

Lil Glossary

Site

The physical characteristics of the land on which a feature is located.

Situation

The location of a feature in relation to there significant features, both cultural and physical.

Internal Morphology

The study of the layout of functions within a settlement, and the processes and interactions that affect that layout.

External Morphology

The study of the outside shape of a settlement, and the processes that affect the shape.

Urban

An urban area is anywhere with a population exceeding 1000 people.

Rural

Areas that are not part of any 'urban' area.

Deindustrialisation

The process of a sustained decline in industrial activities, especially within the manufacturing sector, that results in a reduction in production and employment and a restructuring of local economies.

Rural Drift:

Movement of people from urban to rural

More common in elderly wanting to move away from city into quiet relaxed open spaces

Urban Drift:

Movement of people from rural to urban mostly young people for employment and entertainment

Urban Functions

Stakeholder

A group or individuals affected, eg. Housing - Gvt Authorities

Sustainability

Meeting the needs of current and future generations through simultaneous environmental, social and economic adaption and improvement.

Mention : Economically, Socially, Environmentally

Liveability

The sum of the aspects that add up to the quality of life of a place, including its economy, amenity, environmental sustainability, health and wellbeing, equity, education and learning, and leadership.

Multi National Cooperations

MNC'S Has facilities and other assets in at least one country other than its home country. Such companies have offices and/or factories in different countries and usually have a centralised head office where they coordinate global management.

Urbanisation

A population shift from rural to urban areas, and the ways in which each society adapts to the change. 53% of the



Depth Study 1



Depth Study One

Biodiversity Loss:

Loss in the total number and variety of genes, species and ecosystems in a given area.

World Biomes (map):

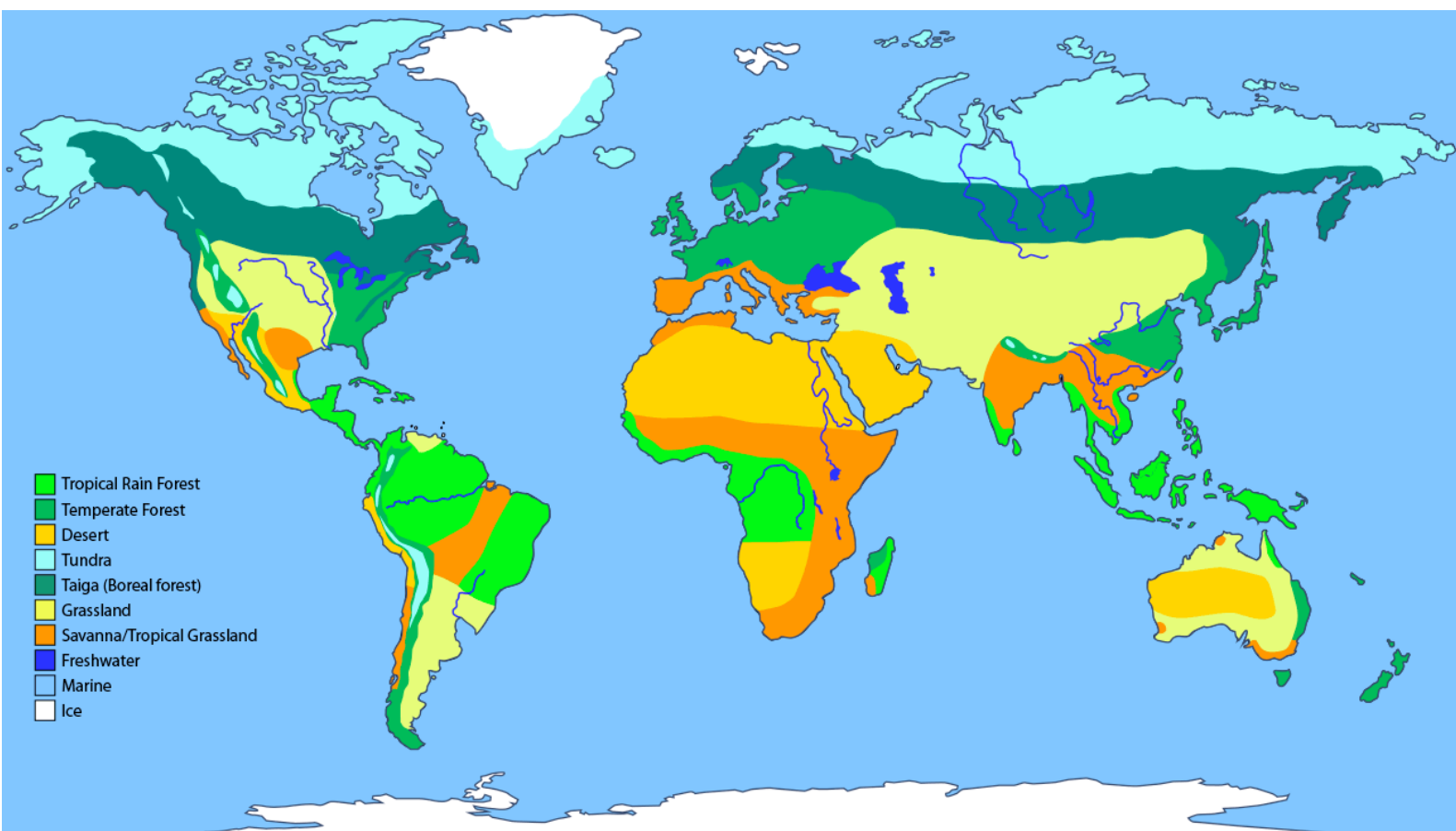
A **natural** biome is a large, naturally occurring community of flora and fauna occupying a major habitat, which has adapted to its surrounding area.

