Geography chapter 7 Notes

-What are cities?

A city is a defined urban area within a country.

Different countries have different guidelines to identify their cities.
Factors that make a city:
-A large population size compared to other locations in the country.

-**A high population density** compared to other locations in the country
A population density is a measurement of the number of people living in a unit area of land
Population density formula: Number of people living in an area/ Land area

-**A built-up area** which means that the land surface is mostly covered by buildings.
This can include **extensive infrastructure** which is a system of buildings and equipment meant to provide basic services such as water, electricity, sanitation, telecommunications and transport for its residents.
A dense built-up with tall buildings closely-built.

-Range of Functions which can be administrative, commercial or educational activities.
Manufacturing industries produce and sell a variety of products including paper and cars and business also benefits from modern infrastructure such as:
Telecommunications systems to communicate efficiently with suppliers, customers and across offices in other locations.
Well connected transport systems to move goods around the city and country and even for export to other countries

-Relationship between cities and rural areas
Compared to cities(urban areas), rural areas have a <u>lower population size and density. Also having fewer functions which are also less built-up</u>. Despite these differences, cities and rural areas in many countries are connected by movement of people, goods and services.

Some people(migrants) in cities may have originally come from another location in their country before settling down. This is common for people to move from rural areas to urban areas such as towns and cities, this process is called **rural-urban migration**.

Migrants move due to many reasons, known as Push factors(negative reasons causing migrants to want to **leave**) or Pull factors(positive reasons **attracting** migrants towards a destination)
Pull reasons may include:
1)High pay
2) Safe and political stability
3)More opportunities

4)Better healthcare

Push factors may include:
1)War or political instability making it unsafe for people to stay in rural areas hence prompting people to relocate to urban areas.
2)A lack of essential facilities such as education facilities. Education is important as it enables people to gain knowledge which can affect future employability of children and causes people to migrate to urban areas where there are a variety of education institutions.
3)Low income which causes people to migrate to seek a higher pay in urban areas to have a better livelihood
4)Natural disasters such as droughts destroyed large amount of crops which may result in starvation and prompts people to migrate to urban areas due to lack of food
5)Lack of job opportunities make people want to migrate to seek employment and earn money to support their families.

Another relationship between cities and rural areas would be their interdependence in providing goods and services.

1)Cities rely on rural areas for food as they have limited space for agricultural activities, Rural farmers can rear animals and grow crops for their own needs or sell them at markets in the cities. This exchange of food for money becomes their income. (Cities depending on rural areas)

2)Rural inhabitants also benefit from amenities in cities such as expert medical help and advanced treatment which might not be available in where they live and also buy certain goods that are only available from malls in the cities. (Rural areas depending on cities)

How do cities affect their inhabitants and the environment?

-Opportunities there are for people in cities include:

 Education and employment are closely linked as education enables people to learn useful skills and knowledge which they can apply and have employment and they get paid which allows them to purchase food and other necessities to improve their well-being.
Cities are centers of learning and allow large populations of people and children to learn.

Businesses thrive in cities because of their developed infrastructure, availability of services and opportunities such as education. They also benefit from the concentration of educational institutions in cities and can hire a large pool of skilled employees. They may also offer work study arrangements for education institutes to train their employees.

Technological innovations are something that cities are known for and uses scientific knowledge to create new products or services. This is because there are many skilled people living in cities which receive funding from the government to experiment new ideas.

Innovations in cities.
1)Shading
Apart from trees, sheltered covered walkways are installed to provide shade and shield from rain
2)Transport
Use of public transport, cycling and walking to help reduce heat production from the transport sector.
3)Vegetation
Greenery on roofs and building facades prevents sunlight from heating up buildings.
4)Building facade
Light-coloured surfaces on buildings help to reflect sunlight to reduce heat absorption.
5)Water bodies and features
Ponds and pools help to prevent overheating.

Challenges people face in the cities

1)Increased environmental pollution
Cities are major polluters of air and water. Large amounts of fossil fuels are being consumed in the cities everyday due to high concentration of people, businesses and transportation networks. This also becomes a leading cause of environmental pollution where contaminants are produced and released to the physical environment which harms human health.

