	Port Moresby			Office of Urbanization



PNG has the largest number of towns and cities in the Pacific Region. Three were formally declared cities (the capital Port Moresby, Lae and Mt. Hagen) and 17 towns.



Figure 2.8 b: Lae, the Second Largest City



Figure 2.8 a: Port Moresby, the Capital City of PNG



Figure 2.8 c: Mt Hagen, the third largest City

In the 2000 census, the Port Moresby population was 254,158 persons, or just over one third of the then PNG urban population of 675,403 persons (National Statistics Office, 2003). In 2008, Port Moresby's population was estimated at approximately 410,000 persons (UN Habitat, 2008). At the end of 2010, it was estimated to account for approximately 45 to 50 percent of the national urban population of one million persons, which was around 450,000 to 500,000 persons. Using the rate of expansion of unplanned settlements as one indicator of urban growth, the urban population of Port Moresby at the beginning of 2012 was best estimated in the range of approximately 500,000-750,000 persons (Jones and Kep, 2012).



The Key Growing Industries in PNG

The industrial sector, constrained by the small domestic market and the population's low purchasing power, is largely undeveloped. Industries are concentrated in industrial metals, timber processing, machinery, food, drinks, and tobacco. Although industrial production, including construction and the provision of utilities, electricity and water, has increased to about 40 percent of GDP, the manufacturing component has been decreasing as a percent of GDP, from 9.5 percent in 1980 to 9 percent in 1990 to 8.2 percent in 2001, according to Asian Development Bank statistics. This relative decline is mainly due to double digit growth in the construction sector, a boom led by work on the Lihir gold mine and the Gobe petroleum project. The growth rate in construction peaked in 1997 and 1998, at 21.7 percent and 25.4 percent, respectively, but the sector continues strong.

In 2002, a number of construction projects involving housing, airports, highways, disaster rehabilitation, and a petroleum refinery were planned or under way. Handicraft and cottage industries have expanded. A government-sponsored program assists Papua New Guineans in setting up businesses and purchases equity in existing firms. It has also encouraged small-scale import-substitution operations.

In 2005, industry accounted for 38.3 percent of the GDP, and was seconded by agriculture with 35.2 percent and services, with 26.4 percent. However, 85 percent of the 3.4 million labour force continues to be engaged in subsistence agriculture.

The major economic sectors in PNG include Agriculture, Forestry, Fisheries Manufacturing, Minerals and Petroleum, Retail and Wholesale, Building and Construction, Transport and Telecommunications, Finance and Business, and trade. The key industries in PNG are copra crushing, palm oil processing, plywood production, mining (gold, silver and copper), crude oil production, petroleum refining, Liquefied Natural Gas (LNG), construction and tourism.

The creation of the PNG LNG project highlights the next major challenge facing PNG. That is how to grow the non-mining sectors.

Papua New Guinea's main imports are sourced from Australia, Japan, the United States of America, Singapore, New Zealand, the United Kingdom, China and Hong Kong. The main destination of Papua New Guinea's exports are Australia, Japan, South Korea, China, Germany, the United States of America, the United Kingdom and Singapore.

Papua New Guinea enjoys a surplus in its trade account. Most exports are commodity based. The main thrust of the Government's economic development and industrial policies is aimed at increasing the value and volume exports of value-added products.

The graph below shows the sectoral composition of GDP, in the year 2000.

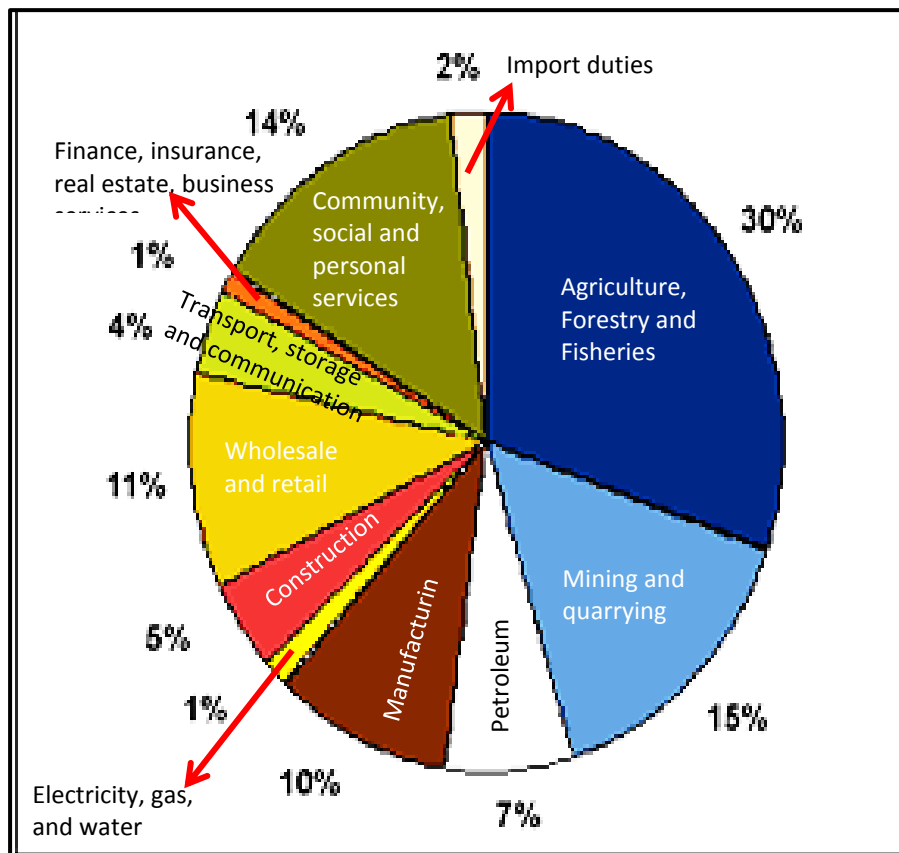


Figure 2.9: Sectoral Composition of GDP, 2000 Total: PNGK11, 066 Million

Industrial Development Policies

An essential component of the Government's structural adjustment program is the promotion of non-mining sectors of the economy to ensure economic growth can be sustained after the depletion of the mineral resources.

Government policies encourage the development of Papua New Guinea's non-mining sectors, including manufacturing, renewable resources, agriculture and business services, to promote economic self-sufficiency by the Year 2000.

The focus of these policies is on industries and businesses where private sector investment is more likely to contribute significantly to the Government's desired objectives of growth and employment.

The implementation of industrial policies remains the responsibility of various statutory authorities which were established for that purpose within the Ministry of Commerce and Industry. They are the Investment Promotion Authority (IPA), the Small Business Development Corporation (SBDC) and the Industrial Centres Development Corporation (ICDC).



While macro-economic policy reforms are prime objectives of the Government, micro-economic reforms are equally crucial in facilitating the development of private enterprise. In that context, the Government is committed to a privatization policy that will see Government involvement in commercial activities transferred to the private sector.

The establishment of a stock exchange complements these initiatives. It will allow for greater opportunities for businesses and individual investors, as new and existing investment entities become listed on the exchange. Investors will benefit from a more liquid and transparent capital market.

Small Scale Industries in PNG Cities

There are business facilities for medium and small scale industries in and near the main towns in all provinces in Papua New Guinea. These areas are generally well served by the appropriate air, sea and road transportation networks, as well as other necessary components of infrastructure such as the supply of water and electricity and telecommunications facilities.

The city of Lae has earned the reputation of being the manufacturing capital of Papua New Guinea because of its location among major shipping, road and airline routes. Port Moresby, Mt Hagen and Madang are other well developed cities where major industries and businesses are located.

The development of resource projects in non-urban areas has also resulted in the emergence of almost self-sufficient communities in parts of the country which otherwise may have remained isolated with only limited formal economic activity.

The physical characteristics of the country have prohibited the development of an extensive road network and the often extreme weather patterns present enormous challenges to the architects and engineers of infrastructure developments.

However, the mountainous terrain has resulted in the development of hundreds of airstrips throughout the country enabling inter-village and inter-provincial travel. Shipping and other forms of water transport have evolved also out of necessity in response to the great expanses of ocean and huge inland waterways.

Essential services for the operation of basic businesses are available in most towns and villages but there is still room for further improvement and development. The Government places infrastructure development and maintenance high on its agenda but, like other Governments, is constantly juggling resources to meet the demands from the community.

However, investors can be assured that all basic infrastructure is available for business in Papua New Guinea. For larger scale investment projects, the Government and the private sector have the resources to put in place any other specific requirements.



Department of Commerce and Industry

The department is responsible for the formulation, co-ordination and monitoring of industrial development policies and relevant programme implementation. It aims to be the catalyst for development and the private sector's partner in progress by:

- assisting with the provision of a conducive economic environment;
- promoting international competitiveness;
- providing an effective and co-ordinated infrastructure and service support system; and,
- mobilising and organising people, institutions and resources to achieve the Government's objectives and goals for industrialisation.

The department's programme initiatives include, among others, the development of the garment and textile industries, as well as wood and marine-based industries. Generally, the department is responsible for policy formulation while actual programme development and implementation is carried out by statutory authorities within the department.

Benefits of Boosting Small Scale Industries in PNG

Here is an example of a successful report of a small scale industry.

Papua New Guinea's small scale or alluvial mining has seen growth in past several years and last year the sector recorded K373.4 million in revenue from alluvial gold exports, according to the Mineral Resources Authority (MRA). Information from the authority showed that an additional K2.1 million was generated during the period from silver exports. At present, there are an estimated 70,000 to 80,000 active miners mostly in remote areas of Papua New Guinea. MRA, through its small scale mining branch, plays an important role in promoting and regulating the sector.

The authority since establishing a training centre at Wau, Morobe, in 2009, has certified over 3,500 alluvial miners.

Alluvial miners are more focused on gold (and the bi-product, silver), though some miners insist that they have found gemstones. Use of mercury to separate gold is a major concern.

We believed that it has to educate the alluvial miners to increase productivity and to ensure environmentally friendly and sustainable mining methods for extracting gold. After attending the training (alluvial mining), a grassroot miner can become a manager of his own alluvial mining operation with financial capability through his savings from the operation. For larger scale mechanised operations the tenement holder may enter into a joint venture arrangement with a third party called a Tribute agreement, which is required to be approved prior to formal registration under the Mining Act.



Look at the diagram below. It shows some benefits of boosting the small scale industries in PNG.

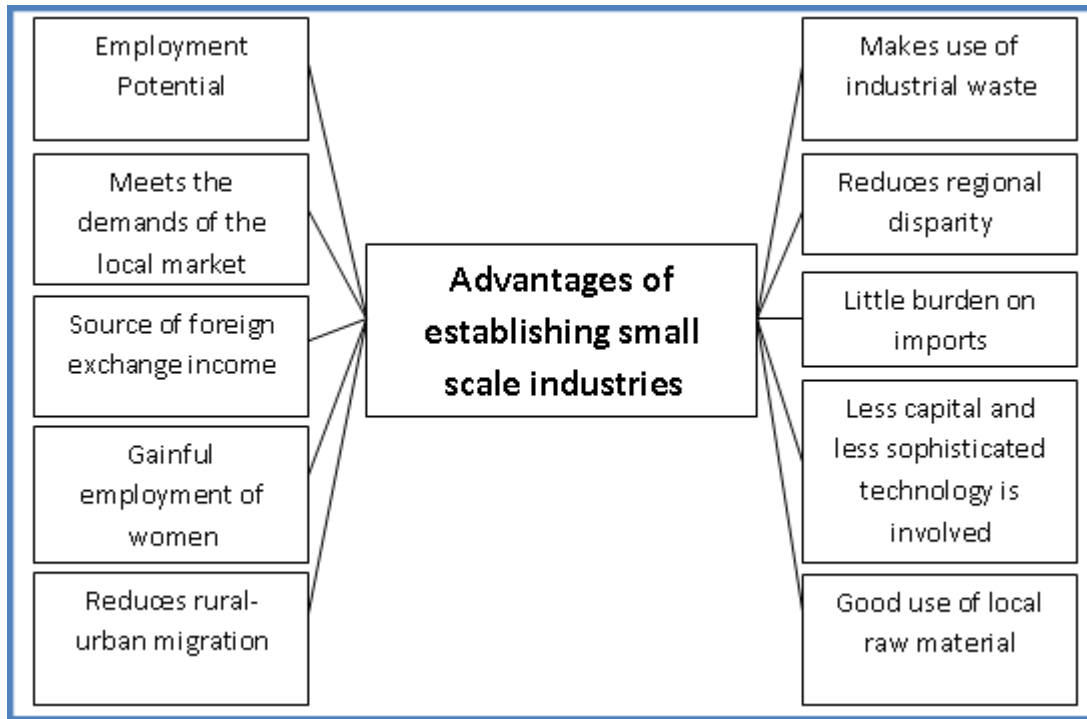
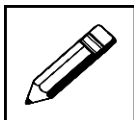


Figure 2.10: Advantages of establishing small scale Industries

Now do learning activity 8 below.