Anthropogenic biomes show patterns of human activity that have been created as a result of sustained direct human interactions with ecosystems, therefore changing the ecosystem and the environment.

Transitional Biomes are the biomes located in the transitional zone between major biomes that is populated by flora and fauna of each adjacent biome.

The Spatial Distribution between Biomes:

- Polar biomes such as **Tundra (North Europe/Canada)** are **colder** and have shorter growing seasons resulting in fewer kinds of vegetation. These are in the higher northern latitudes. **Taiga (Central Europe/Canada)**
- As you move away from the poles and towards the equator, precipitation becomes increasingly important, producing **temperate** communities of **desert, grassland and forest** in increasing order of precipitation, there is a relatively smaller range of temperature during the year, with the type of tropical or subtropical biomes determined by the amount of precipitation, therefore there are not only tropical forests but also tropical grasslands and sub tropical deserts.
- **Terrain** affects the distribution of biomes in many ways, with increasing altitude there is a similar transition in biome types as is seen with increasing latitude, with high mountain regions featuring biome that share many characteristics of those of polar biomes.
- Also mountain barriers and coastal regions can affect the amount of precipitation received, affecting vegetation.
- **Cold:** Arctic/Sub Arctic/ Temperate
- **Hot:** Tropical
- **Wet:** Rainforrest/Savannah
- **Dry:** Desert





Biotic and Abiotic Elements

Biotic components are the living organisms that shape an ecosystem.

Biotic factors are any living component that affects another organism, including animals that consume an organism and the living food that an organism consumes. It includes the interactions between the living components of an ecosystem such as parasites, disease and human influence.

Abiotic components are the non-living components of an organisms environment, such as temperature, light, moisture air currents, and land forms.

The Abiotic factors tend to be limiting factors such as the available water or nutrients for plant growth or the length of the growing season, they can also change over time, therefore hanging the ecosystem.

Flows of Energy

Energy moves in a one-way through the ecosystem.

A **food chain** represents a succession of organisms that eat another organism and are, in turn, eaten themselves. The energy flows through the ecosystem from one organism to the next.

The number of steps an organism is from the start of the chain is the measure of its **trohic level**.