2)Water pollution
Waste water not disposed of properly can result in water bodies such as rivers being polluted which increases the likelihood of people consuming contaminated water which can lead to water-borne illnesses such as cholera.

3)Air pollution
Air can be polluted from vehicle exhaust or burning of fossil fuels in power plants which prolonged exposure to air pollution which can lead to respiratory infection,lung cancer, heart disease and even death.

4)Competition for natural resources
In cities due to high population size creates competition for natural resources such as land and water and people may not have enough of such resources.

5)Land resources
When cities need to accommodate large and growing populations for different purposes and when they have insufficient land they expand towards rural areas replacing forests and

farmlands or leveling hills which leads to unhappiness when existing residents have to be relocated for new buildings being repurposed.

6)Water resources
Cities need to ensure the continual supply of clean water to meet the needs of people and businesses. However this can be compromised by competition for land which limits the construction or expansion of reservoirs and water catchment areas and groundwater are also affected as more natural vegetation is converted to concrete surfaces.

Managing cities sustainability

Environmental management is split into
1) Managing physical environment
Cities tend to have large environmental footprints and large amounts of waste is produced through people's actions and activities such as transport and industry. Pollution reduced the quality of the physical environment and its sustainability. It can spread to surrounding areas including other countries.
Management strategies to regulate the use of natural resources and minimize the negative environmental impact from human activities are therefore necessary.

1) Reducing water pollution through water treatment ponds by setting up drains around farm plots and water treatment ponds where cattails and fragrant pandan are grown to purify the water and to channel and collect rainwater and excess nutrients.
2) Reducing air pollution through laws by setting limits to the amount of vehicles that can be registered and by setting limits on air pollutants.

2) Management of hazards
Hazards tend to be events that have a negative impact on people.
Human-induced hazards arise from human actions or inaction such as ignoring safety regulations or warnings. (Fires,oil spills, industrial accidents)
Natural hazards arise from the physical environment. (Earthquakes, volcanic eruptions, tsunamis.
1)Management of hazards can be by using better quality building materials to withstand the threat of hazards like preventing immediate hazards. (Mori tower in Japan uses oil-filled shock absorber to prevent the building from collapsing during earthquakes)
2)Land using planning which disallows some areas used for construction as they are generally unsafe and may have hazards.

Improvement of quality of life
Quality of life refers to a person's well-being which is affected by several factors such as physical and mental health, etc.

1) **Providing safe housing** for the masses, making them affordable and to shelter people from weather elements such as extremely high or low temperature and rain. This tackles the problem of inadequate and low quality of housing due to high rates of migration and overpopulation.(When housing becomes insufficient or expensive, people may resort to building their own homes also known as squatter settlements and can be found at unsafe locations.)
2) **Providing a variety of transportation modes** to reduce traffic congestion(more people have more options to travel) and allow for ease in traveling(transportation modes are more affordable than cars) and reduce air pollution(reduces fossil fuel consumption and carbon emissions).
3) **Considering the needs of different groups** to ensure inclusivity-elderly,children and people with disabilities.

Chapter 8 Housing and its spatial distribution

-What is housing
Housing refers to structures or buildings developed to shelter people from the elements. It is a basic need that everyone should have access to. Housing can be temporary or permanent, planned or unplanned, variety of materials that come in shape and sizes.
It can be arranged in height and density,
High rise and density typically compromises of shared facilities, such as playgrounds, exercise and swimming pools.
Low rise and density comprises of detached houses, semi-detached houses, terraces and shophouses
High rise
-Housing with more than six stories and require use of lifts
High density
-Accommodating many people in a given area
High rise and density is found nearer in the city centre while low rise and low density is found towards the fringe of the city.

-Different types of housing
Housing can be identified by spatial distribution(distance to city centre from house), density,location, type of material, social relation.
Proper housing plans are important for cities to develop sustainably, when city and urban population grows faster than the pace of housing development, it results in housing shortage. Sustainable development of cities, it is useful to consider whether housing is legally**(formal housing**), provided for by government housing programmes or private developers or illegally built(**informal housing**) and is usually built by individuals who are unable to access formal housing.