Learning Activity 8

1. Define Industrialisation.

2. List and explain the three main groups of industries.



3. List some benefits or advantages of boosting the small scale industries in PNG.

4. Discuss the implications of the increasing population growth in urban areas according to the 2012 UN Habitat Port Moresby Urban profile study.

CHECK YOUR ANSWERS AT THE END OF THE UNIT SUMMARY



TOPIC 12.2.3 IMPACT OF INDUSTRIAL GROWTH

INTRODUCTION

Welcome to the third topic of Unit 2, Impact of Industrial Growth. We will be discussing the Growth and Influence of Multinational Corporations, the use of trade protection policies and the effects of industrial growth on people and the natural environment.



Objectives or Aims

- Define Multinational Corporations
- Explain the dominance of multinational corporations in the global economy
- Defines Trade Protection Policies.
- Discuss examples of Trade Protection Policies in PNG
- Explain the advantages and dis-advantages of Trade Protection Policies in PNG
- Describe the welfare of workers in rapidly growing industrialised world
- Assess the impact of exploitation and unemployment
- Discuss the effects of industrial growth on people and the natural environment

This topic should be completed within 10 weeks.

If you set an average of 3 hours per day, you should be able to complete the unit comfortably by the end of the assigned week.

Try to do all the learning activities and compare your answers with the ones provided at the end of the unit. If you do not get a particular exercise right in the first attempt, you should not get discouraged but instead, go back and attempt it again. If you still do not get it right after several attempts then you should seek help from your friend or even your tutor. Do not pass any question without solving it first.



Topic 12.2.3.1: The Growth and Influence of Transnational/Multinational Corporations (TNCs)

Welcome to subtopic 1 of topic 3. In this subtopic, we will examine the growth and influence of Multinational or Transnational Corporations (TNCs).

The Dominance of Multinational or Transnational Corporations in Global Economy

A Multinational or Transnational Corporation is one that operates in many different countries regardless of national boundaries. As per standard definition, **TNC** refers to a company with economic divisions in more than two countries operating under a decision-making system which permits coherent policies and a common strategy (United Nations Conference on Trade and Development (UNCTAD)).

The map below shows some multinational corporations around the world today.

MULTINATIONAL CORPORATIONS IN THE WORLD



The importance of transnational corporations (TNCs) for developing countries, broadly understood as emerging markets, transition economies and less developed countries, has been increasing over the last 20 years and the spread of globalization has raised a new set of issues in relation to TNCs. After being deemed as exploiters, met with reluctance from host governments, the tides have changed and many developing countries now welcome TNCs and view Foreign Direct Investment (FDI) as an important source of development. TNCs is seen to play a central role in development by increasing economic growth and contributing to social development. However, TNCs may also bring developing countries on a dependent path where local firms remain focused on low value added activities and where host



countries become increasingly vulnerable to the global strategies of TNCs. More generally, the private sector's contribution to development has gained increased attention within firm strategy and management thinking as well as within thinking on development strategy. However, research on the impact of TNCs and FDI on developing countries is still fragmented and limited in various fields, which makes it relevant to shed new light on these aspects.

One of the obvious feature of TNCs is that their headquarters and the main factory are usually located in an economically more developed country. Initially, many branch factories were established in economically less developed countries. There is now an increasing global shift to the more affluent markets of Europe, North America, Japan and South Korea. TNC's are believed to directly employ nearly 50 million people worldwide and to indirectly influence an even greater number. It is estimated that the largest 300 TNCs control over 70 percent of world trade now (compared with only 20 percent in 1960) and produce over half of its manufactured goods. The largest TNCs have long been car manufacturers and oil corporations but these have, more recently, been joined by electronic and high tech firms. Several of the largest TNCs have a higher turnover than all of Africa's GNP in total.

Gross National product (GNP) is a broad measure of a nation's total economic activity. GNP is the value of all finished goods and services produced in a country in one year by its nationals.

TNCs, with their capital and technology, have the 'power' to choose what they consider to be the ideal locations for their factories. This choice will be made at two levels; the most suitable country and the most suitable place within the country. The choice of the country usually depend on political factors. Most governments, regardless of the level of economic development within their country, are prepared to offer financial incentive to attract transnationals which they see as providers of jobs and a means to increasing export.

The issue of TNCs and their influence on the host country is also a controversial issue around the world. A number of scholars has managed to analyse the positive and negative impacts of TNCs in different countries. Some economists believe that TNCs are powerful self-governing forces monitoring the international fiscal activities based on their interests. On the other hand, some others believe that TNCs have some progressive impacts on the world economy. These quarrels brings about the demands such as "why do such big companies or organisations invest in other countries?" Do these investments have any impressions on the global economy? It obvious the influence of TNCs is replacing that of states. According to Mireilli, 2008, over two thirds of 100 largest economic entities are now companies and not states. According to United Nations Conference on Trade and Development, as 2006 there were 63 000 multi-national corporations with over 70 000 branches scattered across the world (Shoo, 2011).

Although, it is obvious the companies have trade benefits extensively when they set up companies in these host countries, there is still observable positive impacts of over the economy of the host country and as well as the world economy. The positive impacts include the following:

1. Technology transferring,
2. Economic growth
3. Employment
4. Taxation

Technology transferring to the host country will increase productivity. This occurs when they import different technology to nations they operate in, this would increase competition as the restricted firms will try to reproduce their technologies or employ workers initially trained by the Multi-National Corporation. In this way competition between local firms will try improve their products and adapt to innovative technology (Shoo, 2011).

The diagram below illustrates the positive and negative impacts of TNCs.

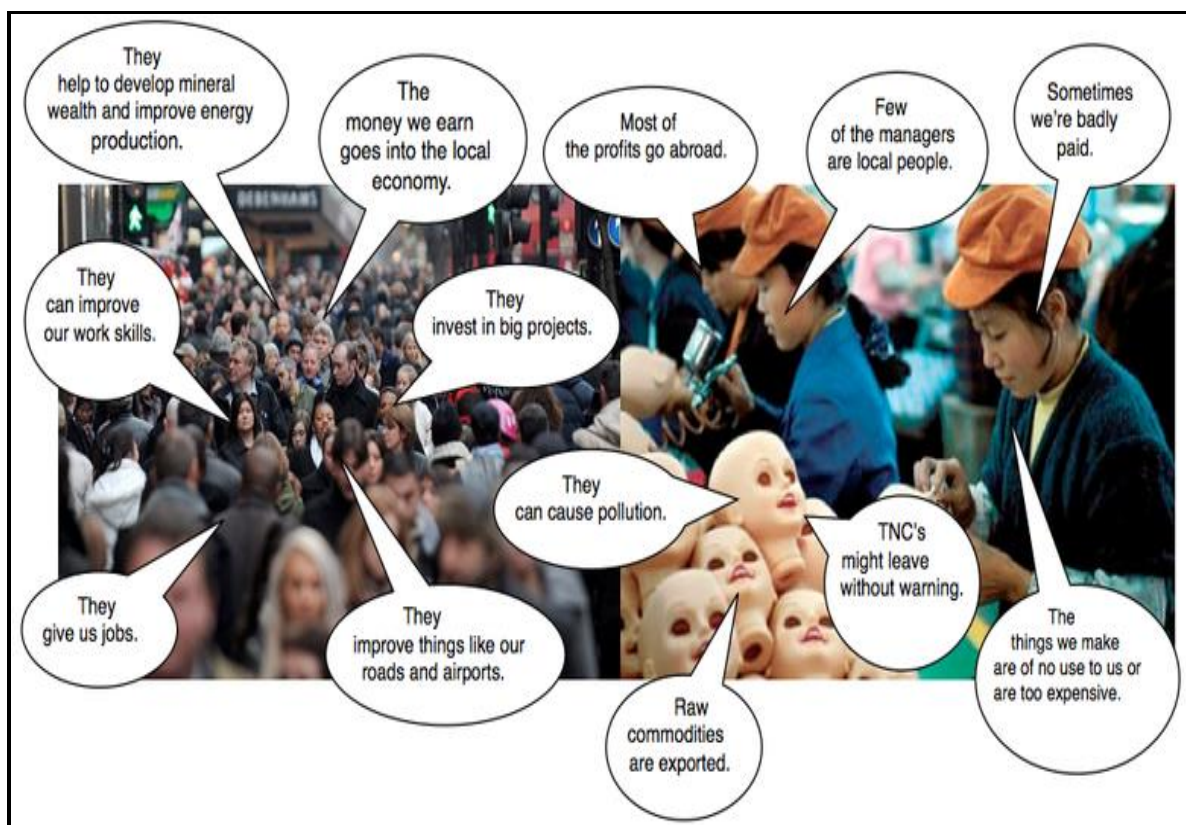


Figure 3.1: Positive and Negative Impact of TNCs

The Future of TNCs: Trends and Scenarios for Global Politics

The total output of transnational corporations (TNC) exceeds a quarter of the global GDP. The TNC divisions beyond the home countries, i.e. the countries where relevant TNCs are registered and/or headquartered, boast approximately 10.3 percent of the global GDP and one-third of the world exports. In spite of the global crisis, the TNCs successfully expand. As compared with the pre-crisis level of 2005 to 2007, the employment at TNC divisions beyond home countries has gone up by 33.9 percent, sales by almost 35 percent and exports by 47.1 percent. Therefore, TNCs have been markedly solidifying their economic positions even during the global crisis. After the crisis consequences are surmounted, it is expected that further growth of their share in the global GDP, exports and employment will continue.



Have a look at the graph below. It shows how TNCs control the global economy today.

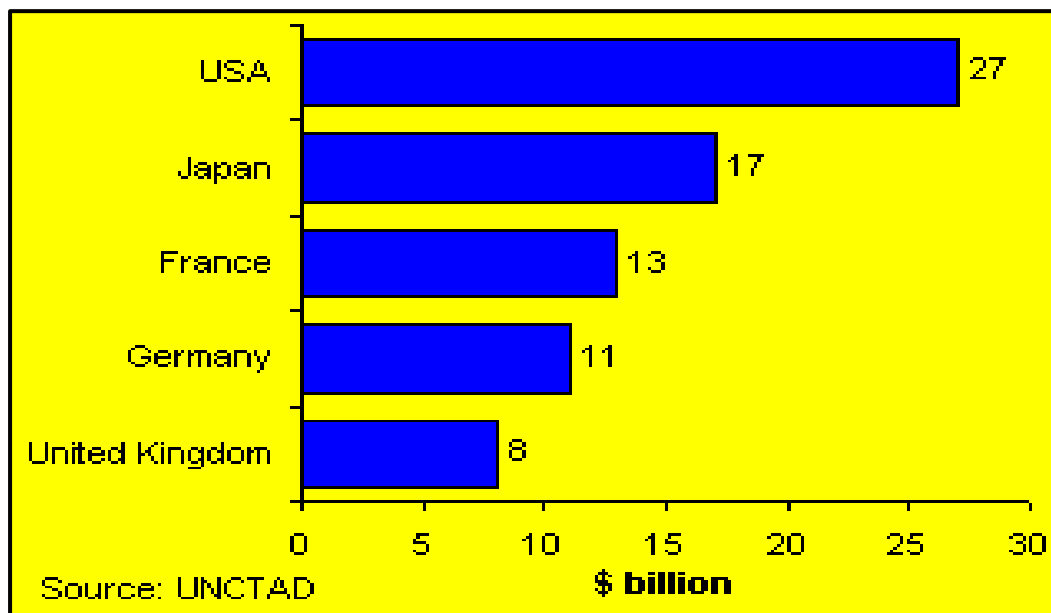


Figure 3.2: Distribution of top 100 companies with largest foreign assets by country, 1997.