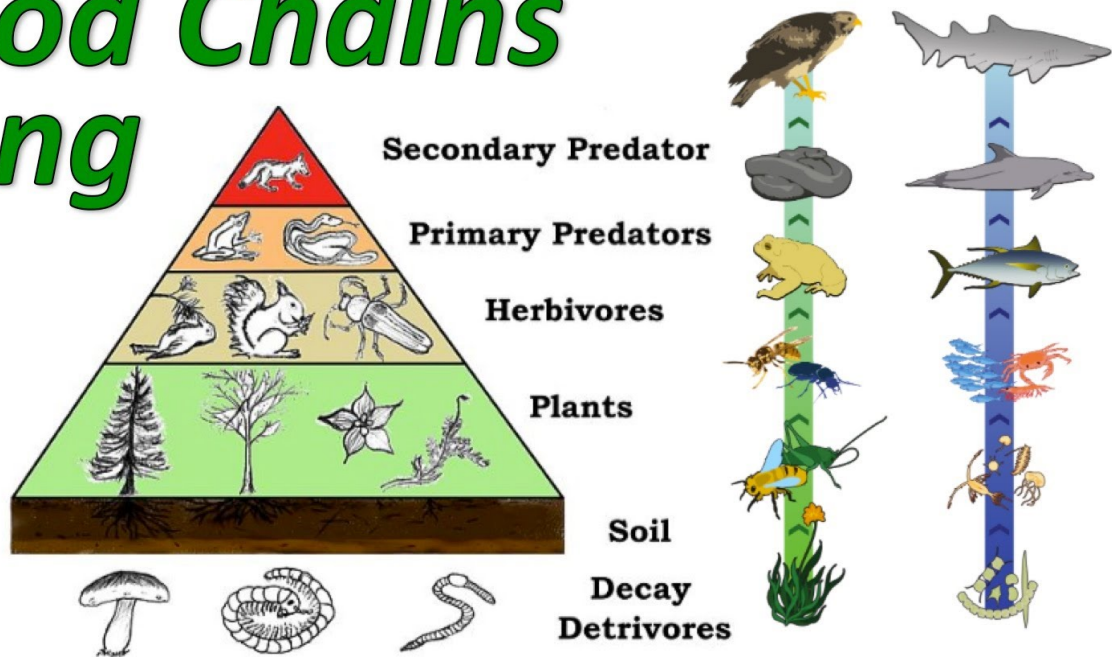
Three basic ways organisms get their food: (**ECOSYSTEM DYNAMICS**)

Producers: (autotrophs) - typically plants or algae (do not eat other organisms), they take nutrients from the soil, ocean or manufacture their own nutrients through photosynthesis.

Consumers: (heterotrophs) - typically species that cannot manufacture their own food and need to consume other organisms, this includes herbivores, carnivores and omnivores.

Decomposers: (detritivores) - break down dead plant and animal material and wastes and release it again as energy and nutrients into the ecosystem for recycling, this can include bacteria and fungi.

Food Chains Song



Food Chains are linear networks of links in a food web starting from producer organisms and end at the apex predator such as bears/sharks, or decomposers.

Food Webs are the natural interconnection of food chains and generally a graphical representation of what eats what in an ecological community.

All life forms can be grouped into two categories, **autotrophs** and **heterotrophs**.

Autotrophs produce organic matter from inorganic substances, including both minerals and gases such as CO₂.

Heterotrophs obtain organic matter by feeding on autotrophs and other heterotrophs.

Flows of Matter

Energy flows in only one direction, matter is cycled through an ecosystem. A **biogeochemical cycle** is a pathway by which a chemical substance moves through both biotic and abiotic parts of the Earth. For example, water can be recycled through the **water cycle**.

The 4 Spheres of the Earth

- 1- Lithosphere is the hard, solid, outer layer of the Earth.
- 2- Hydrosphere consists of all the water on the Earth.
- 3- Atmosphere is the layer of gasses that surround the Earth.
- 4- Biosphere is where life exists on Earth, this is a mix of the previous 3 spheres.



Earths Five Major Extinction Events

- Ordovician-Silurian Extinction
- Late Devonian Extinction
- Permian-Triassic Extinction
- Triassic-Jurassic Extinction
- Cretaceous-Tertiary Extinction

Effects of Biodiversity - *The services:*

Provisioning- Production of food and water.

Regulating- Control climate and disease.

Supporting- Nutrient cycles and crop pollination.

Cultural- Spiritual and recreational benefits.

Natural Causes of Biodiversity Loss

- **Flood Basalt Events**, Giant volcanic eruptions or series of dust and aerosols which reduce photosynthesis which therefore collapses food chains. Sulphur dioxide is emitted causing acid rain which poisons multiple organisms. Also large amounts of carbon dioxide is emitted causing global warming.
- **Asteroid Impacts**, the impact of a huge collision could produce enough dust and aerosols to reduce photosynthesis, rocks full of sulphur dioxide could be emitted causing acid rain, could have caused mega tsunamis and global forest fires.
- **Sustained Global Cooling**, could kill polar and temperate species and force others to move to the equator, results in increased competition for resources, could also make the earth drier.