Formal housing
It refers to housing that is provided by the government or private developers with legal rights to occupy the land. These are built using high quality materials and residents in such development can expect access to basic services. 4 Factors of public housing is as follows:

1)Built by government or private developers
Formal housing developments are part of urban planning processes, they are undertaken by the government or private businesses, rather than individuals. The HDB builts flats and towns and their supporting amenities, such as hawker centres on roads, on government owned land. Apart from being built by the government, plots of land can be sold or leased to private businesses, which in turn develop private housing projects sold to anyone who wants to buy them.

2)Legal right to occupy land
Land rights refer to the ability of individuals to freely obtain use and possess land at their discretion as long as their activities on the land do not impede on others rights. Land rights addresses the ownership of land, which provides security and increases human capabilities, without this legal right, individuals may feel less secure about their homes. Formal housing refers to housing that is built by those with the legal right to occupy the land that may be levied in, sold or leased to others.

3)Access to basic services
As urban planners determine the sites of formal housing, basics services are planned for. The provision of these basic services improves the quality of life for residents in these housing developments. These services include
- easy access to water
-easy access to electricity
-provision of sanitation services
-infrastructure to support these services(underground water pipes, electrical substances, power lines and sewage pipes) is all often built together with the housing project.

4)High quality building materials
As formal housing (whether privately or publicly built) is usually regulated, these developments conform with planning authorities' guidelines(safety and building quality) and use high-quality materials. In general, these high quality materials could include concrete, metal or hard-wood. However the materials and guidelines range from countries on their economy, environmental and social circumstance.

A house of high quality materials can
-withstand elements such as heavy rain and strong winds
-protect occupants from basic threats such as fires
-last for a long time with minimal maintenance
Examples:
1)Mechanical and electrical fittings including switches and air-conditioners are checked for gaps and joints, uneveness and signs of damage
2)Floors are checked for possible poor alignment, unevenness, cracks and signs of damage
3)Bathrooms are filled with water for four hours to check for leakage
4)Durable surfaces with strong walls that are made of concrete and steel
5)waterproof roof provides protection against strong wind and rain
6)locked doors and window frames provide protection against threats

Informal housing
It is characterized by one or more of the following:
1)self built housing settlements
2)no legal right to occupy land
3)lack of access to basic services
When cities struggle to support the immense influx of people who move from cities with hope of improving their circumstances and building a better life, there is a chance they end up within informal housing due to unable to afford one and end up settling within informal housing in cities or on outskirts of cities as squatters. Squatter settlements are informal settlements.
Informal housing results in 1)social unrest
        2)degradation of environmental quality.
        3)Facilitates spread of disease leading to squatter settlements being undesirable.
        4)Envoironmental threats to safety
        5)Constant risk of losing their homes

However they may aid housing issues in over populated cities.
Informal housing have 4 main factors as follows:

1) Self built squatter settlements
In contrast to formal housing, which is built by organisations such as the government or private business, informal housing is typically built by individuals in an unplanned fashion. While informal housing may appear to line up neatly along roads or rivers, their development was not planned for.

2) No legal right to occupy land
Informal housing is built out of necessity and on any available, accessible plot of land by residents desperate for shelter. Many informal houses occupy government land or private property which is undeveloped and unsecured. This means that these residents are often illegal occupants of the land. Often when the legal owners of the land discover such occupation, the informal houses may be cleared away and their residents evicted.

3) Lack of access to basic services

As informal housing is built by individuals and in areas not meant for housing development, the residents lack access to basic services such as electricity, water and sanitation. They resolve this issue by illegally tapping onto nearby electrical grids, siphoning water from nearby pipes and disposing of sanitary waste into ground or nearby rivers.

This leads to increase risk of 1)injury

2)ill health due to electrocution, consumption of contaminated water and waterborne diseases.

4) Poor quality building materials

Informal housing is often constructed from scavenged materials such as repurposed zinc sheets and recycled lumber. THey are constructed using inferior build materials and thus at risk of collapsing, being flooded on rainy days or catching fire easily.

Where are different housing types found in cities

Formal housing

Formal housing is found on desirable land within a city. Government and private developers are able to situate formal housing near greenery and amenities, away from pollution, and support them with quality infrastructure such as roads, piped water, electricity and waste disposal.