Apart from greater role in the world economic processes, there are some stable structural trends that are likely to determine the TNC operations in the nearest decades.

Firstly, TNCs based in developing countries should gain ground. Between 2009 and 2011, the share of foreign direct investments (FDI) made by the TNCs from developing and transitional countries solidly exceeded 25 percent. Although the phenomenon could be partially attributed to lower investment from the crisis-stricken industrialized states, the relevant share should make 35 to 40 percent in the nearest 10 to 15 years.

Secondly, the strengthening of TNCs' economic position vis-à-vis nation-states will certainly continue.

At the same time, trans-nationalization of small and medium businesses is going to gain momentum. The process reflects the overall imperative for the commercial activities in global economics, which means the need to concentrate competitive advantages on the basis of economic capability (resources, science and technology, marketing, agglomeration, etc.) in various parts of the world. As a result, the TNCs will no longer mean only large-scale enterprise since in reality the planet's business landscape will incorporate transnational entities of different dimensions united by the drive to increase their global competitiveness.

These trends are likely to materialize within the coming two or three decades. A longer-term forecast should inevitably require inclusion of political and social aspects of the TNC activities, with the future scenarios to be determined by high variability of these factors.



The Influence of TNCs in PNG

Most of the influences of TNCs is seen in the extractive industries of Mining, Gas and Oil, Fisheries and Forestry. Let us examine some examples of the impact of TNCs in PNG.

Papua New Guinea was not discovered until the sixteenth century and did not begin developing this lush, mountainous country until the nineteenth century. Foreign companies, realizing the opportunity to exploit one of the world's last great natural treasures, are making up for lost time: they are well on their way to destroying Southeast Asia's largest remaining rainforest, as well as more than 700 distinct cultures.

These multinational corporations among them are; Amoco, CRA and Chevron who are operating with the approval of the PNG government. A crippling foreign debt of \$2.5 billion has driven the government to trade the country's natural resources for short-term and short-sighted gains. Raw materials such as minerals, timber and oil account for almost all of the country's export earnings.

"The interests of our people are paramount and any decision to conserve forests must be weighed against their need for development," former politician and Forests Minister Jack Genia once rationalized.

The PNG government has developed stringent environmental and social standards for foreign investors, but it is so dependent on earnings from resource extraction that it often makes exceptions to the rules, and its primary efforts are devoted to attracting foreign investment. In October 1991, for example, the PNG government hosted a series of seminars in Canada and the United States for potential investors interested in developing PNG's mineral and petroleum resources. The government hoped to restore investor confidence in the country, which has been shaken by a series of violent attacks by local residents on large-scale development projects. The investors are largely responsible for these reactions, having ignored the needs and ways of the local PNG people.

PNG's unique land tenure system where local clans own 97 percent of the land communally, contrasts dramatically with the highly unequal land distribution patterns found throughout much of the Third World. Communal ownership could provide the foundation for genuine sustainable development, based primarily on people producing food and goods for their own needs. Instead of taking advantage of the land tenure system, however, the PNG government has encouraged landowners to form landowner associations. These are organizations which can enter into contractual agreements with multinationals. Through the Timber Rights Purchase process, the government negotiates with the landowners on behalf of interested corporations. The government then strikes its own deal with the companies, so that both the association and the government receive royalties from the corporations.

With PNG's developing economy growing at an extraordinary pace, the country is now host to more multinational corporations than ever before. As some of the world's biggest global companies move to exploit PNG's large mineral, gas and oil reserves, there arises the inevitable situation of friction and even conflict between these multinationals and their partners and the local landowners of PNG.



There is a long list of such confrontations in PNG. The earlier examples of Bougainville Crisis that resulted from CRA and the Panguna Mine environmental damages and unequal distribution of wealth, BHP's Ok Tedi Mine to the more recent player ExxonMobil's PNG LNG project; and usually, when these confrontations translate into legal proceedings and messy negotiations, big business usually wins with the support of the government (always a minority shareholder).

A PNG example of this is when in 1994, PNG landowners sued BHP in the Supreme Court of Victoria in Melbourne, Australia alleging that BHP's operations at the Ok Tedi copper mine caused destruction of the surrounding environment and of their traditional lifestyle. BHP and the plaintiffs reached an out-of-court settlement in 1996.

The Case of the Pacific Marine Industrial Zone

Papua New Guinea is unashamedly dancing to the tune of multinational corporations. We are willing to break our own laws to make money for the rich. Sir Arnold Amet has a right to be angry at how colonizers tricked us in the past into giving up our resources for nothing. However, he fails to see that the same thing is still happening in PNG, this time through multinational corporations.

PNG is waking up to the realization that our constitution is being broken to suit the corporations greed. One of the most obvious is the Pacific Marine Industrial Zone (PMIZ) in Amet's own province. Once it is up and running, the PMIZ project is supposed to be operating within a Special Economic Zone (SEZ).



Figure 3.3: Pacific Marine Industrial Zone in Madang

SEZs are established to create an environment where the investor will operate with minimal restrictions to its business activities. Essentially, it is supposed to provide an environment for the investor to make profits at the least cost. Already the Government of PNG promises investors a 10 year tax free holiday in this project.

Minister for Commerce and Industry, Gabriel Kapris admitted in a recent PMIZ forum in Madang that there is no law in place to cater for a SEZ in PNG.

The Government of PNG and the World Bank through its financial arm, International Finance Corporation (IFC), is currently in cohorts to legalize SEZ in the country. If we are to learn from other South East Asian Countries that have SEZs, we should expect the law at the very least to ensure that our labor, immigration, quarantine and occupational health and safety laws do not apply.

Papua New Guineans should then expect to provide cheap labour within these zones and with the failed promises of incentives already experienced by landowner companies. We



shouldn't expect to be equal participants to the benefits of extracting our natural resources.

The Examples of SABL and Deep Sea Mining Project

When the obvious plan by the government and the World Bank to take control of customary land through land registration resulted in the death of student protestors, this didn't stop the drive to take land from Papua New Guineans. Now instead of asking for consent, foreign companies or investors simply take, through the use of Special Agriculture Business Leases.



Figure 3.4: Protest by Pomio landowners against the lack of action on SABL Land Grab

As another amendment to the constitution, SABL is an investors dream in a resource rich country like PNG. Companies can now bypass forestry laws that ensure wide consultations with customary landowners to gain access to virgin forests. SABL grants easy access to hectares of land for commercial purposes. In itself, SABL has resulted in Papua New Guineans losing more than 2.5 million hectares of land in 6 months between 2010 and 2011. All this land has been taken by the government because corporations need our land to make money.

The government has thrown caution to the wind, choosing to ignore what the constitutional planning committee warned of the impact of large scale industries on our societies.

While we are still trying to recover and deal with the impact of terrestrial mining activities, the PNG government approved the deep sea mining project, another project that has no law in place to regulate it.

The very act of approving this project has increased the stock value of the Canadian developer Nautilus; however, the people of PNG are still in the dark about the impact of this project.



While there is a huge effort by our government in ensuring that a Filipino company can diversify, a Canadian company makes profit and other foreign companies have easy access to raw materials, there is a marked lack of vision by our leaders for the people of PNG and ignorance for the country's existing laws.

Now do learning activity 9 below.



Learning Activity 9

1. What is a TNC?

2. What is the importance of TNC for developing countries?

3. List the positive impacts of TNCs establishing their companies in their host countries

- 1) _____
- 2) _____
- 3) _____
- 4) _____

4. State some negative impacts of TNCs.

- 1) _____
- 2) _____
- 3) _____
- 4) _____

5. Refer to the bar graph on page 89 to answer the following question.

By how many billions was USA ahead of Japan in 1997 in terms of foreign assets?

6. Sir Arnold Amet a senior statesman made a point about early colonisers and their approach to Papua New Guinea's natural resources. His perspective was further corrected.



Discuss the corrected notion.

CHECK YOUR ANSWERS AT THE END OF THE UNIT SUMMARY

Topic 12.2.3.2: The Use of Trade Protection Policies to Safeguard Industries

Welcome to subtopic 2 of topic 3. In this subtopic, we will look at the use of Trade Protection Policies to safeguard industries.

Protecting National Jobs

Firstly **trade protectionism** is used by countries when they think their industries are being damaged by unfair competition from foreign industries. It is a defensive measure, and is usually politically motivated. It can often work, in the short run. However, in the long run it usually does the opposite of its intentions. It can make the country, and the industries it is trying to protect, less competitive in international trade.

Protectionism is the practice of nations to protect domestic industries and their workers by providing subsidies for their production and imposing tariffs on competing foreign products. Yet protectionism has been blamed for closing off trade from foreign countries, raising prices and giving domestic consumers less choice. A country that practices protectionism can just as easily be subjected to it by other countries imposing their own import tariffs and awarding subsidies to their industries.

What Is Trade Protectionism?

Countries use a variety of ways to protect their trade. One way is to enact tariffs, which tax imports. This immediately raises the price of the imported goods, making them less competitive when compared to locally produced goods. This works especially well for a country like the United States, which imports a lot of consumer products and oil.

The most famous example is the Smoot-Hawley Tariff of 1930. It was originally designed to protect farmers from agricultural imports from Europe, which was stepping up farming after the destruction of World War I. However, by the time the bill made it through Congress, it had slapped tariffs on many more imports. As so often happens with tariffs, other countries retaliated. This tariff war restricted global trade, and was one reason for the extended severity of the Great Depression.

A second way of protecting trade is when the government subsidizes local industries with tax credits or even direct payments. This again lowers the price of locally produced goods and services.

It works even better than tariffs because now the goods are cheaper even when shipped overseas. This works well for the United States, but even better for countries that rely mainly on exports.

A good example of this is, once again, in the U.S. agricultural industry. The Agricultural Adjustment Act of 1933 allowed the government to pay farmers to not grow crops or livestock, thus restricting supply and raising prices. This subsidy helped farmers who had been devastated by the Dust Bowl.



A third method is by imposing quotas on imported goods. This can be one of the most effective methods for protecting trade, since the foreign country cannot ship more goods no matter how low it sets the price through subsidies.

There is a fourth type of trade protectionism that is not usually mentioned in text books, because it is subtle. That is a deliberate attempt by a country to lower its currency value, thereby making its exports cheaper and more competitive. However, this can ultimately result in retaliation, and start up a currency war. Countries can lower their currency's value through either a fixed-exchange rate, like China's yuan, or by creating so much national debt that it has the same effect, like the U.S. dollar decline.

Disadvantages of Trade Protectionism

In the long term, trade protectionism weakens the industry. Without competition, companies within the industry will not innovate and improve their products or services. There is no need to. Eventually, consumers will pay more for a lower quality product than they would get from foreign competitors.

For example, job outsourcing is a result of declining U.S. competitiveness. This is particularly true for high tech, engineering, and science. Increased trade opens new markets for businesses to sell their products. The Peterson Institute for International Economics estimates that ending all trade barriers would increase U.S. income by \$500 billion.

Increasing U.S. protectionism will further slow economic growth and cause more layoffs, not less. If the United States closes its borders, other countries will do the same. This could cause layoffs among the 12 million U.S. workers who owe their jobs to exports.

Free Trade Agreements

With market globalization, industrialized and developing nations have embraced free trade as a means for opening markets and reducing consumer prices. Yet it has been reviled by human rights organizations that blame free trade for a critical degrading of worker's rights and its harmful effects on the environment. The benefits of free trade can hide its unintended impacts. But measures to safeguard against its ills raise the fear of protectionism.

Free trade is based on agreements between nations to drop import barriers, allowing foreign goods and services to compete on a level playing field with domestic products. This opens markets for developing countries and in theory improves their economic conditions. Developing companies in turn are more capable of buying products from industrialized countries. Jobs lost in one industry of a developed country can grow in another industry. Free trade is meant to improve the economy of all participating nations. The World Trade Organization (WTO) regulates free trade agreements among member nations.



