

## Subject Guide

# UD528: PLANNING AND DEVELOPMENT IN ARID - ZONES

Tutor: Professor Charles Choguill  
Dr. Mezyad Alterkawi

Office: Room 2120  
Telephone: 050 922 9250  
Electronic mail: [habitat@ksu.edu.sa](mailto:habitat@ksu.edu.sa), cchoguill@hotmail.com

Duration and mode of subject: 14 weeks by seminar on Mondays 9-12, First Semester 2007-2008.

Credit points: 3

## Subject Description

This subject is designed to provide an overview of the issues involved with the planning for arid and desert regions in a country such as Saudi Arabia. Emphasis is placed on the linkages between policy and the desert, as well as rural and urban impacts. Traditionally, urban planning in Saudi Arabia has been initiated by the construction of a master plan, or more recently, a structure plan. This course is designed to broaden that approach, examining such features as desert life and water constraints, how Saudi Arabian deserts formed, their carrying capacity, and issues concerning the sustainability of urban and rural activities. It is only once these basic principles are established that the preparation of a physical plan becomes possible.

## Objectives/Learning Outcomes

The objective of this subject is to give students insight into the planning issues involved in arid and desert regions of Saudi Arabia. By the end of the series of seminars, students should have an understanding of the intricate nature of desert regions and how they were formed, the geology of Saudi Arabia, the seriousness of water constraints, and an understanding of the concepts of carrying capacity and sustainability. In addition, certain planning issues that arise within such a context will be examined for relevance, including the National Spatial Strategy, urban containment and structure planning. As the seminar will be conducted in English, it will also provide the opportunity for students to improve their language skills within a supportive environment.

## Assessment

The assessment of this subject will be based on two elements:

### 1. Presentation of a Seminar on the Approaches to Planning of a Small Town in the Najd Region of Saudi Arabia.

The objective of your presentation will be to present to the members of the seminar how you would organize and approach a planning project designed to create a 'structure plan' for a fairly small, rural-based place in central Saudi Arabia. **This presentation will constitute 75% of your assessment for the course.** These seminar presentations will be in the last 3 weeks of the semester.

Your presentation should last about one hour, and you can use Power Points if you feel this would be an advantage (although it is not required). Unfortunately, the seminar presentation will have to be in English.

You will be expected to focus your analysis on one of the surrounding small towns in this region: Dirab, Duruma, Bawdah, Al 'Uyaynah, Al Jubbayolah, Al Hair, Huraymala, Jaww or Al Ghutghut. There are enough small towns so that each of you can concentrate on a different town, which will make the seminars more interesting. It is unlikely that your seminar presentation will be successful if you have not spent at least some time in one of these towns, studying the situation. You will also

probably want to collect whatever data is available from the Deputy Ministry of Town Planning.

The assessment of your seminar presentation will be based on the following points:

1. A justification for why you have selected the town that you have chosen.
2. Why you consider the town to be located in an arid/desert area, highlighting any peculiar characteristics of the location.
3. Your overview of the natural characteristics of the surrounding region and the environmental constraints that exist on any urban activity/expansion.
4. The stability of the geology/geography of the area you have chosen (i.e., is it likely to be overrun by sand dunes?)
5. Your consideration of the carrying capacity of the urban place and its surrounding vicinity for added population/economic activity.
6. Your assessment of the local water sources and their potential for facilitating urban/economic expansion.
7. Your assessment of the agricultural potential of the area you have chosen.
8. Your assessment of any other economic potential that exists within the town and its vicinity.
9. Your assessment of the sustainability of the proposed development, which will necessarily involve you in defining what you mean by 'sustainability'.
10. Your consideration of the key planning issues that have to be taken into account before the construction of a plan can begin, such as an appropriate urban containment policy and a consideration of the constraints of the National Spatial Strategy.
11. The approach you would use for the construction of a structure plan, including what you mean by the term 'structure plan'.
12. The elements that you would intend to include in the structure plan. You will not be expected to present a detailed structure plan for your area. It is assumed that you have picked up the essential elements required for constructing a plan when you were an undergraduate. Our objective here is merely to establish the framework within which a structure plan could be constructed. You will probably wish to present an outline plan, but detail, beyond the principles, is quite unnecessary.
13. Any proposal you may wish to make concerning the involvement of town residents in the decisions relating to your plan.

In deriving your assessment for your presentation, these points will be given equal weight.

Following the presentation, there will be a discussion on what you have proposed, with questions from the class. I would appreciate it (although I do not require it) that you give to me a copy of your PowerPoint diskette at the end of the presentation.

**2. The second part of your assessment will be based upon your seminar participation and will amount to 25% of your final mark.** Rather than having a series of lectures, we will meet each week as a seminar. You will be expected to have read the material for each seminar (the material will be given to you on a CD) and to contribute to the discussions that take place. You will also be expected to ask questions of your classmates when they make their seminar presentations at the end of the semester.