Informal housing

Description: Informal housing is typically found in areas of locally unwanted land used.(near landfills, sewage treatment plants and large polluting industries.)

Explanation: They are often neglected/lack infrastructure development or basic services (not amenities)/ the only space left available.

Description: They are found near or outskirts of the cities/industries/construction site.

Explanation:Dwellers wish to to save on travelling time and cost by living near their workspace/ job opportunities.

Description: They are found near water bodies

Explanation: so that residents can obtain water for daily activities from the water source.

Factors affecting location of housing.
Location of any type of housing is primarily affected by
1)land-use planning,
2)choices made by developers
3)land price
4)the availability of housing financial support.

1)Land use planning
They are guidelines drawn up by authorities where they practice zoning as a planning control tool for ensuring that the built environment is well developed. Zoning restricts the type of activity and land use permitted on specific site to shape the layout of cities and enable various types of developments. Formal housing occupies zones and areas that are designated for housing development while informal housing can occur regardless of land-use planning guidelines.

2)Developers
Developers tend to pick sites more commercially viable land to earn more profit while the government builts housing considering more of people's needs more than profits. Informal housing tends to occupy locations near large housing or industrial developments to benefit from existing infrastructure such as piped water, electricity or roads.

3)Land prices
If land prices are high, houses will have to be sold at higher prices
Causing the people who wish to buy these houses will no longer be able to afford them.
If land prices are too high, informal housing is more likely to spring up to accommodate the influx of migrants due to rural urban migration or the local urban poor.

4)Housing financial support
Housing financial support goes to both developers and buyers
Developers:
It helps to lower the cost of building houses, encouraging them to build more houses and prevent housing shortage, it increases the availability of housing. It also enables developers to

sell them at affordable prices making formal housing more affordable for buyers and not so out of reach anymore. (Increases affordability and availability)

Buyers:Helps to make housing more affordable through the provision of grants which helps to subsidise the cost of housing. (Increases affordability)

Places without these finance support schemes and a lack of formal housing will have more informal settlements since affordability of such housing is low.

Chapter 9
Sustainable development of housing

How does housing affect the natural environment

Affected by 2 factors:
1)use of natural resources
2)environmental pollution(land water air)

1) Use of natural resources

Housing developments promote high-density living and increase the resource demands made of any surrounding area. People living in places require electricity to power devices, food to eat, water for sanitation, space to dispose waste and open spaces for recreation.

To meet these needs, natural resources need to be extracted to use, the resource demands of housing development thus lead to negative environmental impacts.

Cause- To make space for building of houses, land needs to be cleared. This deforestation due to logging and mining.

Effect- Deforestation causes a lost of habitats and destroy ecosystems, this causes a lost of biodiversity too.

Cause-Depletion of natural resources, resources extracted from environment, from either forest resources or from mining

Example: Resources for cooking and warmth used as fuel for cooking and warmth.

Furniture in our homes are made of wood, which comes from forests.

The electricity that powers our appliances comes from burning natural gas, needs to be extracted from burning natural gas

The steel that reinforces our homes likewise is acquired through mining, which takes a toll on the natural environment.

Effect- Toxic substances from mining can have soil contamination (land pollution) and may flow into nearby water bodies, causing water pollution that kills aquatic life.

Cause-Freshwater for drinking and agriculture is extracted from surface and groundwater sources.
Effect-This over extraction of water resources can cause rivers to dry up and negatively affect the aquatic life, the depletion of water resources can then cause a water shortage.

2)Environmental pollution
Pollution is defined as introduction of substances that do not normally belong in the environment which in great enough concentrations can have harmful effects on plants and animals and humans.

Land pollution:
Cause- Waste from landfills and homes can contain toxic substances
Effect-The waste seeps into the ground and contaminates the soil

Cause-Informal housing such as the slums and squatters do not have access to basic services such as waste disposal services and piped water.
Effect-Residents often dump their household garbage directly into the surrounding areas causing land pollution.

Water pollution:
Cause-Untreated household sewage is dumped into the river causing water pollution/ Lack of access to sanitation may force residents to defecate directly into water bodies near slums.