Free trade agreements (FTAs) reduce or eliminate tariffs and quotas between trading partners. The largest agreement is NAFTA, or the North American Free Trade Agreement, which is between the United States, Canada and Mexico. If approved, two other agreements would be larger: the Trans-Pacific Partnership and the Transatlantic Trade and Investment Partnership.

Other free trade agreements are CAFTA, which is between the United States and Central America. There are bilateral agreements with Chile, Colombia, Panama, Peru and Uruguay, most countries in Southeast Asia, and the Middle Eastern countries of Israel, Jordan, Morocco, Bahrain, and Oman.

Trade Protection Policies in PNG

There have been concerns growing over the future of Papua New Guinea's sugar industry. Let us now examine few examples (*Post Courier/PACNEWS*, 'Ramu Sugar drops 31.5 percent in sales', 26 November 2012).

In January 21st 2013, according to press reports, the only sugar producer in Papua New Guinea (PNG), Ramu Sugar, 'has lost 31.5 percent sales since the government slashed [tariffs] on imported sugar'. The consequence of the reduction in import tariffs has been compounded by the combined effects of the declines in world sugar market prices (from 33 US cents/lb at the beginning of 2011 to 19c/lb in November 2012), the 30 percent appreciation of the PNG kina against the US dollar, and rising production costs (particularly labor costs). According to the General Manager of Ramu Sugar, Jamie Graham, 'this has made it much more attractive to import sugar than in the past and many importers are taking advantage of this situation.'

According to Mr. Graham, the decline in sales will inevitably lead to job losses. He states that the company believes that an import 'tariff set at 50 percent over the next 5 years will provide protection to maintain a viable sugar industry in PNG'.

The government of PNG's slashing of tariffs on imported sugar and reluctance to re-impose higher protective tariffs that would support the local sugar industry need to be seen in the context of the wider policy of trade opening pursued by the government of PNG.

The WTO's trade policy review of PNG in 2010 highlighted the more open trade policies that the government had been pursuing since 2000. PNG's market access offer under the interim EPA agreements signed with the EU has more than satisfied the EU's interpretation of 'substantially all trade'. This involved liberalizing everything that was to be liberalized on Day 1 of entry into force of the interim EPA (see *Agritrade* Executive Brief Update, 'EPA negotiation issues between Pacific and the EU', 31 March 2010).

More recently this policy of greater trade openness has been demonstrated under the Melanesian Spearhead Group Trade Agreement (MSGTA), whereby the country has removed more than 400 items from its 'negative' list, with the exception of three items (mackerel, salt and sugar). However, even for sugar (imported from Fiji), it can be envisaged that the

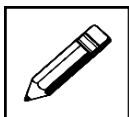


current restriction will be relaxed in due course, in line with PNG's general market opening policies.

This will then move away from the current sugar monopoly supply situation. This longer-term reality has implicitly been recognized by Ramu Sugar, which is undertaking a process of diversification out of sugar and into other agriculture-related activities. Indeed, Ramu Sugar Ltd has been renamed Ramu Agri-Industries Ltd (RAIL) to reflect its diversification into beef production, ethanol fuel and oil palm. The success being achieved by RAIL has been implicitly recognized by the competition that now exists between two major locally incorporated companies, New Britain Palm Oil Ltd and W.R. Carpenter to take over RAIL, which is currently 25 percent owned by the government of PNG.

The Government reduced the import duty on imported sugar from 70 percent to 40 percent and said they are opening the trade up to competition. This should see sugar (already imported by Ramu Agri -Industries (RAI) and subsequently probably by others as well) hitting the shelves very soon and quickly removing the current shortage. The current shortage is the result of a bad harvest owing to bad (dry) growing conditions over the past year, combined with 600 hectares or so of ripe sugar being burned by local arsonists in the Ramu valley (and probably steadily growing demand from an expanding and more urbanised population). The company insists the shortfall is not the result of any reduction in planted area or conversion to other crops (notably oil palm), and that they are committed to sustaining the current area under sugar. Why do we have such a high import duty on sugar in the first place? It is the highest (remaining) duty on any product. This is the result of sugar production in PNG not really being competitive on the international market. This is partly because we lack the economies of scale which some other producers enjoy (like Argentina, Brazil and Australia) with their vast estates and turnover through their mills (and refineries), and partly because of the pests and diseases we suffer in PNG. It may also be because of the high subsidies provided in some producing areas (including the EU countries with their sugar beet and the US) which keeps global production levels up and market prices down.

Now do learning activity 10 below.



Learning Activity 10

1. Explain Protectionism?

2. In what circumstances would a country decide to use Trade Protection?



3. Discuss the disadvantages of Trade Protectionism.

4. Read the last paragraph on page 98 based on the reduction of import duty on sugar and answer the question below.

Discuss the advantage of this action.

5. What does WTO stands for?

CHECK YOUR ANSWERS AT THE END OF THE UNIT SUMMARY



Topic 12.2.3.3: Effects of Industrial Growth on People and the Natural Environment

Welcome to subtopic 3 of topic 3. This is the last subtopic of this topic and the unit as well. In this subtopic, we examine the effects of industrial growth on people and environment.

Introduction

To better understand the effects of industrial growth on people and the environment, we need to examine the origins of industrial growth. Let us review your Year 10 lessons on industrial revolution.

The **Industrial Revolution** marked a major turning point in Earth's ecology and humans' relationship with their environment. The Industrial Revolution dramatically changed every aspect of human life and lifestyles. The impact on the world would not begin to register until the early 1960s, some 200 years after its beginnings. From human development, health and life longevity, to social improvements and the impact on natural resources, public health, energy usage and sanitation, the effects were profound.

The Industrial Revolution started in the mid-1700s in Great Britain when machinery began to replace manual labor. Fossil fuels replaced wind, water and wood, used primarily for the manufacture of textiles and the development of iron making processes. The full impact of the Industrial Revolution would not begin to be realized until about 100 years later in the 1800s, when the use of machines to replace human labor spread throughout Europe and North America. This transformation is referred to as the industrialization of the world. These processes gave rise to sweeping increases in production capacity and would affect all basic human needs, including food production, medicine, housing, and clothing. Not only did society develop the ability to have more things faster, it would be able to develop better things. These industrialization processes continue today.



Figure 3.5: Industries fuelled the Industrial Revolution. Image: Shutterstock

The Industrial Revolution and Population Growth

The most outstanding evidence of the Industrial Revolution's impact on the modern world is seen in the worldwide human population growth. Humans have been around for about 2.2 million years. By the dawn of the first millennium AD, estimates place the total world (modern) human population to be between 150 to 200 million, and 300 million in the year 1,000. The population of the United States was 312,000,000 in August 2011. The world human population growth rate would be about 1 percent (.001) per year for the next seven to eight centuries.



Human population growth is always tied together with increased use of natural and man-made resources, energy, land for growing food and for living, and waste by-products that are disposed of. These waste are left to decompose, pollute or be recycled. This exponential population growth led to the exponential requirements for resources, energy, food, housing and land, as well as the exponential increase in waste by-products.

Wakening to Implications of Unsustainable Growth and Dependence on Limited Resources

There were many indicators that the Industrial Revolution propelled the world human population into an era of living and production at the ultimate expense of the human condition. It also impacted the resources that had been taken for granted for the entire prior history of humankind. There had always been more resources than the demand for them.



Figure 3.6: Rachel Carson

It would take just one person in the 1960s to make the general public aware of the cause and effect of human outgrowth from the Industrial Revolution. Rachel Carson took on the powerful and robust chemical industry in her globally acclaimed 1962 book, *Silent Spring*. In it she raised important questions about humans' impact on nature. For the first time, the public and industry would begin to grasp the concept of sustainable production and development.

It was the fossil fuel coal that fuelled the Industrial Revolution, forever changing the way people would live and utilize energy. While this propelled human progress to extraordinary levels, it came at extraordinary costs to our environment, and ultimately to the health of all living things. While coal and other fossil fuels were taken for granted as being inexhaustible, it was American geophysicist M. King Hubbert who predicted in 1949 that the fossil fuel era would be very short-lived and that other energy sources would need to be relied upon.

Hubbert predicted that fossil fuel production, in particular oil, would reach its peak starting in 1970 and would go into steady decline against the rising energy demands of the population.

Importance of Industries

Industry is central to the economies of modern societies and a crucial motor of growth. It is essential to developing countries, to widen their development base and meet growing needs. Though industrialized countries are said to be moving into a post-industrial, information-based era, this shift must be powered by a continuing flow of wealth from industry.



Many essential human needs can be met only through goods and services provided by industry. The production of food requires increasing amounts of agrochemicals and machinery. Beyond this, the products of industry form the material basis of contemporary standards of living. Thus all nations require and rightly aspire to efficient industrial bases to meet changing needs.

Industrial Growth and its Impact

As recently as 1950, the world manufactured only one-seventh of the goods it does today, and produced only one-third of the minerals. Industrial production grew most rapidly between 1950 and 1973, with a 7 percent annual growth in manufacturing and a 5 per cent growth in mining. Since then growth rates have slowed, to about 3 per cent yearly between 1973 and 1985 in manufacturing and virtually zero growth in mining.

That earlier, rapid growth in production was reflected in the rising importance of manufacturing in the economies of virtually all countries. By 1982, the relative share of value added to gross domestic product by manufacturing (the 'manufacturing value added', or MVA) ranged from 19 per cent in developing countries as a whole to 21 per cent in industrialized market economies and 51 per cent of net material product in centrally planned economies.

See the table below. If the extractive industries are taken into account, the share is even higher.

TABLE 5: SHARE OF MANUFACTURING VALUE ADDED IN GDP, BY ECONOMIC GROUPING AND INCOME GROUP.

GROUP OF COUNTRIES	1960	1970	1980	1962
Developing Countries	14.2	16.6	19.0	19.0
Low income	11.2	13.8	15.0	15.0
Lower-middle income	11.0	13.5	16.4	16.6
Intermediate income	10.6	14.4	17.1	17.6
Upper-middle income	19.4	21.6	24.1	23.3
High income	17.2	16.2	17.2	17.9
Developed Market Economies	25.6	26.3	27.9	27.1
Centrally Planned Economies*	32.0	42.4	50.5	50.8
* Figures refer to the share of manufacturing value added (estimated) in net material product. Data are constant (1975) prices. (MVA in percentage)				
Source: UNIDO, World Industry: A Statistical Review 1985 (Vienna: 1966).				



The Changing Structure of World Industry

In recent years, the trend of the 1950s and 1960s has been reversed. Manufacturing has declined in importance relative to other sectors of the economy. In many countries, this decline has been in progress since 1973. It is most noticeable in the case of industrial market economies, but the share of MVA in GDP has also declined in nearly half the 95 developing countries surveyed by the United Nations Industrial Development Organisation (UNIDO). This may reflect the growing interaction between industry and all fields of science and technology and the increasing integration of industry and services, as well as industry's ability to produce more with less.

The relative importance of industry as an employer has been declining for some time in developed countries. The shift in jobs towards the service sector has accelerated sharply over the past 15 years with the increasing adoption of new processes and technologies. Economists continue to argue over whether the advent of an information-based economy will further depress employment in industry or will expand job opportunities overall.

Most developing countries started at independence with virtually no modern industry. Then during the 1960s and 1970s their industrial production, employment, and trade consistently grew faster than these sectors in developed market economies. By 1984, developing countries accounted for 11.6 per cent of world MVA (still well short of the 'Lima target' of 25 per cent adopted by UNIDO in 1975). The centrally planned economies of Eastern Europe had raised their share of world MVA from 15.2 per cent in 1963 to 24.9 per cent in 1984.

The international trade in manufactured goods, which has consistently grown faster than has world manufacturing output, is one of the factors underlying the changing geography of industrialization. Many developing nations, particularly newly industrialised countries (NICs), have shared in this growth and made spectacular progress in industrialisation. Taking the Third World as a whole, exports of manufactured goods have grown steadily relative to primary exports, rising from 13.3 per cent of their total non-oil exports in 1960 to 54.7 per cent in 1982.