Anthropogenic Causes of Biodiversity Loss

An estimated 99% of animal species are at risk of human activity, this includes habitat loss, introduction of exotic species and climate change.

Driver 1: Land Cover Change

- Most important driver, has biggest effect on the ecosystem.
- Deforestation.
- Farm land covers nearly a quarter of the earth land surface.
- Fragmentation is the division of habitats. Smaller fragments are more prone to extinction. Edges of habitat half different ecosystem to exterior

Driver 2: Invasive Species

Driver 3: Overexploitation

Driver 4: Nutrient Pollution

Driver 5: Climate Change has had such impacts over the last century such as:

- Species distributions.
- Population sizes.
- Timing of reproduction and migration events.
- Increase in frequency of pest and disease outbreaks.
- Precipitation patterns have changed globally.

Geological Evidence of Biodiversity Loss

Cretaceous Teritary (K-T), was a mass extinction of around 75% of plants and animals 65 million years ago.

Evidence is buried in ground as a thin layer rich of iridium, this is the **K-T boundary**.

- **North American Fossils**, scientists compare 2 time periods, if the older time period has a greater variety of dinosaurs. Plant fossils suggest a reduction in plant species.
- **Marine Fossils**, K-T boundary suggests an abrupt extinction of marine plankton right on the K-T boundary.
- **Evidence of Asteroid Impact**, There's a high level of iridium in asteroids, but not much on the earth. Crystallised rock formed from impact.

Evidence of Biodiversity Loss

Over Geological Time

North American Fossils - The most informative sequence of dinosaur-bearing rocks in the world from the K-T boundary discovered so far is in Western North-America, this provides information from the last 10 million years of the Cretaceous on changes in dinosaur populations

Over Recent Human History

Genetic Diversity - Has declined globally, particularly among domesticated species. Intensification of agricultural systems coupled with specialisation by plant breeders and the effects of globalisation have led to a substantial reduction in the genetic diversity of domesticated plants and animals in agricultural systems.

Evidence of Biodiversity Loss in Recent Human History

Birds
Declining bird populations across most habitats confirm that profound changes are occurring on our planet in response to human activities. Nine species of bird become extinct in Australia, along with 15 sub-species, since Europeans arrived.

Depth Study Two



Addressing the Impacts of Land Cover Change

Land cover change has many impacts on local and regional environments, this includes impacts on:

- The Water Cycle
- Soil Erosion
- Degradation
- Loss of habitat and Biodiversity
- Degradation of aquatic and marine environments
- Changes to regional climate

A program in place of protecting this is Karakamia.

KARAKAMIA

- Addresses the impacts of loss of biodiversity and habitat within the South West.
- It is a wildlife sanctuary of the Australian Wildlife Conservancy (AWC)
- Located 50km NE from Perth covering 275 hectares.
- Protected by fences stopping feral pests from entering.
- Contains 249 plant species, 18 mammals, 150 bird, 32 reptile, 10 amphibian species.
- Provides habitat for 15 threatened species such as the White tailed Black Cockatoo.

EVALUATION

- Socially, it provides employment for 80 people as well as educating of the Jarrah forests.
- However there are entry costs and dogs and cats can potentially be harmed from pest management
- Economically, Tourism revenue contributes to the Australian economy (\$2m made in 2015)
- However there are running and servicing costs
- Environmentally, Threatened species are safe and native populations increase
- However pests such as cats and dogs may be shot on site

Addressing Land Cover Rehabilitation

Reforestation Projects - Rwanda

Pop density is over 480 p/km² therefore pressure to use land for agriculture is very high. The landscape is mountainous and average rainfall is over 1000mm per annum therefore leading to erosion once natural vegetation is cleared. Reforestation projects have taken place encouraging the plantation of eucalypts and other exotic trees. Australian trees are often used in African countries as they grow quickly in wetter environments. Recent efforts have expanded the Gishwati forests to 1000 hectares.

