

Human Settlements in Arid and Semi-Arid Lands

Goal of topic

- By the end you should:
 - know the types of arid settlements
 - factors that influence arid urbanization
 - be able to discuss the problems associated with settlements in arid and semi-arid lands

Population Distribution in Arid Lands

- Abt 900 million people inhabit arid and semi-arid lands (abt 15% of the world's population); 524 million in semi-arid regions
- Arid lands cover abt 33 - 47% of the earth's surface
- The overall density of people in these landscape is less than half of the world's density

Population Distribution in Arid Lands

- Even in the hyper-arid/true deserts density doesn't exceed 2 per/sq/ml
- Unevenness in the population distribution
- 86% in Asia & Africa; 50% in South Asia and North Africa
- Population growth in semi-arid regions has been rapid almost at par with the rest of the world

History of Desert Urbanization

- Historically, desert settlements served as commercial and administrative centers, which sprang around mines, trade routes, water wells and hills overlooking trade routes
- Timbuktu in Mali founded about 1000 yrs ago by a Tuareg woman Buktu – meaning the place of Buktu
- Tuaregs used the city as their main trading post – moving gold and slavery from one end of the Sahara to the other
- Collapsed after King Mansa Mousa in the early 1300's

Causes of Desert Urbanization

- **Intro** - Some of these settlements were established in frontier desert regions as strategic outposts in response to geopolitical and security considerations, or formed as the first line of defense from potential foreign invaders.
- Today, desert towns and cities function as irrigation centers, garrisons and communications nodes, political, administrative and regional centers; they are also focused on tourism, recreation, mining and other industries such as mineral exploration and processing.

Causes of Desert Urbanization

- **Rural-urban migration** - in the Sub-Saharan Africa, where periodical droughts draw thousands of rural migrants and nomads to local cities, in search for food and employment; most of these temporary migrants leave cities and return to their nomadic way of life when the rainy season comes and traditional food sources become more secured

Causes of Desert Urbanization

- **Employment driven** - Exploration of mineral deposits and the construction of communication and transportation lines, which take the shortest way possible and often traverse arid regions, creating new jobs.
- Large-scale development projects, taking place in the arid zones (such as the Hoover dam in the USA or the Aswan dam in Egypt), create jobs for both local residents and newcomers.

Causes of Desert Urbanization

- **National Security** - Population migration to the desert may also take place for security or policy consideration.
- During WWII, the government of the former Soviet Union relocated major industries from the western part of the country, occupied by Nazi Germany, to its eastern regions, including desert areas of Kazakh and Turkmen Republics.
- This relocation process was followed by a major migration of technical personnel and essential employees of these industries.

Causes of Desert Urbanization

Strategic National Policies- In recent years, the government of the PR of China established various incentives for boosting the economy of its western and northern desert regions, following the discovery of oil in these regions and the national policy of encouraging development of the inland parts of the country.

➤ These policy incentives include tax breaks, lowering corporate cost, and encouraging foreign investment, as well as direct financial transfer earmarked for education, infrastructure improvement, & establishment of industrial bases of primary and military industries.

Causes of Desert Urbanization

Strategic National Policies

As another example of "**forced**" desert urbanization, many university graduates in Egypt have been sent to remote desert localities upon graduation, as a matter of national policy of reclaiming desert lands for agricultural cultivation (Divon and Abou-Hadab, 1996).

Causes of Desert Urbanization

- **Strategic National Policies-** In developed countries migration from non-desert to desert areas also occur for "**consumption**" reasons as well, being driven by the availability of cheap public housing (e.g., in the development of towns in the Negev region of Israel) or as migration of the retired (the Sun Belt localities in the USA and the Canary Islands in Spain), who are attracted to desert cities and towns from elsewhere by dry and sunny desert climate.

Types of Human Occupancy/Settlements & Socio-Economic Characteristics of Arid and Semi-Arid Lands

Oases Settlement :

- ‘oasis’ is usually used for **fertile areas of crop growing, and mining or industrial towns around a water body.**
- The oases **vary in size** and settlement patterns occur either in clusters or in a string-like pattern, depending on the nature of source of water.
- Farmers in oases settlements depend on water from the springs/dams to cultivate crops, **usually fruits and vegetables.**
- **The economic and social circumstances of many of the old historic sites are changing as a result of changing markets and new forms of transport by desert vehicles and aircraft.**

Types of Human Occupancy/Settlements & Socio-Economic Characteristics of Arid and Semi-Arid Lands



Linear Oasis Settlement



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Sedentary Occupance of Semi-Arid Lands:

- **The concentration of settlements in villages:** This is due to localized nature of fertile lands and water.
- The semi-arid area is not at all lacking in water resources, but these are generally of limited availability.
- Hence, they have some human populations that settle in towns or communities and develop the local economy.
- Most of these settlements are cattle-and sheep-raising communities. They are predominantly male communities.

Sedentary settlements in the Sahara



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Sedentary Occupancy of Semi-Arid Lands:

- Some settlements were created by an over-optimistic expansion of cultivation during wet seasons. A return to worse dry condition often forces the abandonment of some rash 'pioneer settlement'.
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- Bad distribution of rainfall means that farmers would have to rely on irrigation.
- Another reason for the localized nature of settlement is insecurity.
- Thus, there are fluctuations in populations due to political instability.