In general, developing-country industrial production is diversifying and moving into more capital intensive areas such as metal products, chemicals, machinery, and equipment. The heavy industries, traditionally the most polluting, have been growing in relation to light industries. At the same time, the share of industries involved in food products, and to a lesser extent in textiles and clothing, has fallen significantly.

Environmental Decline and Response

Industry and its products have an impact on the natural resource base of civilization through the entire cycle of raw materials, exploration and extraction, transformation into products, energy consumption, waste generation, and the use and disposal of products by consumers. These impacts may be positive, enhancing the quality of a resource or extending its uses. It may be negative, as a result of process and product pollution and of depletion or degradation of resources and the environment.



Figure 3.7: Smog that settled on Beijing in January 2013 could join the ranks of these game-changing environmental disruptions.

The negative environmental impacts of industrial activity were initially perceived as localized problems of air, water, and land pollution. Industrial expansion following the Second World War took place without much awareness of the environment and brought with it a rapid rise in pollution, symbolized by the Los Angeles smog; the proclaimed 'death' of Lake Erie; the progressive pollution of major rivers like the Meuse, Kibe, and Rhine; and chemical poisoning by mercury in Minamata. These problems have also been found in many parts of the Third World as industrial growth, urbanization, and the use of automobiles spread.

Public concern grew rapidly and forced a broad debate on environment conservation and economic growth. The possibility that the process of industrial growth would run into material resource constraints became an important theme in this debate. Although non-renewable resources are by definition exhaustible, recent assessments suggest that few minerals are likely to run out in the near future.

By the late 1960s, growing awareness and public concern led to action by governments and industry in both industrial and some developing countries. Environmental protection and resource conservation policies and programmes were established, along with agencies to administer them. Initially policies focused on regulatory measures aimed at reducing emissions. Later a range of economic instruments were considered: taxation, pollution charges, and subsidies for pollution control equipment. However, only a few countries introduced them. Expenditures rose, gradually at first, reaching 1.0 per cent and as high as 2.0 per cent of GNP in some industrial countries by the late 1970s.

Industry also responded to these problems by developing new technologies and industrial processes designed to reduce pollution and other adverse environmental impacts. Expenditures on pollution control measures rose rapidly in some highly polluting industries; and corporations began to set up their own environmental policy and control units. Guidelines and codes of conduct were published covering safety of products and plant



operations, trade practices, technology transfer, and international cooperation. National and international industry associations have also developed guidelines and voluntary codes of practice.

The graph below shows air pollution emitted in four different places in China and Japan.

BAD AIR DAYS; AVERAGE ANNUAL SULPHUR-DIOXIDE CONCENTRATIONS MICROGRAMS PER CUBIC METRE IN JAPAN



Take a look at the article below. It tells us of the experience of a patient suffering from air pollution in Japan.

"I am one of the patients of air pollution. When Japanese economy grew very rapidly, my asthma deteriorated. I am 39 years old. I was hospitalized when I was 18 until I was 23 because of my severe asthma. I had no joy of life, in those five years. I got a job and went to work but I cannot work as long a time as ordinary people. For the last 10 years I can hardly work. When the law was enacted, the law concerning the abatement of pollution, it has given me compensation. That is my only income, from the compensation that this law provides. If I should suffer another disease on top of asthma, I really don't know what to do".

Yoshi Suzuki

Association of Patients of Pollution and Their Families

WCED Public Hearing

The results were mixed, but during the decade a number of industrial countries experienced a significant improvement in environmental quality. There was a considerable roll back in air pollution in many cities as well as water pollution in many lakes and rivers. Certain chemicals were controlled.

These achievements were limited to some industrial countries. Taking the world as a whole, fertilizer run-off and sewage discharges into rivers, lakes, and coastal waters have increased, with resulting impacts on fishing, drinking water supply, navigation, and scenic beauty. The



water quality of most major rivers has not markedly improved over the years. It is, in fact, worsening in many of them, as it is in many smaller rivers.

Industrialized countries still suffer from 'traditional' forms of air and land pollution. Levels of sulphur and nitrogen oxides (NOV), suspended particulates, and hydrocarbons remain high and in some cases have increased. Air pollution in parts of many Third World cities has risen to levels worse than anything witnessed in the industrial countries during the 1960s.

In the light of this and the growth trends projected through the next century, it is evident that measures to reduce, control, and prevent industrial pollution will need to be greatly strengthened. If they are not, pollution damage to human health could become intolerable in certain cities and threats to property and ecosystems will continue to grow. Fortunately, the past two decades of environmental action have provided governments and industry with the policy experience and the technological means to achieve more sustainable patterns of industrial development.

Costs and benefits have naturally varied among industries. One method of estimating the cost of pollution reduction in industry compares expenditures on new plants and equipment that have pollution control facilities to hypothetical expenditures on new plants without such features. Studies using this comparison in the United States found that pollution abatement expenditures for new plant and equipment for all manufacturing industries in that country in 1984 amounted to \$4.53 billion, or 3.3 per cent of total new expenditures. The chemical industry spent \$580 million (3.8 per cent) on such equipment. Similar studies in the Japanese steel industry found that new investment in pollution control equipment reached as high as 21.3 per cent of total investment in 1976 and even today remains around 5 per cent.

Firms involved in food processing, iron and steel, non-ferrous metals, automobiles, pulp and paper, chemicals, and electric power generation - all major polluters have borne a high proportion of the total pollution control investment by industry. Such costs provided a strong incentive for many of these industries to develop a broad range of new processes and cleaner and more efficient products and technologies. In fact, some firms that a decade ago established teams to research and develop innovative technologies to meet new environmental standards are today among the most competitive in their fields, nationally and internationally.

Waste recycling and reuse have become accepted practices in many industrial sectors. In some industrialized countries technologies to scrub sulphur and nitrogen compounds from smokestack gases made remarkable advances in a relatively short time. New combustion techniques simultaneously raise combustion efficiency and reduce pollutant emissions. Innovative products and process technologies are also currently under development that promise energy- and resource-efficient modes of production, reducing pollution and minimizing risks of health hazards and accidents.

Pollution control has become a thriving branch of industry in its own right in several industrialized countries. High-pollution industries such as iron and steel, other metals, chemicals, and energy production have often led in expanding into the fields of pollution control equipment, detoxification and waste disposal technology, measurement



instruments, and monitoring systems. Not only have these industries become more efficient and competitive, but many have also found new opportunities for investment, sales, and exports. Looking to the future, a growing market for pollution control systems, equipment, and services is expected in practically all industrialized countries, including NICs.

Role of Unions

Unionism is about workers standing together to improve their situation, and to help others. It is not rocket science, in fact it's pretty instinctive behaviour. However, despite UN Conventions, there are almost always restrictions of some kind imposed. As a result, the nitty gritty of unionism differs from country to country.

Trade unions are independent, membership-based organisations of workers that represent and negotiate on behalf of working people. They give advice when their members have problems at work, represent members in discussions with employers, and help improve wages and working conditions by negotiating with employers. Unions also make sure that their members' legal rights are enforced, provide and broker education and learning opportunities for members, promote equal opportunities at work, fight against discrimination and help to ensure a healthy and safe working environment. Many unions provide services for their members, such as welfare benefits, personal legal help and financial services.

How Unions Work

It can be very difficult for a single worker to speak to management about a workplace problem (for example, forced overtime or late wages) and to resolve their difficulty individually – assuming they even have the confidence to raise the issue. Unions work on the principle that if all workers speak with the same voice, their concerns are more likely to be addressed. This involves union members in the same workplace getting together to talk about common problems, democratically taking collective decisions on workplace issues, and putting these views to the employer.

Individual members usually elect someone to speak on their behalf – a shop 'steward' or 'representative' (rep) – and to discuss their concerns with management. Where the union has a recognition agreement with management (this is where the employer has agreed to negotiate with the union to set staff terms and conditions), they will have regular formal discussions. These negotiations are referred to as 'collective bargaining'.

Unions are financed through the individual contributions of their members. Unions continually seek to recruit members (encouraging new members to join by 'organising') and to build an active membership, as this gives unions stronger bargaining power in negotiations with employers.

The Benefits of Working with a Recognised Trade Union

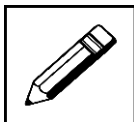
Employers around the world understand that working with a recognised trade union can bring many benefits to their company. In particular, trade unions can help employers to:



- Build trust among the workforce
- Ensure workplaces are safe
- Audit non-compliance with labour codes
- Improve staff retention
- Make better business decisions
- Promote equality
- Provide access to learning and skills
- Save money
- Increase productivity

Due to issues of exploitation of employees amidst the growth of industries, the Trade Unions were formed to basically ensure health, safety, protection and appropriate work conditions existed for the workers. To guarantee a fair deal and social justice to workers and to make the workers aware about their rights and duties and to settle the disputes through negotiation.

Now do learning activity 11 below.



Learning Activity 11

1. Discuss the influence of the industrial revolution on the growth of industries and its effects on people and the environment.

2. Where did industrial revolution start in the mid-1700s?

3. Which type of fuel replaced wind, water and wood, and was used primarily for the manufacture of textiles and the development of iron making processes?

4. Identify the outstanding evidence of the industrial revolution's impact on the modern world?



5. The relative importance of industry as an employer has been declining for some time in developed countries.

Discuss the reasons for a shift in jobs towards the service sector.

6. List three negative environmental impacts of industrial activity?

- 1) _____
2) _____
3) _____

7. What is a Trade Union?

8. List three ways in which Trade Unions can help employees.

- 1) _____
2) _____
3) _____

CHECK YOUR ANSWERS AT THE END OF THE UNIT SUMMARY

END OF TOPIC 12.2.3.3



UNIT 12.2: SUMMARY

Unit Summary for Unit 12.2 Urbanisation and Industrialisation comprises of 3 topics. Each of these topics have subtopics. Hence, these unit summary is organised in terms of subtopic summaries which together sums up the main ideas of Unit 12.2.

12.2.1: DISTRIBUTION OF WORLD CITIES

12.2.1.1: The First Cities in the World

- **Settlement** is a place where a group of people live, usually in one place or location. Settlements can be small or large, ranging in size from a few dwellings, through to villages, towns and cities.
- **Cities** are the main towns in a country and would have more people than towns while **conurbation** refers to a region comprising a number of cities, large towns, and other urban areas that, through population growth and physical expansion, have merged to form one continuous urban and industrially developed area.
- A conurbation should also be contrasted with a **megapolis**, where the urban areas are close but not physically bordering and where the merging of labour markets has not yet developed.
- Ancient or very early cities were notable for their geographical diversity in form and function. Early urbanization was believed to be the result of economic activities, political capitals, trade centers and religious activities. Some cities were sparsely populated while others had large dense populations.
- Early cities developed in a number of regions, from Mesopotamia to Asia to the Americas. The very first cities were founded in Mesopotamia after the Neolithic Revolution. This was around 7500 BC. Mesopotamian cities included Eridu, Uruk, and Ur.
- Early cities also arose in the Indus Valley and ancient China. Among the early World cities, one of the largest was Mohenjo-Daro, located in the Indus Valley (present-day Pakistan).
- The civilization of Ancient Greece was one of the most brilliant in world history. It emerged into the light of world history in the 8th century BC.
- Agriculture is believed to be a prerequisite for cities, which help preserve surplus production and create economies of scale. It is believed that cities were first formed after the **Neolithic or Agricultural Revolution** with the spread of agriculture.
- Many philosophers believe that agriculture preceded the development of cities and led to their growth.
- A good environment and strong social organization is two necessities for the formation of a successful city. A good environment includes clean water and a favorable climate for growing crops. A strong social organization helps work together in times of need.