Cause-Toxic substances may get washed into nearby water bodies by rain
Effect-Killing aquatic life and affecting aquatic ecosystems

Cause-Residents may also use the water in the river for washing causing soap and other chemicals to contaminate the water causing water pollution.

Cause- Oil, rubber, heavy metals and other contaminants from vehicles water pollution as they flow into water bodies via surface run-off from roads.
Cause- Poorly treated sewage containing pollutants is discharged into water bodies
Cause-Dumping of untreated waste discharge from factories into water bodies.
Cause-Agrochemicals from agricultural are washed into water bodes. (NOTE only agricultural)
EFFECT of all 4- Untreated or poorly treated sewage can be low in dissolved oxygen and high in pollutants such as faecal colform, nitrates other bacteria and chemicals in the water sources. The process of removing them from wastewater is prone to contamination.

Air pollution:
Cause- Burning of fossil fuels for energy use, emissions from industries and vehicles contain harmful substances, cause air pollution, carbon monoxide to be in the envoirnment.
Effect-Lowers air quality in cities, causing respiratory illnesses like asthma

How does access to housing affect people
It affects people through their access to amenities and communities, having 3 ways to affect people:
1)Provision of basic needs
2)Provision of amenities
3)Presence of communities

1) Provision of basic needs

City housing provides people with shelter from weather elements which is a human basic need. The access to proper sanitation and waste disposal which is essential in improving people's quality of life, it reduces the outbreak of diseases and improve people's well being and overall health.
Allows access to water and electricity for daily activities is easier as such infrastructure is developed together with housing projects.

2) Presence of amenities

Amenities and services which make life easier for the residents and are desirable or useful are in close vicinity to each other and are located near residential areas. Thai amenities such as medical or food have convenient access, and easily avaialble. (Increased availability and accessibility)
Variety of amenities and services, including supermarkets, clinics, eateries, etc under one roof alow for convenience and ease of access for the residents.

3) Presence of communities

Social needs are met through social gatherings housing developments have made. Spaces for social gatherings, e.g. playgrounds, community centres allow residents to meet and talk and play and get to know people within the neighbourhood and able make friends and seek companionship
Interactions and community spirit fostered among neighbours allow for a sense of belonging and inclusivity for residents of such housing developments.

What are transport systems
Transport systems connect people between different locations , providing opportunities for social interaction and economic trade. It has 3 factors:
1)density of transport network
2)quality of transport infrastructure
3)variety of transport modes

1)Density of transport network
Movement between locations depend on existence of networks
A transport network contain nodes and are linked by routes
Nodes represents a location of entry to a transport network
A route represent a path of travel between nodes.
Network density refers to how many nodes and routes in one area, the more nodes and routes, the denser the network density, this allows easier access for people to reach locations and engage in different activities.

2)Quality of transport infrastructure
The reliability and performance of a transport system is dependant on its infrastructure quality, it is key to moving foods and people. It is measured by 5 factors:
   1) Coverage
Avaialbiltiy and reach of the infrastructure (distance of 2 nodes)
   2) Capacity
Number of people or amount of goods that can be moved(how many passengers picked up at once)
   3) Frequency
Number of occurrences of a service (how long does the next service take to arrive)(how often is maintenance)
   4) Convenience
Ease of movement (barrier free, how easy to pay and transfer)
   5) Envionrmental sustainability
Envorinemntal impact (what is the impact of building the infrastructure on envoirnment)

3) Variety of transport modes
The way people and goods moved depends on variety of transport modes offered.
Modes may offer customsied point to point service
None motorised modes like cycling and walking are more envoirnemtnally friendly and promote
health benefits and exercise(Cycling lanes cnotrsucted to ensure cyclist and runners safety and
encourage non motorised transport to be more envoinmentaly friendly, promoting cycling as a
good form of exercise)
Shared mobility modes, bike sharing and car sharing is also on the rise. (Bus is convenient is
carrying large amount of people)

Where are transport nodes located
Transport nodes are not equal in importance
 A terminal is where Passengers and freight originate or terminate
A interchange is important points of transfer within or between two transport networks of
different modes to ensure continuity of traffic flow.
They are affected by:
1) Concentration of activities
2) The level of accesbiltiy

1)Concentraiton of activities
Transport nodes are often located at places bustling with activity ranging from business to retail
to leisure to finance to allow for more people to access them since there is a higher accessibility
with more nodes.