Loss of Biodiversity - Mitigation

involves all strategies and processes put in place to reduce the severe impacts of loss of biodiversity, species extinction.

Gondwana Link

Animal habitats have become fragmented within the SW of WA, ultimately causing loss of biodiversity. The Gondwana link aims to revegetate, restore and reconnect 1000 km of fragmented habitat from the forest and wetlands in the south west. This reconnection will allow species to move safely between populations, reducing the current wave of slow localised extinction from isolated remnants.

Bush Heritage is a organisation that works with the Gondwana Link responsible for buying areas of habitat. In 2014 12000 hectares was purchased.

Loss of Biodiversity - Adaption

Alternate Fishing Practices

Overfishing is one of the major causes of loss of biodiversity of aquatic species. It occurs when the number of fish caught is greater than the amount the natural population can be replaced. Humans have had to change their fishing habits through strategies such as regulations and limits, this applies to the quotas and restrictions to equipment used and length of fishing season. Such regulations have been applied to that of the Alaskan King Crab.

Addressing Impacts of Land Cover Change in the Kimberly

Kachana

The Kachana company graze Shorthorn cattle whilst working to restore the ecosystem. It is 750 km² of cattle property in the East Kimberly region of Western Australia. The property was originally severely eroded with a loss of bio diversity, depleted soils due to overgrazing by free ranging cattle, introduced species and unstable fire management practices.

El Questro

Is a cattle property in the East Kimberly which is now primarily a wilderness park. As a cattle property, the land was too rocky and rugged to manage and the property needed to diversify into ecotourism to be economically sustainable. Braham cattle have replaced Shorthorn cattle because they trample less vegetation due to being less fussy eaters, they are less prone to radical weather and the produce 30-40% less methane. Tourists are attracted to the scenery which is the main source of income which supports the restoration and rehabilitation programs used to manage and cover change.

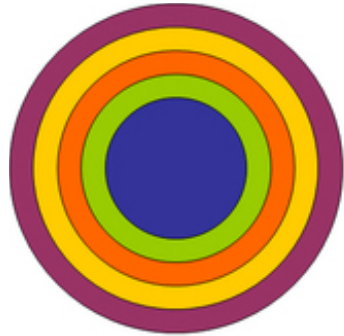
THE MODELS :

The Concentric Zone Model (Burgess Model)






Is one of the earliest theoretical models to explain urban social structures.

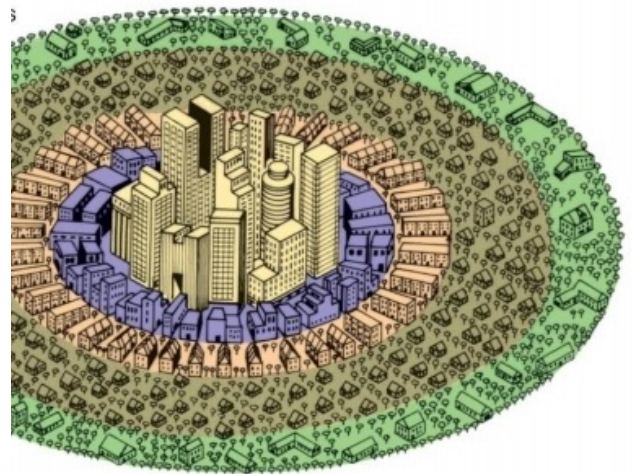
Burgess argued that

- CBD was the area dominated by commercial, offices and retail land uses as well as civic, cultural and entertainment facilities such as government offices, museums and art galleries
- Next to this was a zone of transition, run down in places due to the existence of industrial land uses and dominated by lower income and migrant groups as well as spaces of vice and criminality
- With distance from the CBD the quality of the housing the socio-economic status of the residents increased



Burgess Model

-  Central Business District
-  Transitional zone: recent immigrants, deteriorating housing, factories, abandonment
-  Working class zone: single family tenements
-  Residential zone: single family homes with yards and garages
-  Commuter zone: suburbs