Plagiarism, or the copying of work from others without acknowledgment, will not be tolerated, and is grounds for expulsion from the subject and course.

The standard grading system in operation at King Saud University will be used in this subject:

A+	96-100
A	90-95
B+	85-89

B	80-84
C+	75-79
C	70-74
D+	65-69
D	60-64
F	less than 60

## Study Program

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## Seminar Outline and Readings

**Week 1: Introduction:** In this session, an overview of the course will be presented and procedures to be followed will be outlined. Readings for the course, to the extent they are available, will be distributed.

**Week 2: Arid Regions and Deserts, An Overview:** Can such regions be defined? If so, how? Are they common in countries other than Saudi Arabia?

### Readings:

1 United Nations Environment Programme, Global Desert Outlook, Chapter 1, Appendices 1 and 2. This report has only recently appeared. Although for our purposes, we will be reading no more than 4 chapters, you may wish to read the rest of this report, given its relevance to Saudi Arabia.

2 D. Noin and J. I. Clarke (1998), 'Population and Environment in Arid Regions of the World', in J. I. Clarke and D. Noin (eds.), Population and Environment in Arid Regions, Paris: UNESCO. This is a standard work from the UNESCO Biosphere Programme, focusing on Arid Regions.

**Week 3: The Geology of Saudi Arabia:** How did Saudi Arabia come to be like it is? What are the underlying forces which are at work?

### Readings:

3 Andrew Thompson (2000), 'From Stone to Bronze', Chapter 5 in Origins of Arabia, London: Stacey International. Read additional chapters in this fascinating book if you have the time. It is available in virtually all Riyadh book stores.

**Week 4: The Concept of Carrying Capacity:** This week's seminar is devoted to developing an extremely important concept, 'carrying capacity'. In marginal areas, this concept is extremely important as a guide to development.

### Readings:

4 Carrying Capacity Network, 'What is Carrying Capacity?' (Internet resource).

5 Garrett Hardin (1992), 'The Tragedy of the Commons', Chapter 4 in A. Markandya and Julie Richardson, Environmental Economics, London: Earthscan, pp. 60-70. Originally published in Science, 162, 1968.

6 Seidl and C. A. Tisdell (1998), 'Carrying Capacity Reconsidered: From Malthus' Population Theory to Cultural Carrying Capacity', Economic Issues, 4.

7 International Institute for Sustainable Development, 'Carrying Capacity', (Internet resource)

### Background reading if required:

8 Wikipedia, 'The Logistic Function' (Internet resource).

**Week 5: The Problem of Water in Arid Regions:** This week we try to come to an understanding of

the Saudi Arabian water problem and to determine its constraints on urban growth and economic development. Saudi Arabia is a dry country with no rivers, little rainfall and underground aquifers the recharge only very slowly. Should this pose a constraint to development?

### **Readings:**

9 Shobha Shetty (ca. 2003), 'Kingdom of Saudi Arabia, Future Vision of the Saudi Economy, Agriculture and Water Resource Management: Issues and Options', A World Bank Discussion Paper. This is an excellent overview of the water and agricultural situation in Saudi Arabia in terms of the 7<sup>th</sup> Development Plan.

10 Masahiro Murakami (1995), 'Seawater Desalination in the Arabian Gulf Countries', Section 2.9 in Managing Water for Peace in the Middle East, United Nations University. This is a brief, well-informed overview of the desalinization technology, its feasibility, geographic development and economic structure.

11 Masahiro Murakami (1995), 'Non-Renewable Groundwater Development in the Middle East', Section 2.7 in Managing Water for Peace in the Middle East, United Nations University. This chapter is an overview of the groundwater situation in the Middle East.

12 Charles; Choguill (2004), Extracts on Water and Agriculture from 'A Vision for Al-Qasim', Regional Study for Al-Qasim, Mousalli Consult for the Ministry of Municipal and Rural Affairs. This paper is an effort to come to an understanding of the water and agricultural situation in one Saudi Province and to make a crude estimate of remaining water availability.

13 Walid A. Abderrahman (ca. 1997), 'Water Demand Management in Saudi Arabia', Chapter 6 in Water Management in Islam, Ottawa: IDRC. This is an important paper on the water availability and use in Saudi Arabia.

1 United Nations Environment Programme, Global Desert Outlook, Chapter 4.

**Week 6: The Problem of Sustainability:** Now that we understand 'carrying capacity', as well as the primary constraint to development in Saudi Arabia, water, it is time to put these together and consider the idea of 'sustainability'. Although originally thought of as a macro-economic development concept, the ideas can be applied to human settlements, thus having an affect on approaches to urban planning. A key idea in sustainability is the concept of the ecological footprint.