2)Level of accessibility
Accessibiltiy is the ease of reaching destinations or activities.
Major transport nodes such as interchanges are often located at places with high accessibility.
High accessibility is one from which many destinations can be reached with relative ease within
a given time frame and cost.
(Short travel time and low travel cost between origin and destination may indicate high
accessibility)

Why are transport systems located in cities
Transport systems are needed in cities to fufill the demand for movement, its unique
characteristics such as location population size, topography and resources.
The movement of resources from one place to another drives commuting, trading and even
migration between places.
They have 4 main roles to enable movement of people and freight.
1) Movement of people
2) Movement of goods and services
3) Connection between transport does
4) Connection between cities

1) Movement of people
Transport systems facilitate the everyday mobility of people, enabling them to commute to work, in many cities, employment opporutnites are concentrated in the city centre while housing if found further away in areas where it is more affordable. The physical separation between residential areas and employment opportunities means that people must commute or travel to and from their homes to their workplaces daily.
Transport systems play a major role in provding access to social activities and amenities that will improve people's social and emotional well-being, (The LTA invest money in sheltered walkways allwoing commuters to reach amenities conveniently from public transport nodes)

2) Movement of goods and services
-Trasnport systems are vital to functioning of enomic activities, supplying goods and services from where they are produced to where they are consumed.
-The rise of e-commerce with a greater amount of goods and services are bought or sold over the internet , has increased the demand for door to door delivery of goods.
-Reisdents in mexico rely entirely on water supply trucks
-Most cities rely on tank trucks to deliver petroleum to petrol kiosks

Connection in cities by transport systems
1) Connection between transport modes
There are 2 types of connections between transport nodes
      1)Unimodal transport
- One type of transport
- Movement is limited
      2)Intermodal transport
- Two or more transport modes
- Intermodal activity, allowing for seamless movement of passengers and freights, linking them with many different modal networks.
- Taps on strengths of each transport mode with the goal of linking different modal networks so more destinations can be reached, intermodal connectivity is key to ensuring passengers do not get lost and goods do not go missing while changing between modes in interchanges or terminals.

2) Conenction between cities
Connection between cities can be direct or indirect, either point to point or hub and spoke.
1) Point to point(direct connections)
      - Connects a set of locations directly without interruption of services.
      - Allows people to travel between cities directly
2) Hub and spoke (indirect connections)
      - Allows people to transfer between cities by making a transfer at a hub
      - Connects every location through one intermediary locations called a hub

Chapter 11
Sustainable management of transport systems

Transport systems impact environment in cities by 2 ways
1) Changes to the physical envorinement
2) Increased carbon footprint

1) Changes to the physical environment
There are 3 main effects
1)Natural vegetation is lost
2)Reducing animal's habitats size
3)Toxic materials leaked during drilling

1) Natural vegetation is lost
- Natural vegetation is cleared to build roads to improve accessbility between locations
- To accommodate drilling machinery, a platform needed will cause forests to be cleared and land to be levelled, this loss of vegetation cover will result in soil erosion where loose soil sediments will enter rivers or water bodies, raising water level in these sources and increases the probability of flooding.
- Holes will be drilled into the ground using machinery

2) Reduction of animals habitat size
- Road developments can divide forests into smaller fragments, reducing the size of animal habitats and restricting animal movement.
- -When animals try to cross busy roads to get to the other side of the forest, they becomes victims of roadkils after they collide with vehicles
(Can be solved by creating overpasses or wildlife corridors)

3) Toxic materials leaked during drilling
- Highly toxic materials used by drilling machines may leak into streams and marshes which pollutes the animals and their habitats which will kill the animals

Examples of topography affected
1)Singapore river was temporarily diverted for the construction of MRT of downtown line stations, it was restored after completion of tunnels.
2)The BKE to allow shorter travel time from the bukit timah to north of singapore divided bukit timah reserve, causing flora and fauna at bukit timah forest from the larger central catchment forest affected the flora and fauna at bukit timah forest from the larger central.
3)Construction of hong kong international airport led to elvelling of mountainous island chep lap kok from 100m above sea level to 7m above sea level.