12.2.1: DISTRIBUTION OF WORLD CITIES

12.2.1.2: Urbanisation and Urban Growth

- **Urbanization** is to do with towns and cities and refers to the process by which the proportion of a country's population in urban area increases.
- For the first time ever in the history of mankind it is now estimated that more people live in towns and cities than in rural areas. This is because increasing number of people migrates from rural to urban areas especially in developing countries to live in towns and cities.
- Urbanization is closely linked to modernization, industrialization, and the sociological process of rationalization.
- Urban growth is the rate of growth of an urban population. It is the actual number of people of which a city or town's population grows whereas urbanization is the process of changing from rural to urban.
- The UN forecasts that today's urban population of 3.2 billion will rise to nearly 5 billion by 2030, when three out of five people will live in cities. This increase will be most dramatic on the least-urbanized continents of Asia and Africa.
- During the last one hundred years the world's population has grown rapidly. As well as the growth in population, there has been an even more rapid growth in urbanization.
- Migration and natural increase are the two main factors that affects urbanisation levels and urban growth.
- **Migration** is the movement of population from one area to another.
- A *Push factor* is something that can force or encourage people to move away from an area.
- A *Pull factor* is one in which encourages people to move to an area.
- Urban areas are growing faster in Least Economically Developed Countries (LEDC) than anywhere else in the world.
- Poverty, overcrowding, high housing costs, pollution and traffic congestion are serious problems in cities in developing countries.



12.2.1: DISTRIBUTION OF WORLD CITIES

12.2.1.3: Challenges of Cities in the Developing Countries

- Executive Director of UN Habitat Mr Joan Clos, stressed that while cities in the developing world continue to be plagued by problems associated with poverty, underdevelopment, poor health and standard of education and insecurity, new challenges to urban areas in both poor and richer countries were arising.
- Rapid economic growth brings substantial problems of its own, notably increased pollution.
- **Urban decay**, in simpler terms, refers to the gradual falling apart of a previously functional city, or part of a city or town that falls into disrepair and is in ruins.
- Urban decay also occurs in smaller cities.
- **Urban Renewal** is the process of redeveloping dilapidated or no longer functional urban areas. It is the rehabilitation of city areas by renovating or replacing ruined or disused buildings with new housing, public buildings, parks, roadways and industrial areas, often in accordance with comprehensive plans.
- Urban renewal is usually undergone for the purposes of persuading wealthier individuals to come live in that area. It aims to bring a change in functional role of the area and improvement in the quality of living for residents.
- **Gentrification** is a form of urban renewal that usually involves renovation of heritage buildings. As a result, the surrounding urban environment changes character.
- **Decentralization** means to spread, redistribute or reorganize urban settlement patterns away from city center. It is a government policy which attempts to reduce the concentration of businesses, services and population in major city centers, and to increase population size in small regional centers.
- Counter-urbanization is the relocation of people and employment from large urban centers to smaller urban centers or rural areas.
- Factors which have contributed to counter-urbanization are developments in transport and information technologies. It is generally only a phenomenon in the More Economically Developed Countries (MEDCs).



12.2.1: DISTRIBUTION OF WORLD CITIES

12.2.1.4: Case Study: Dubai (United Arab Emirates), a City in the Developed Country

- The United Arab Emirates (or the U.A.E as it is commonly referred to as) is located in the Southwest Asia within the Arabian Peninsula.
- There are seven emirates or states in the United Arab Emirates and they are: Fujairah, Ras al-Khaimah, Umm al-Quwain, Ajman, Sharjah, Dubai and Abu Dhabi.
- Abu Dhabi is the capital city of the country and it is also the second largest city of the U.A.E. in terms of population size.
- Dubai is located on the Persian Gulf, in the northeast of the country. It is the second largest emirate with an urban area of 3,885 square kilometer and the city is roughly 35 square kilometers.
- Dubai also has the highest population, sharing its borders with Abu Dhabi in the south, Sharjah in the northeast and the Sultanate of Oman in the southeast.
- There are about 4.8 million people living in the country and of this number, only about 22 percent are the citizens of the countries and the remaining people are foreigners.
- In the Middle East, the United Arab Emirates is said to have the most diverse population.
- The United Arab Emirates experiences a dry and hot climate, with the hottest months being July to August.
- The United Arab Emirates was established on 2 December, 1971 and is a federation of the seven emirates
- Each emirate was led by **sheikha** who belonged to a particular tribe which was usually the most influential tribe in the area.
- People of the UAE are extremely proud of their heritage. The traditional Arabic family values are encompassed in respect, hospitality, religious tolerance and pride. Ancestral customs remain strongly rooted among local people and in all spheres of Emirati society.
- Islam is ever present in the UAE and is captured in its foundations. Dubai city has vowed to ensure that no one in the emirate is more than 500 meters away from a mosque, and the call to prayer (or athaan) reaches out five times a day.
- Dubai is experiencing the most startling and rapid urbanization seen in current day.
- Urbanization requires an abundance of energy that Dubai is struggling to find.



- Dubai is also a home to the world's tallest building, *BurjKhalifa*.
- Dubai and Abu Dhabi the two dominating cities in UAE are experiencing unprecedented urbanization in the structural development in unique buildings which already form breathtaking skylines and more urbanization and construction is still to come.
- Over the last few decades, UAE has witnessed a great economic revival resulting in massive urbanization.
- As a country, the United Arab Emirates has developed very rapidly from a developing country with a largely nomadic population, to a modern and wealthy country with a Western lifestyle.
- Rapid modernization and urbanization have contributed to a significant problem with chronic diseases, particularly obesity-related cardiovascular risk.
- Environmental researchers and activists argue that artificial islands threaten the marine ecosystems due to increased pollution and the absence of policies to protect the environment has increased the risk.
- Ninety percent of Dubai's population is comprised of guest workers from places like India, Bangladesh, and Vietnam, a strange imbalance explored at length in the January 2014 issue of the National Geographic Magazine.



12.2.1: DISTRIBUTION OF WORLD CITIES

12.2.1.5: Case Study: Mumbai (India), a City in the Developing Country

- Bombay, now known as Mumbai, is home to around 14 million people. It is a thriving cosmopolitan, multi-cultural city, and is the centre of India's entertainment industry.
- In 1534, the Portuguese captured the islands and established a trading centre (or 'factory') there. The Portuguese called the place *Bom Bahia*, meaning 'the good bay', which the English pronounced *Bombay*.
- The first Englishmen to visit Mumbai were raiders.
- By 1675, the population was around 60,000. In 1687, the East India Company made Bombay their Indian headquarters. The headquarters stayed there until 1708.
- Bombay soon grew again. By the end of the 1700s it was "The Gateway to India".
- In the early 1800s, much engineering work was carried out in Bombay completely filling in the city's swamps, and by 1845 the seven small islands that had previously made up Bombay had been turned into one large island.
- The city changed its name in 1995 to **Mumbai**, after *Mumbadevi*, the stone goddess of the deep-sea fishermen who originally lived on the islands were driven out by the East India Company.
- In terms of urbanisation, Mumbai is a **megacity** and a World city which has grown enormously since the 1950's and gives a great case study of urbanization and its issues within an LEDC.
- In terms of population size Mumbai is India's largest city, and is the financial capital of the country, being home to the Mumbai Stock Exchange.
- Today, Mumbai serves as an important economic hub of India, contributing 10 percent of all factory employment and 40 percent of India's foreign trade.
- Mumbai has urbanised over the past 60 years and urbanized rapidly from its origins as a fishing village.
- Slum dwellers make up an ever increasing proportion of Mumbai's population. This created numerous problems for people and planners.
- *Dharavi* slum is located in Mumbai (formally Bombay) in India. It is India's and Mumbai's biggest slum. There are a million people crammed into one square mile in Dharavi.



- Many of the people come to Dharavi slum from many parts of India as a result of the *push and pull factors* of migration.
- In the slum people have to live with many problems such as toilet in the street, open sewers, children play amongst sewage waste and doctors deal with 4,000 cases a day of diphtheria (A rare bacterial infection) and typhoid, open sewers are close to water pipes, which can crack and take in sewage and toxic wastes are also in the slum including very dangerous heavy metals.
- Dharavi is made up of 12 different neighbourhoods and there are no maps or road signs.
- There also exist positive things in the slum such as informal shopping areas making it possible to buy anything people might need. There are mosques catering for people's religious needs and a pottery area which has a community centre.
- Family life dominates, and there can be as many as five people per room.
- Dharavi has a recycling zone where almost everything is recycled from cosmetics and plastics to computer keyboards.
- **Re-urbanization** is the process whereby towns and cities in MEDCs which have been experiencing a loss of population, are able to reverse the decline and begin to grow again.
- **Suburbanisation** is the process by which, factories, offices and shops move out from the central areas of cities and into the suburbs.
- Mumbai now has a long history of suburbanisation, and many key events have occurred in the suburbanisation process.
- **Counterurbanisation** refers to the movement of people from the MEDC cities to the countryside seeking a better quality of life.

12.2.2: INDUSTRIAL GROWTH

12.2.2.1: Industrial Growth and Its Influence on Urbanization and Industrial Development in Europe and Asia

- A revolution in agriculture in the 1700s created conditions that favoured the Industrial Revolution.
- Increased food production improved people's diet and health, which in turn contributed to rapid population growth.
- Better farming methods meant that fewer people were needed to farm.
- The Industrial Revolution was the transition to new manufacturing processes in the period from about 1760 to sometime between 1820 and 1840.
- This transition included going from hand production methods to machines, new chemical manufacturing and iron production processes, improved efficiency of water power, the increasing use of steam power, and the development of machine tools.
- During the Industrial Revolution, advances were made in transportation and communication.
- The Industrial Revolution began in Great Britain and spread to Western Europe and the United States within a few decades.
- Great Britain enjoyed many advantages such as plentiful iron and coal resources and a good transportation system that helped it take the lead in the Industrial Revolution.
- The Industrial Revolution marks a major turning point in history where almost every aspect of daily life was influenced in some way.
- One of the defining and most lasting features of the Industrial Revolution was the rise of cities.
- In pre-industrial society, over 80 percent of people lived in rural areas.
- Rapid growth brought urban problems, and industrial-era cities were rife with dangers to health and safety.
- In the 19th century, health conditions improved with better sanitation, but urban people, especially small children, continued to die from diseases spreading through the cramped living conditions.
- The Industrial Revolution brought significant social changes but child labour was still prevalent until Great Britain's Parliament passed the Great Reform Act in 1832.



12.2.2: INDUSTRIAL GROWTH

12.2.2.2: The Growth and Influence of Key Industries

- The **Group of Seven (G7)**, formerly G8) is a governmental forum of leading advanced economies that are also highly industrialized nations in the world today.
- G7 hold an annual meeting to foster consensus on global issues like economic growth and crisis management, global security, energy, and terrorism.
- The G7 is composed of the seven wealthiest developed countries on earth (by national net wealth or by GDP).
- Some of the key industries in USA include oil and gas, mining, agribusiness and renewable energy.
- Brazil, Russian Federation, India and China (BRIC) are the emerging and fast growing countries within the agricultural products industry.
- These BRICs countries provide a great example of four countries with very little natural geographical, cultural or historical ties, which have come together to focus on mutual opportunities and challenges.

12.2.2: INDUSTRIAL GROWTH

12.2.2.3: Growth of Small Scale Industries in Papua New Guinea

- **Industrialization** is the process in which a society or country (or world) transforms itself from a primarily agricultural society into one based on the manufacturing of goods and services.
- Industry generally refers to all stages and type of economic activity including extraction, construction and services.
- Industries can be grouped into Primary, Secondary and Tertiary.
- The factors that have hindered the development of the industrial property systems in less developed countries such as Papua New Guinea include the lack of resources and expertise.
- Industrial development in Papua New Guinea is also hindered by a number of structural and institutional factors such as poor infrastructure, a small and fragmented domestic market, inadequate and costly transport and communication, lack of adequate skilled labour and local entrepreneurship, and inadequate training and education facilities and programs.
- The industrial sector, constrained by the small domestic market and the population's low purchasing power, is largely undeveloped.
- Industries are concentrated in industrial metals, timber processing, machinery, food, drinks, and tobacco.
- Small industries of handicraft and cottage industries have expanded.
- A government-sponsored program assists Papua New Guineans in setting up businesses and purchases equity in existing firms. It has also encouraged small-scale import-substitution operations.
- The major economic sectors in PNG include Agriculture, Forestry, Fisheries Manufacturing, Minerals and Petroleum, Retail and Wholesale, Building and Construction, Transport and Telecommunications, Finance and Business, and trade.
- The key industries in PNG are copra crushing, palm oil processing, plywood production, mining (gold, silver and copper), crude oil production, petroleum refining, Liquefied Natural Gas (LNG), construction and tourism.
- There are business facilities for medium and small scale industries in and near the main towns in all provinces in Papua New Guinea.