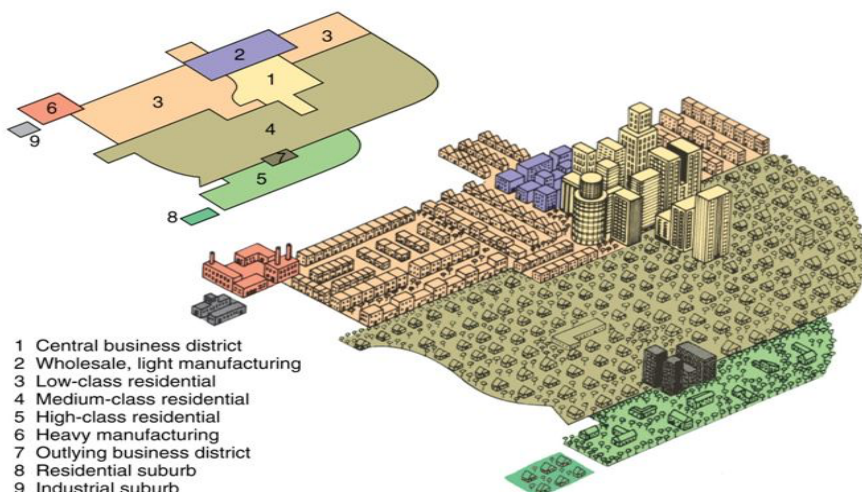
The Multiple Nuclei Model

Shows the general layout of the city Ullman and Harris argued that cities did not simply form and grow outwards from the CBD

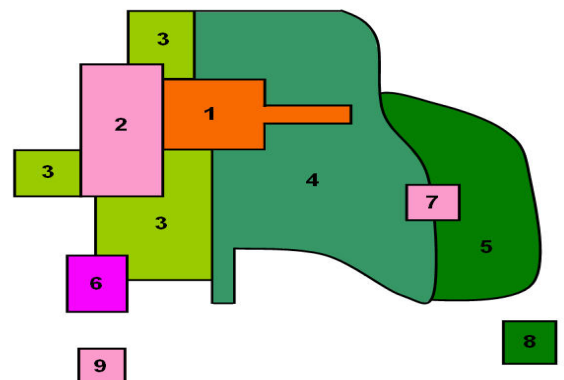
Cities are a product of a number of separate nuclei (centres)

The model recognises the role of historical as well as local economic, physical and cultural factors in explaining why different commercial, industrial and residential land-uses emerge across an area, closest to reality.

Multiple Nuclei Model



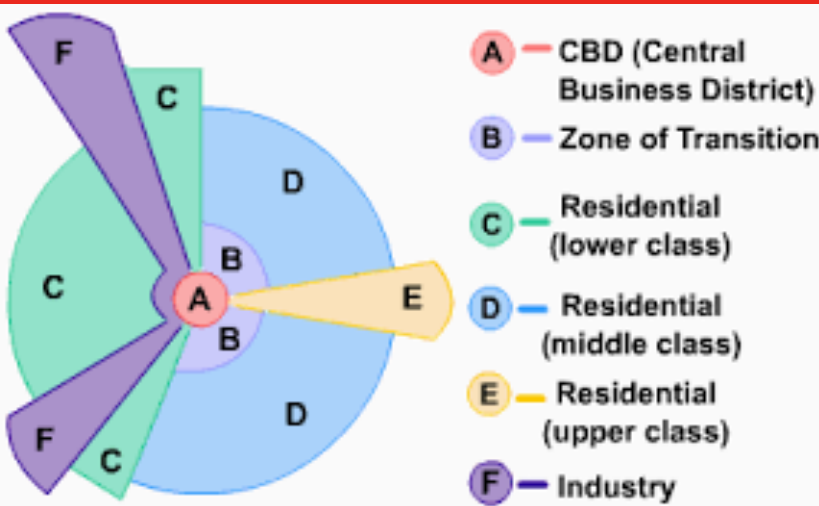
- 1 Central business district
- 2 Wholesale, light manufacturing
- 3 Low-class residential
- 4 Medium-class residential
- 5 High-class residential
- 6 Heavy manufacturing
- 7 Outlying business district
- 8 Residential suburb
- 9 Industrial suburb



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The Sector Model

Is a model of urban land use, it has benefits such as allowing for an outward progression of growth.