2) Increased carbon footprint
-When petrol is burnt to provide energy, carbon dusoxide and other greenhouse gases are produced. Thai contributes to carbon footprint.
-Carbon footprint is the measure of greenhouse gases emitted to supoort human activities.
-Excessvie concentration of human activities leads to enhanced greenhouse effect and global warming.
-As cities continue to grow, transport systems are set to expand, excessive growth of transport system, also means increasing our carbon footprint along with our greenhouse gases produced.
-Since many people are reliant on transport systems for their daily commute and travels, there is a need to consider different transport modes to reduce carbon footprint.

How do transport system impact people in cities
There are 3 ways on hwo transport system benefits and harm people in cities:
1) improved mobility for the elderly and persons with disabilities
2) traffic congestion
3) Health and safety risks

    1)   Improved mobility for the elderly and persons with disabilities.
-Mobility is the ability is people and freight to move from place to lace. It allows us to access basic goods and services and facilitates social interactions that are necessary for our emotional well-being.
-PWDs and elderly face difficulty that hinder them from carrying out daily acitivtes.
Ways to improve their mobility:
1)Wide automatic fare collection gates in MRTs
    -   Easier access to enter or exit the MRT
2)Lift access in MRT
    -   Help the elderly or PWD to move around to different levels of station for more convenience
3)Back rest seats in buses
    -   Improve comfrotability for elderly or PWD during the ride
4)Lowered windows for PWD
    -   To enjoy the view of surroundings during their ride
5)Grab bar is lowered for PWD
    -   Allow PWD to hold on for safety and reach the bell easier
6)Silver zones

- Gateway marked with bright signs and yellow painted road strips to indicate start of silver zone
- Reduced speed limit of 40km/h
- Reduciton of lanes at some road sections to shorten crossing distance and time taken to cross
- Two stage crossing that allows senior pedestrains to rest in middle of crossing
- Moutnable centre dividers that enable emergency vehicles to pass over when necessary and safe to do so

Traffic congestion:
-Occurs when road usage approaches or exceeds road capacity.
-Tends to happen when peak periods when many people rush to school or work in the morning or on the way home from work in the evening
-Long queues of slow-moving vehicles are a common indicator of traffic congestion
-High traffic volume with slow speed means longer travelling times for all road users
-Has impacts on people and environment

1) Traffic congestion impact on people
   1) Long travelling times cause fatigue and tiredness drivers and passengers, falling asleep and losing concentration while driving and leading to accidents
   2)People caught in traffic congestion experience stress, anxiety and frustration which negatively affects their physical and mental health
   3)Drivers in traffic congestion may become frustarted and increase the likelihod of displaying aggressive behaviour or losing concentration and fight with other drivers and have road rage which increases the likelihood of accidents.
   4)Traffic congestion is a source of exhaust fumes, which contain carbon dioxide and carbon monoxide from idling vehicles stuck in traffic. Exposure to these smogs can increase the risks of respiratory problems, asthma, lung cancer and eye irritation
   5)People In traffic congestion spend more time on commuting and transport and lose time that cna be used to do productive work which reduces their productivity overall

2) Traffic congestion impact on environment
   Air pollution
   -Many greenhouse gases and carbon monoxide are produced when cars burn the most fuel and produces the most amount of smog when starting to move.
   - This means higher carbon dioxide emissions, increased carbon footprint and worsened air quality.
   -The greenhouse gases trap heat in the atmosphere causing the earth temperature to increase.
   -Affects air quality by reducing visibility and lowers quality when smog is created which results in accidents
   Nosie pollution

-Noise pollution also affects people as it can disturb sleep, reduce work performance, provoke annoyance and cause mental stress, result in hearing imprament and trigger heart relate illnesses.
-From the honking of cars

Safety risks
Road safety risks affect healthcare, insurance damage to property and life and thus measures are set up to prevent it.
Methods used include:
1)safety cameras
Deter and detect speeding by ensuring motirsts are aware of the, cameras painted orange and have warning signs to alert
2)gender segregated transportation
-As traffic volume increase, transport modes may deemed to be less safe. It can become overcrowded during peak period. Large crowds increase risk of theft and outergae of modesty. To ensure safety of female passengers, cities have desfined gender segregarted transportation
3)Terrorist attacks
-Termianls are a target of many terrorist attacks due to tehri visibiltiy and significance. The growth in traffic means more resources needed to be deployed to safeguard the well being of passengers at these terminals.