- An essential component of the Government's structural adjustment program is the promotion of non-mining sectors of the economy to ensure economic growth can be sustained after the depletion of the mineral resources.
- Essential services for the operation of basic businesses are available in most towns and villages but there is still room for further improvement and development.
- The department of Trade and Industry (now Trade and Commerce) is responsible for the formulation, co-ordination and monitoring of industrial development policies and relevant programme implementation.
- The department's programme initiatives include, among others, the development of the garment and textile industries, as well as wood and marine-based industries.



12.2.3: IMPACT OF INDUSTRIAL GROWTH

Topic 12.2.3.1: The Growth and Influence of Transnational/Multinational Corporations (TNCs)

- **TNC** refers to a company with economic divisions in more than two countries operating under a decision-making system which permits coherent policies and a common strategy (United Nations Conference on Trade and Development (UNCTAD)).
- The importance of transnational corporations (TNCs) for developing countries, understood as emerging markets, transition economies and less developed countries, has been increasing over the last 20 years and the spread of globalization has raised a new set of issues in relation to TNCs.
- TNC's were initially seen as exploiters and met with reluctance from host governments, the tides have changed and many developing countries now welcome TNCs and view Foreign Direct Investment (FDI) as an important source of development.
- TNCs is seen to play a central role in development by increasing economic growth and contributing to social development.
- One of the obvious feature of TNCs is that their headquarters and the main factory are usually located in an economically more developed country.
- The positive impacts of TNCs include technology transferring, economic growth, employment and taxation.
- Most of the influences of TNCs in PNG is seen in the extractive industries of Mining, Gas and Oil, Fisheries and Forestry.
- With PNG's developing economy growing at an extraordinary pace, the country is now host to more multinational corporations than ever before.
- The Government of PNG and the World Bank through its financial arm, International Finance Corporation (IFC), is currently in cohorts to legalize SEZ in the country.
- PNG is waking up to the realization that our constitution is being broken to suit the TNC's greed of which the Pacific Marine Industrial Zone (PMIZ) is an example.



12.2.2: IMPACT OF INDUSTRIAL GROWTH

12.2.3.2: The Use of Trade Protection Policies to Safeguard Industries

- Firstly **trade protectionism** is used by countries when they think their industries are being damaged by unfair competition from foreign industries.
- It is a defensive measure, and is usually politically motivated.
- In the long term, it can make the country, and the industries it is trying to protect, less competitive in international trade.
- Without competition, companies within the industry will not innovate and improve their products or services.
- **Protectionism** is the practice of nations to protect domestic industries and their workers by providing subsidies for their production and imposing tariffs on competing foreign products.
- Countries use a variety of ways to protect their trade. One way is to enact tariffs, which tax imports.
- With market globalization, industrialized and developing nations have embraced free trade as a means for opening markets and reducing consumer prices.
- Free trade is based on agreements between nations to drop import barriers, allowing foreign goods and services to compete on a level playing field with domestic products.
- Free trade is meant to improve the economy of all participating nations.
- The World Trade Organization (WTO) regulates free trade agreements among member nations.



12.2.3: IMPACT OF INDUSTRIAL GROWTH

12.2.3.3: Effects of Industrial Growth on People and the Natural Environment

- The **Industrial Revolution** marked a major turning point in Earth's ecology and humans' relationship with their environment.
- Industrial Revolution problems started in the mid-1700s in Great Britain when machinery began to replace manual labor.
- Fossil fuels replaced wind, water and wood, used primarily for the manufacture of textiles and the development of iron making processes.
- The most outstanding evidence of the Industrial Revolution's impact on the modern world is seen in the worldwide human population growth.
- Human population growth is always tied together with increased use of natural and man-made resources, energy, land for growing food and for living, and waste by-products that are disposed of, to decompose, pollute or be recycled.
- It was the fossil fuel coal that fuelled the Industrial Revolution, forever changing the way people would live and utilize energy.
- Industry and its products have an impact on the natural resource base of civilization through the entire cycle of raw materials exploration and extraction, transformation into products, energy consumption, waste generation, and the use and disposal of products by consumers.
- The negative environmental impacts of industrial activity were initially perceived as localized problems of air, water, and land pollution.
- Public concern grew rapidly and forced a broad debate on environment conservation and economic growth.
- By the late 1960s, growing awareness and public concern led to action by governments and industry in both industrial and some developing countries.
- Environmental protection and resource conservation policies and programmes were established, along with agencies to administer them.



- Industry also responded to environmental problems by developing new technologies and industrial processes designed to reduce pollution and other adverse environmental impacts.
- Expenditures on pollution control measures rose rapidly in some highly polluting industries.
- Corporations began to set up their own environmental policy and control units.
- Guidelines and codes of conduct were published covering safety of products and plant operations, trade practices, technology transfer, and international cooperation.
- In the light of this and the growth trends projected through the next century, it is evident that measures to reduce, control, and prevent industrial pollution will need to be greatly strengthened.
- Pollution damage to human health could become intolerable in certain cities and threats to property and ecosystems will continue to grow if pollution and its prevention measures are not strengthened.
- Unionism is about workers standing together to improve their situation, and to help others.
- Trade unions are independent, membership-based organisations of workers that represent and negotiate on behalf of working people.
- Unions work on the principle that if all workers speak with the same voice, their concerns are more likely to be addressed.
- Unions are financed through the individual contributions of their members.
- Unions continually seek to recruit members (encouraging new members to join by 'organising') and to build an active membership, as this gives unions stronger bargaining power in negotiations with employers.

END OF UNIT 12.2 UNIT SUMMARY

NOW DO THE ASSESSMENT TASKS IN YOUR ASSESSMENT BOOK 2. WHEN YOU FINISH ALL THE ASSESSMENT TASKS AND ARE SATISFIED WITH YOUR ANSWERS, SEND YOUR ASSESSMENT BOOK TO YOUR PROVINCIAL COORDINATOR FOR MARKING



ANSWERS TO LEARNING ACTIVITIES 1-11

Activity 1

- 1) A **rural settlement** refers to all the villages, farmhouses, hamlets and other dispersed settlements whose people are mainly engaged in agriculture while an **urban settlement** refers to towns, cities or conurbations.
 - 2) Many philosophers believe that **agriculture** preceded the development of cities and led to their growth.
 - 3) With the adoption of farming, hunters and gatherers began to abandon their nomadic lifestyles and settled near others who lived by agricultural production. Agriculture yielded more food, which made it possible to feed a larger population and this encouraged and supported the development of cities. Population became settled in one place and food surplus that required storage led to *trade*.
 - 4) A good environment and strong social organization is two necessities for the formation of a successful city. A good environment includes clean water and a favorable climate for growing crops. A strong social organization helps work together in times of need. It further allows people to develop various functions to assist in the future development of the city. Without these two conditions, as well as advanced agricultural technology, a newly formed city is not likely to succeed.
-

Activity 2

1. **Urban growth** is the rate of growth of an urban population. It is the actual number of people of which a city or town's population grows whereas **urbanization** is the process of changing from rural to urban.
 2.
$$\frac{977\,000}{7645000} \times 100 = 12.8\%$$

% of PNG's urban population = **12.8%**
 3.
 - i. During the **19th century**, in what are now referred to as the economically more developed countries, industrialization led to a huge demand for labor in mining and manufacturing centers. Urbanization was, in these parts of the world, a consequence of economic development.
 - ii. **Since the 1950's**, in the less economically developed countries, the twin processes of migration from rural areas and the high rate of natural increase in population have resulted in the uncontrollable growth of cities. Urbanization is, in developing countries, a consequence of population growth and is not, as previously believed, an integral part of development.
-



4.
 - i. Migration and
 - ii. Natural Increase
5. There are many problems associated with the rapid growth. These include unplanned housing (squatter settlements/shanty towns), unemployment, providing basic needs, dealing with urban waste, pollution and stress on the *infrastructure* and the city's services.

Poverty, overcrowding, high housing costs, pollution and traffic congestion are serious problems in cities in developing countries. Urban development also leads to valuable agricultural land being lost.

Activity 3

1. **Urban decay**, refers to the gradual falling apart of a previously functional city, or part of a city or town that falls into disrepair and is in ruins.
2. New challenges to urban areas in both poor and richer countries included cities as emitters of greenhouse gases that contribute to climate change and the risk of the collapse of transit systems due to inadequate planning and rapid expansion.
3. **Urban Renewal** is the process of redeveloping dilapidated or no longer functional urban areas.

Activity 4

1. An **Emirate** is a political territory that is ruled by a dynastic Arab monarch styled *emir*. It also means *principality*.
2. United Arab Emirates is a federation of seven emirates: Abu Dhabi, Ajman, Dubai, Fujairah, Ras Al Khaimah, Sharjah and Umm Al Quwain.
3. $22 \div 100 \times 4800000 = 1\,05600$ people are citizens of UAE
4. From the 1850s until the union of the emirates in 1977, the British Colonial Administration maintained influence in the region, and each emirate entered into separate treaties with Britain. The emirates were then collectively known as the Trucial States or Sheikhdoms.
5. Nuclear power, is hardly sustainable itself, because it requires large amounts of water and it also produces radioactive waste.



6. Until the discovery and exploration of oil and gas in the mid-20th century, the human population of the UAE was small and the impact of the human economy on the natural environment was very limited.

Over the last few decades, UAE has witnessed a great economic revival resulting in massive urbanization.

Activity 5

1. Bombay needed a **fort** and a **garrison** of soldiers to protect it from Dutch fleets and Indian pirates.
2. In 1534, the Portuguese captured the islands and established a trading centre (or 'factory') there. The Portuguese called the place *Bom Bahia*, meaning 'the good bay', which the English pronounced *Bombay*.
3. English, Dutch and Portuguese ship captains regularly raided and captured foreign ships, if they thought they could get away with it. In 1688, during a conflict between the English and the Mughals, fourteen Mughal ships were captured and taken to Bombay harbour. A fleet of barges was also captured. The Mughals responded and in February 1689, a force entered Bombay harbour and landed Mughal men.

The population of Bombay fell to a fraction of its earlier size. Many people, both Indian and English, lost their lives. Plantations were devastated and houses destroyed. Bombay became known as a "dismal desert".

4. The Company built up a fleet, called the **Bombay Marine**, which brought some peace to the West coast of India in the first half of the century. The Bombay Marine eventually became the Indian Navy.
5. The city changed its name in 1995 to Mumbai, after Mumbadevi, the stone goddess of the deep-sea fishermen who originally lived on the islands were driven out by the East India Company.
6. Dharavi has a recycling zone. It is claimed that Dharavi's recycling zone could be the way forward to a sustainable future. Everything is recycled from cosmetics and plastics to computer keyboards. 23 percent of plastic waste gets recycled in the UK, and in Mumbai it is 80 percent. However, it is humans who work to sift the rubbish in the tips where children and women sift through the rubbish for valuable waste. They have to work under the hot sun in appalling conditions. They earn around a £1 a day for their work.
7. **Re-urbanization** is the process whereby towns and cities in MEDCs which have been experiencing a loss of population, are able to reverse the decline and begin to grow again. **Suburbanisation** is the process by which, factories, offices and shops move out from the central areas of cities and into the suburbs. **Counter-urbanisation** refers to the



movement of people from the MEDC cities to the countryside seeking a better quality of life.