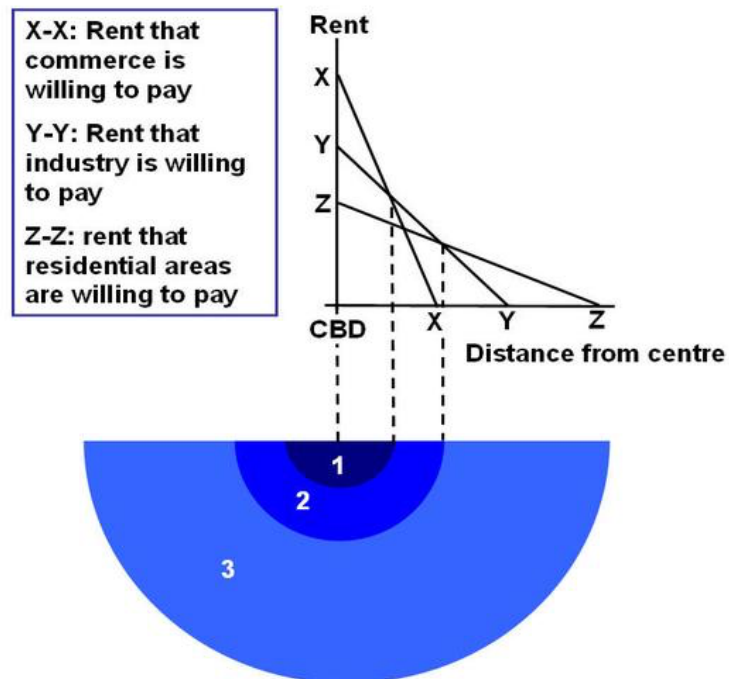


Cities grew out in a sectoral pattern (not in concentric circles) following lines of transport or sections of high amenity such as waterfronts, rivers or public open space

Low income households were still close to the CBD and/ or near industry where land values and amenity would be low

The Bid Rent Theory

helps explain why the CBD is dominated by office, commercial and retail land use and that residential land dominates beyond the CBD. The further away from the CBD. The lower the price.



Factors influencing the spatial distribution of urban and rural places in Australia

Historical Factors

- The reasons for settlement and timing of settlement
- Aus was established as a collection of 6 nations (colonies) therefore 6 capital cities grew, each settlement was located on the coast which was essential to establish port facilities and on a river
- Gvt contracts to build infrastructure like roads buildings and became a hub of economic activity and employment

Economic Factors

-
- **Hydrology**
- Settlement near rainfall loactions
- As water diminishes inland so does number of urban places

Soils

-
- **Climate**

- Southern Australia warm and mediterranean was favoured by the first settlers
- Locations of good seasonal rainfall were favoured over drier northern locations
- The colonial capitals were located centrally inland of regions that would support agricultural production

Topography



Urban Processes

Urban Sprawl

- The outward spread of urban area
- To accommodate a growing population, results in new developments built further from the city centre

Invasion and Succession

- When one land use function enters another land use zone
- Leads to urban blight, run down appearance

Urban Renewal

- Large scale redevelopment projects, usually in blighted areas for rejuvenation
- Govt funded

Inertia

- Limits change of an area
- Occurs when land use function has retained its location
- EG St George Cathedral

Agglomeration

- The grouping of similar land use functions
- Clustered together due to the benefits of using shared infrastructure and sharing services.

Planning

- The way cities look is due to Urban Planning and Zoning
- Carried out by local, state and federal govt and private developers

Perth

Perth's External Morphology

Situation

- The latitude and longitude of Perth is 31°57'S 115°51'E
- Perth situated on South West coast of Australia
- Perth situated 2700km West of Adelaide
- TRANSPORT- Railway lines have further encouraged the corridor development of Perth. The extension of the Joondalup line to Butler in 2014 and Mandurah line in 2007 have continued to encourage the North-South growth of the city.

Site

- Perth is sited on the Swan Coastal Plain which generally, is stable and well drained.
- The coastal area is mostly limestone throughout the area.
- The Swan and Canning rivers have continued to influence the semi stellate shape of the Metropolitan area by dividing the area in half and encouraging development along the water ways.
- The site factors which have limited growth include the Darling Escarpment and the State Forest to the East and the Indian Ocean to the West.
- The Indian Ocean to the West has restricted growth in this direction, however has encouraged Perth's long north-south orientation. However Australians desire to live on the coast, suburbs such as Alkimos and Mindarie take advantage of this.