Types of Human Occupancy/Settlements & Socio-Economic Characteristics of Arid and Semi-Arid Lands

Sedentary settlements in arid regions:

- Smaller rooms than in humid regions,
- Stone is preferred for its stability as well as for its insulating powers against summer heat and winter cold
- Rooms are designed to ensure maximum ventilation.
- The very high rooms found in some semi-arid countries are another attempt to make houses comfortable in summer

**Typical
Desert
Buildings**



Types of Human Occupancy/Settlements & Socio-Economic Characteristics of Arid and Semi-Arid Lands

Nomadic Occupancy of Arid Lands:

- A member of a people/tribe that has no permanent abode but moves about from place to place, usually seasonally and often following a traditional route or circuit according to the state of the pasture or food supply.
- Nomads usually roam over smaller or wider areas in the region they inhabit, mobile and always travelling.

Types of Human Occupancy/Settlements & Socio-Economic Characteristics of Arid and Semi-Arid Lands

Nomadic Occupancy of Arid Lands:

- There are three classes of nomadism: These are **hunter-gatherers, pastoralists and traders.**
- **Foragers/Hunter-Gatherers:** They move as small, independent bands within the area in which they know there are potential food for animals. *San in Kalahari Desert*

Nomadic Occupancy of Arid Lands: Foragers/Hunter-Gatherers



Hadza children of Tanzania preparing a meal



San hunters in the Kalahari Desert, Namibia

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Nomadic Occupance of Arid Lands

Foragers/Hunter-gatherers – Gathering of food from the wild and hunting

- Dominant mode of life until abt 200 yrs ago e.g Bushmen/San – Kalahari, southern Texas, northern Mexico
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- They move as small (mobile), low population density, small social units, a wide knowledge of plants and animal uses, familiar with their landscapes where there is potential food for animals, women normally gatherers and men hunters.

Types of Human Occupancy/Settlements & Socio-Economic Characteristics of Arid and Semi-Arid Lands

Nomadic Occupance of Arid Lands

- **Pastoralists:** They move from place to place depending on the needs of their domesticated stock like sheep, goats and camels. Also to avoid conflicts and diseases. E.g. the **Fulani (West Africa), the Bedouin (Sahara), and the Tswana of Botswana**
- Is a successful strategy to support a population on less productive land
- In savannas, pastoralists and their animals gather when rain water is abundant and the pasture is rich, then scatter during the drying of the savanna

Nomadic Occupancy of Arid Lands: Pastoralists



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Nomadic Occupance of Arid Lands

Nomadic Traders - The **nomadic traders** are mobile merchants with trains of pack animals like camels and mules.

- They supply goods produced on one side of the arid land to town people
- E.g. Tuaregs of the Sahara
- Timbuktu served as the main centre of trading
- Some of the common things they traded are salt, gold, dates, animal hides, and oiler products (Beelitz, 20 10),

Types of Human Occupancy/Settlements & Socio-Economic Characteristics of Arid and Semi-Arid Lands

Nomadic Occupance of Arid Lands

- **Nomadic Traders** - Black slaves were captured and traded as well as Europeans slaves captured by pirates off North African's Barbary Coast" (Engel, 2010, 6).
- Recent economic activities of the governments of the Sahel, mining which is polluting and depleting water resources, the Tuaregs are forced to settle
- There is conflict now "Tuareg Rebels" and the multinational companies/governments

Types of Human Occupancy/Settlements & Socio-Economic Characteristics of Arid and Semi-Arid Lands

Nomadic Occupance of Arid Lands

- **Nomadic Traders** - Improved road networks & aircrafts are reducing their roles but the bad weather is impacting of these modern systems (bursting of tires, overheating engines) hence there is a future for their activities

Nomadic Occupancy of Arid Lands: Nomadic traders



Problems/Challenges Associated with Human Occupation/ Living in the Arid and Semi-Arid Regions

- **Water Stress** – low water resources availability/pollution refer to previous lectures
- **Scarcity of Food** – low rainfalls, poor soils, poverty etc



Problems/Challenges Associated with Human Occupation/ Living in the Arid and Semi-Arid Regions

- **Harsh Climatic Conditions/Environmental Stresses:**
excessive heat load on the human body. Through continuous sweating and intake of fresh water, the salt concentration in the body falls and causes severe headaches and cramping of muscles.
 - excessive skin exposure to sunlight, resulting not only in water loss, but also in photo-chemical lesions (blisters) and possible skin cancers.
 - A related problem is eye-strain and possible blindness from the reflected glare of light-coloured ground surfaces under high sunlight.

Problems Associated with occupancy in arid lands

- **Geomorphological hazards:** Need to site settlements close to water bodies; many disasters are related to flooding particularly flash floods and mud flows



Death Valley, July 15, 1999



Las Vegas Flash Flood

Problems Associated with occupancy in arid lands

- **Psychological Stresses:** isolation and lonely life (mainly only men). Harsh weather and lack of entertainment.
- **Services and Transportation** – absence and poor road networks, lack of telecommunication facilities etc,