How can transport systems be sustainably managed
There are 4 main ways for transport to be managed:
1)laws and policies on transport
2)Integrated land use and transport planning
3)provision of a range of mobility options for different groups of people
4)research and development in transport

1)Laws and policies on transport
-Manage transport demand and transport supply. Reduces traffic congestion and carbon footprint, ensuring transport system is sustainability managed
-Car lite polices help reduce car usage by encouraging alternative like public transport and other forms of mobility like walking or cycling
-COE
Causes car ownership to be more expensive and controls the number of cars on the road. This minimises traffic congestion and air pollution. Revenue collected is used to improve public transport so to encourage more people to use public transport
LIMIT OF COE: some people can afford coe and the cars cost
-Zero growth stance
Number of vehicles is capped and cannot be exceeded, reduces the need to increase singapore's road capacity.
-ERP

Road pricing implemented on certain stretches of roads at times, discourage motorists form using them and use other stretches of road instead. Revenue collected can support and develop transport system

LIMIT OF ERP: Traffic may be diverted to other stretches of roads and cause traffic congestion or heavier traffic on those stretches of roads.

2)Intergratedland use and transport planning

Reduce the need for travel land use planning refer to where and how the land should be used. IT is key in shaping the demand for travel and distance to travel

It refers to forecasting operation, provision and management of infrastructure and services for various transport modes to meet current and future usage news.

LTMP:

-Develop a transport network that is convenient well connected and fast

-developing inclusive infrastructure, promoting gracious behaviours and enabling safer journeys by public transport.

-Allow for plenty of opportunities for employment education healthcare etc, by reducing travel time and need to travel far or make frequent single trips.

It manages transport systems sustainably by

-close coordination between stakeholders to balance social and economic and transport needs.

-takes time and investments to have infrastructure design and development on specific land.

-it is located at places of high population density so time commuting is reduced.

Example; To encourage active mobility, pedestrian walks, bicycle lans and build making them ide and shaded to provide a comfortable experience

3)Provision of ranged mobility options for different group of people

-People may be constrained by physical capability, health related conditions transport costs and systems and availability which can limit the mobility of people

-Poor planned infrastructure that is inconvenient for the elderly and PWDs for travelling can cause them to isolate themselves.

-The provision of barrier free transport is important in developing inclusive transport systems to cater to diverse mobility needs

Limitation : barrier free transport facilities with special features for the ages and disabled is expensive and is important to ensure these special features are deployed effectively to areas that are needed to prevent wastage of resources.

4)Research and development in transport

-Cities invest in R and D to improve mobility and safer and more envoirnmentally friendly transport modes which akes a sustainable transport system

-Greener building materials and techniques are developed for transport infrastructure, supporting a sustainable transport system

-The use of mobile applications enable better trip planning and facilities the sharing or rides and vehicles shortening travelling and reducing unnecessary wastage of fuel in transportation.

-Trip planning applications that provide real time traffic information on travel time cost and possible route to undertake via various modes can shape travel habits and choices of transport which reduces transport costs, supporting sustainable traveling

Limit: Apps may be inaccurate in bus arrival timings and cause inconvenience to commuters

-Electric vehicles are sustainable as they have a smaller carbon footprint nad reduce noise reduction.

Limits: EVs are costly than conventional vehicles and cost twice as much, more R and D needed to reduce cost of EV before they can contribute more

-Automonousvehicles

-Use suite of sensors to detect vehicles and pedestrains and avoid to deter road accidents and improve road safety

-Fuel efficient technology to reduce emission and energy consumption

Limit: R and D for AVs require huge amount of investment and is time consuming

Limit: Safety and cybersecurity easier to overcome before AC become a common feature