Perth's Internal Morphology

CBD (Central Business District)

This is the core of the metropolitan area. Has grid like street patterns with high rise buildings located on the north of Swan river. The main functions are commercial and administrative with little residential. High employment. Located due to historical factors. It is the central transport node.

IMZ (Inner Mixed Zone)

Includes Northbridge, West/East Perth. Largest level of mixed land use such as residential, commercial, entertainment, transport. High accessibility, Constantly changing due to invasion and succession. Easily blighted due to constant change. Experiences ethnic clustering.

ERZ (

Largest functional zone. Eg Mt Lawley, Claremont, Victoria Park. Housing density varies greatly. Values also vary greatly due to location and attractiveness, Claremont-\$1.4m in Dec 2015. Houses tend to be older with access to many services. Generally a older population in a higher socioeconomic class.

NGZ (New Growth Zone)

Tends to be on the outer boundary of ERZ, includes Alkimos and Jindalee. Houses tend to be newer. Lacks access to services and infrastructure.

IZ (Industrial Zone)

Light/Medium industrial areas scattered throughout the metropolitan area. Heavy industry located away from residential, 40km south of CBD. Agglomeration occurs so all industries cluster together. Influenced by modes of transport.



- From 1800 to 1900 the world population grew 68%
- From 1900 to 2000 the world population grew 27%
- Projected in 2100 to x2 / increase by 83%

Demographics

Population, Age, Gender

In 2015, Greater Perth's population reached 2.04 million. From 2010-2015 one of the fastest growing areas was Armadale with a 30% increase. In 2015 there was a greater level of children aged 0-14 in WA compared to Greater Perth. From 15 to 35 years Greater Perth has a greater proportion of both males and females. Generally there is a higher proportion of the older population. NGZ's tend not to attract people over 65 years old. Northbridge is appealing to young professionals.

Economic Interdependence

The supply of agricultural products to be consumed locally and exported to both national and international markets is a significant interaction between rural and urban places.

Food such as dairy, eggs, meat, and fibres such as wheat, rice, maize are produced in rural places and are transported to urban places for processing and distribution.



Challenge 1- Housing

Nature and Scope

- Affordable Housing is described as housing that low to medium income households can obtain and afford without experiencing undue financial hardship, ensuring they can meet the costs of other essentials.
- Urban Amenity refers to the attributes and qualities people value about a place that contribute to the quality of living in an area. These are generally the positive aspects of a place. These can be related to safety, heritage, open space, neighbourhood issues, mobility and accessibility.
- According to the Australian Bureau of Statistics (ABS), Greater Perth's population will increase to 3.5 million by 2050 from its current 2.04 million (2015). It is estimated that by 2050 Greater Perth will require an additional 800,000 houses to support the growing population. In 2010, demand for houses outstripped the supply by over approximately 30,000 properties.
- When considering affordable housing, the State Government concentrates on three income groups:
 - + Very low income under \$43,000 p.a.
 - + Low income \$43,000 - \$69,000 p.a.
 - + Moderate Income \$69,000 - \$104,000 p.a.
- Housing affordability has been declining in Perth over the last 30 years as house prices have been increasing at a faster rate than incomes have been rising.
- Due to this declining affordability, the lower end of the market which is many people's entry point, has disappeared. This has occurred due to the increasingly high demand due to Perth's population growth but also its economic prosperity. Australian houses are some of the biggest in the world.

Causes and Implications

- In July the Perth median house price was \$568,132.
- Housing has become more affordable over the last couple of years due to the slowdown of the Australian economy.
- Perth housing prices are the fourth highest in Australia however Sydney is the most expensive coming in at just under \$1m.
- The challenge of housing in Perth can be due to a range of reasons, one of which is that house prices are too high. Issues with housing affordability often involve first home buyers not being able to enter the market due to high prices.
- Other issues may include that the household is unable to meet the continuing costs of a mortgage or rent, relative to their income.

Planning Strategies and Stakeholders

- The State Government's Affordable Housing Strategy 2010 to 2020: Opening Doors to Affordable Housing (Affordable Housing Strategy) was implemented in 2010.
- The Key Stakeholders involved in this strategy are the Housing Authority, low to medium income earners and private sector developers that work alongside the Housing Authority to deliver some of the initiatives.

Sustainability