Activity 6

1. A revolution in agriculture in the 1700s created conditions that favored the Industrial Revolution.
2. The Industrial Revolution was the transition to new manufacturing processes in the period from about 1760 to sometime between 1820 and 1840.
3. Between 1733 and 1793, inventors produced new machines, such as the flying shuttle, the spinning jenny, and a water-powered loom, that speeded up the spinning and weaving of wool and cotton.
4. Great Britain enjoyed many advantages that helped it take the lead in the Industrial Revolution. It had plentiful iron and coal resources and a good transportation system. It was a leading commercial power so merchants had the capital to invest in new enterprises. It had colonies that supplied raw materials and bought finished goods. The British government encouraged improvements in transportation and used its navy to protect British trade. Finally, the British accepted the idea that people could move ahead in society by hard work and talent.
5. i) **Child Labour** is the social issue: Children were sent to work in factories, where they were exploited and ill-treated.

ii) Industrial Revolution aided urbanisation in Britain and other parts of the world. People who lived and worked in the countryside moved to the city for new employment opportunities. Peasants and farmers moved to the city to realise dreams of wealth and steady employment.
6. One of the defining and most lasting features of the Industrial Revolution was the rise of cities. In pre-industrial society, over 80 percent of people lived in rural areas. As migrants moved from the countryside, small towns became large cities. By 1850, for the first time in world history, more people in a country, lived in cities than in rural areas. This happened in Great Britain. As other countries in Europe and North America industrialized, they too continued along this path of urbanization. By 1920, a majority of Americans lived in cities. In England, this process of urbanization continued persistently throughout the 19th century. The city of London grew from a population of two million in 1840 to five million forty years later

Activity 7

1. The **Group of Seven (G7)**, formerly G8) is a governmental forum of leading advanced economies that are also highly industrialized nations in the world today. The Group of Eight (G8) was originally formed by six leading industrialized countries and subsequently



extended with two additional members, one of which, Russia, is suspended. Since 2014, the G8 in effect comprises seven nations and the European Union as the eighth member.

The forum originated with a 1975 summit hosted by France that brought together representatives of six governments: France, West Germany, Italy, Japan, the United Kingdom, and the United States, thus leading to the name **Group of Six** or **G6**. The summit became known as the **Group of Seven** or **G7** in 1976 with the addition of Canada. The G7 is composed of the seven wealthiest developed countries on earth (by national net wealth or by GDP, and it remained active even during the period of the G8. Russia was added to the group from 1998 to 2014, which then became known as the G8. The European Union was represented within the G8 since the 1980s but could not host or chair summits.

2. On March 24, 2014, the original G7 nations voted to, in effect; suspend Russia from the organization in response to the country's annexation of Crimea.
3. **BRIC** stands for Brazil, Russian Federation, India and China which are the emerging and fast growing countries within the agricultural products industry. The new addition now is South Africa.

These BRICs countries provide a great example of four countries with very little natural geographical, cultural or historical ties, which have come together to focus on mutual opportunities and challenges.

4. Export-Import Bank of US, also referred to as **Ex-Im Bank**.

Activity 8

- 1) **Industrialization** is the process in which a society or country (or world) transforms itself from a primarily agricultural society into one based on the manufacturing of goods and services.

2)

Primary: This involves activities in which natural resources are extracted from the natural environment, be it on land, sea or river. It includes agriculture, fishing, forestry, mining and quarrying.

Secondary: Or manufacturing industry include activities in which natural resources at the primary level are made into final products for public consumption or semi-finished products to be used as raw material for producing other products. This is also called the manufacturing industry.

Tertiary: Or Service industry include activities in commercial services of transport, wholesaling and retailing.



3) Benefits/advantages of boosting small scale industries are:

- Employment potential
- Meets the demands of the local market
- Source of foreign exchange income
- Gainful employment of women

Any advantages listed in the lesson is acceptable.

4) According to a 2012 UN Habitat study on Port Moresby Urban Profile, population growth in the urban areas is exceeding national growth rates and the availability of economic development opportunities. The study concludes that the increasing population in urban areas has presented, many challenges such as increased unemployment, squatter settlements, the lack of service provision, and increased crime.

Activity 9

1. TNC means a company with economic divisions in more than two countries operating under a decision-making system which permits coherent policies and a common strategy (United Nations Conference on Trade and Development (UNCTAD)).
 2. The importance of transnational corporations (TNCs) for developing countries, broadly understood as emerging markets, transition economies and less developed countries, has been increasing over the last 20 years and the spread of globalization has raised a new set of issues in relation to TNCs.
 3. Positive Impacts of TNCs (*any answers on the diagram on page 87 is acceptable*)
 1. Technology transferring,
 2. Economic growth
 3. Employment
 4. Taxation
 4. Negative Impacts of TNCs (*any answers on the diagram on page 87 is acceptable*)
 1. Most of the profits go abroad
 2. They can cause pollution
 3. Raw commodities are exported
 4. Sometimes we badly paid
 5. USA is ahead of Japan in 1997 by 10 billion in terms of foreign assets?
 6. Sir Arnold Amet has a right to be angry at how colonizers tricked us in the past into giving up our resources for nothing. However, he fails to see that the same thing is still happening in PNG, this time through multinational corporations.
-



Activity 10

1. **Protectionism** is the practice of nations to protect domestic industries and their workers by providing subsidies for their production and imposing tariffs on competing foreign products.
2. Firstly **trade protectionism** is used by countries when they think their industries are being damaged by unfair competition from foreign industries. It is a defensive measure, and is usually politically motivated. It can often work, in the short run. However, in the long run it usually does the opposite of its intentions. It can make the country, and the industries it is trying to protect, less competitive in international trade
3. In the long term, trade protectionism weakens the industry. Without competition, companies within the industry will not innovate and improve their products or services. There is no need to. Eventually, consumers will pay more for a lower quality product than they would get from foreign competition.
4. They are opening the trade up for competition.
5. WTO stands for World Trade Organisation

Activity 11

1. The impact of Industrial Revolution on the world would not begin to register until the early 1960s, some 200 years after its beginnings. From human development, health and life longevity, to social improvements and the impact on natural resources, public health, energy usage and sanitation, the effects were profound.
2. It started in the mid-1700s in Great Britain when machinery began to replace manual labor.
3. Fossil Fuels
4. The most outstanding evidence of the Industrial Revolution's impact on the modern world is seen in the worldwide human population growth. Humans have been around for about 2.2 million years. By the dawn of the first millennium AD, estimates place the total world (modern) human population to be between 150 to 200 million, and 300 million in the year 1,000.
5. The relative importance of industry as an employer has been declining for some time in developed countries. The shift in jobs towards the service sector has accelerated sharply over the past 15 years with the increasing adoption of new processes and technologies. Economists continue to argue over whether the advent of an information-based economy will further depress employment in industry or will expand job opportunities overall.
6. Land/Air/Water pollution, chemical pollution



7. Trade unions are independent, membership-based organisations of workers that represent and negotiate on behalf of working people.
8. Build trust among the workforce, Ensure workplaces are safe, Audit non-compliance with labour codes (any three answers from the notes)

END OF UNIT 12.2 MODULE 2



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- 17) http://russiancouncil.ru/en/inner/?id_4=727#top-content.
- 18) («[Financial Times Global 500 Rating–2011](#)»; «[World Development Indicators & Global Development Finance](#)»)
- 19) **Michael W. Hansen** (Copenhagen Business School, Denmark) & **Eric Rugraff** (Institute of Technology, University of Strasbourg). 14th General Conference 23-26 June 2014, Bonn. www.gc2014.org
- 20) <http://www.ecology.com/2011/09/18/ecological-impact-industrial-revolution/>



FODE PROVINCIAL CENTRES CONTACTS

PC NO	FODE PROVINCIAL CENTRE	ADDRESS	PHONE/FAX	CUG PHONES	CONTACT PERSON		CUG PHONE
1	DARU	P. O. Box 68, Daru	6459033	72228146	The Coordinator	Senior Clerk	72229047
2	KEREMA	P. O. Box 86, Kerema	6481303	72228124	The Coordinator	Senior Clerk	72229049
3	CENTRAL	C/- FODE HQ	3419228	72228110	The Coordinator	Senior Clerk	72229050
4	ALOTAU	P. O. Box 822, Alotau	6411343 / 6419195	72228130	The Coordinator	Senior Clerk	72229051
5	POPONDETTA	P. O. Box 71, Popondetta	6297160 / 6297678	72228138	The Coordinator	Senior Clerk	72229052
6	MENDI	P. O. Box 237, Mendi	5491264 / 72895095	72228142	The Coordinator	Senior Clerk	72229053
7	GOROKA	P. O. Box 990, Goroka	5322085 / 5322321	72228116	The Coordinator	Senior Clerk	72229054
8	KUNDIAWA	P. O. Box 95, Kundiawa	5351612	72228144	The Coordinator	Senior Clerk	72229056
9	MT HAGEN	P. O. Box 418, Mt. Hagen	5421194 / 5423332	72228148	The Coordinator	Senior Clerk	72229057
10	VANIMO	P. O. Box 38, Vanimo	4571175 / 4571438	72228140	The Coordinator	Senior Clerk	72229060
11	WEWAK	P. O. Box 583, Wewak	4562231 / 4561114	72228122	The Coordinator	Senior Clerk	72229062
12	MADANG	P. O. Box 2071, Madang	4222418	72228126	The Coordinator	Senior Clerk	72229063
13	LAE	P. O. Box 4969, Lae	4725508 / 4721162	72228132	The Coordinator	Senior Clerk	72229064
14	KIMBE	P. O. Box 328, Kimbe	9835110	72228150	The Coordinator	Senior Clerk	72229065
15	RABAUL	P. O. Box 83, Kokopo	9400314	72228118	The Coordinator	Senior Clerk	72229067
16	KAVIENG	P. O. Box 284, Kavieng	9842183	72228136	The Coordinator	Senior Clerk	72229069
17	BUKA	P. O. Box 154, Buka	9739838	72228108	The Coordinator	Senior Clerk	72229073
18	MANUS	P. O. Box 41, Lorengau	9709251	72228128	The Coordinator	Senior Clerk	72229080
19	NCD	C/- FODE HQ	3230299 Ext 26	72228134	The Coordinator	Senior Clerk	72229081
20	WABAG	P. O. Box 259, Wabag	5471114	72228120	The Coordinator	Senior Clerk	72229082
21	HELA	P. O. Box 63, Tari	73197115	72228141	The Coordinator	Senior Clerk	72229083
22	JIWAKA	c/- FODE Hagen		72228143	The Coordinator	Senior Clerk	72229085

**SUBJECT AND GRADE TO STUDY**

GRADE LEVELS	SUBJECTS/COURSES
Grades 7 and 8	1. English
	2. Mathematics
	3. Personal Development
	4. Social Science
	5. Science
	6. Making a Living
Grades 9 and 10	1. English
	2. Mathematics
	3. Personal Development
	4. Science
	5. Social Science
	6. Business Studies
	7. Design and Technology- Computing
Grades 11 and 12	1. English – Applied English/Language & Literature
	2. Mathematics - Mathematics A / Mathematics B
	3. Science – Biology/Chemistry/Physics
	4. Social Science – History/Geography/Economics
	5. Personal Development
	6. Business Studies
	7. Information & Communication Technology

REMEMBER:

- For Grades 7 and 8, you are required to do all six (6) courses.
 - For Grades 9 and 10, you must study English, Mathematics, Science, Personal Development, Social Science and Commerce. Design and Technology-Computing is optional.
 - For Grades 11 and 12, you are required to complete seven (7) out of thirteen (13) courses to be certified.
- Your Provincial Coordinator or Supervisor will give you more information regarding each subject.

GRADES 11 & 12 COURSE PROGRAMMES

No	Science	Humanities	Business
1	Applied English	Language & Literature	Language & Literature/Applied English
2	Mathematics A/B	Mathematics A/B	Mathematics A/B
3	Personal Development	Personal Development	Personal Development
4	Biology	Biology/Physics/Chemistry	Biology/Physics/Chemistry
5	Chemistry/ Physics	Geography	Economics/Geography/History
6	Geography/History/Economics	History / Economics	Business Studies
7	ICT	ICT	ICT

Notes: You must seek advice from your Provincial Coordinator regarding the recommended courses in each stream. Options should be discussed carefully before choosing the stream when enrolling into Grade 11. FODE will certify for the successful completion of seven subjects in Grade 12.



CERTIFICATE IN MATRICULATION STUDIES		
No	Compulsory Courses	Optional Courses
1	English 1	Science Stream: Biology, Chemistry, Physics
2	English 2	Social Science Stream: Geography, Intro to Economics and Asia and the Modern World
3	Mathematics 1	
4	Mathematics 2	
5	History of Science & Technology	