### **Readings:**

14 Charles Choguill (1993), 'Sustainable Cities: Urban Policies for the Future', Habitat International, 17:3, 1-12.

15 Charles Choguill (2006), 'Assessing the Urban Sustainability of Riyadh', Keynote Paper for Jeddah International Urban Forum and Exhibition, 18 April.

16 G. Cornelis van Korten and Erwin H., Bulte (2000), 'The Ecological Footprint: Useful Science or Politics?' Ecological Economics 32, 385-89.

17 The Regional Environmental Center for Central and Eastern Europe, 'Advantages of Sustainable Cities' (Internet resource).

18 The Regional Environmental Center for Central and Eastern Europe, 'What is a Sustainable City' (Internet resource).

19 The Regional Environmental Center for Central and Eastern Europe, 'Problems and Pressures' (Internet resource).

20 The Regional Environmental Center for Central and Eastern Europe, 'Characteristics of a Sustainable City' (Internet resource).

21 The Regional Environmental Center for Central and Eastern Europe, 'Barriers to Creating Sustainable Cities' (Internet resource).

1 United Nations Environment Programme, Global Desert Outlook, Chapter 6.

**Week 7: Placing Human Settlements in Arid/Desert Regions:** We now turn to the establishment

and planning of cities in arid regions. We begin with some of the general ideas that have to be taken into account concerning placement, location and interconnections.

**Readings:**

22 Gideon Golany (1978), 'Planning Urban Sites in Arid Zones: The Basic Considerations', Chapter 1 in Gideon Golany (ed.), Urban Planning for Arid Zones, American Experiences and Directions, New York: Wiley, 3-21.

23 Helmut E. Landsberg (1978), Planning for the Climatic Realities of Arid Regions, Chapter 2 in Gideon Golany (ed.), Urban Planning for Arid Zones, American Experiences and Directions, New York: Wiley, 23-37.

**Week 8: Human Physiological and Physical Dimensions of Arid Region Settlements:** In this seminar, we will discuss the human adaptation aspects of urban development in arid/desert regions. Development in such areas requires certain special considerations. These will be identified and their significance assessed.

**Readings:**

24 Eliezer Kamon (1978), 'Physiological and Behavioral Responses to the Stress of Desert Climate', Chapter 3 in Gideon Golany (ed.), Urban Planning for Arid Zones, American Experiences and Directions, New York: Wiley, 41-60.

25 John I. Yellott and Daniel Aiello (1978), 'The Arid West and Human Responses to it', Chapter 4 in Gideon Golany (ed.), Urban Planning for Arid Zones, American Experiences and Directions, New York: Wiley, 61-74.

**Week 9: Case Studies of Arid Region Development from the Arabian Gulf Region:** This week, we will examine three case studies of development issues from Saudi Arabia and Jordan. These are the Jordan Badia Programme, a generalized study of urbanization and development from the Arabian Gulf Region, and a study of the problems of urban areas in Saudi Arabia.

**Readings:**

26 Peter Beaumont (1989), 'Rapid Economic Development in the Gulf: The Impact of Oil Revenues', Chapter 9 in Drylands, Environmental Management and Development, London: Routledge, 332-56.

27 Roderic W. Dutton (1998), 'The Jordan Badia Programme: Population-Environment Interactions', Chapter 16 in J. Clarke and D. Noin (eds.), Population and Environment in Arid Regions, Paris, UNESCO, 305-30.

28 Charles Choguill (2006), 'A Survey of Saudi Arabian Urban Problems', Journal of King Saud University, Architecture and Planning Section (forthcoming).

**Week 10: Issues Involved in Planning Saudi Arabian Urban Areas:** This seminar will focus on a series of planning issues that are of ultimate importance in planning in Saudi Arabia. They include the Saudi Arabian National Spatial Strategy, the problem of urban containment and various aspects of structure planning. The readings will give some idea of how other nations deal with these issues.

**Readings:**

Ministry of Municipal and Rural Affairs, Deputy Ministry for Town Planning (2001), National Spatial Strategy 1422H – 2001 AD, Riyadh.

29 Mir Anjum Altaf (1994), 'Household Demand for Improved Water and Sanitation in a Large Secondary City', Habitat International, 18:1, 45-55.

30 Vary T. Coates (1977), 'The Future of Rural Small Towns: Are they Obsolete in Post-Industrial Society?' Habitat, 2: 1-2, 245-58.

31 Dennis A. Rondinelli (1986), 'Metropolitan Growth and Secondary Cities Development Policy', Habitat International, 10:1-2, 263-71.

32 Arthur C. Nelson and Thomas W. Sanchez (2005), 'The Effectiveness of Urban Containment Regimes in Reducing Exurban Sprawl', DISP, 160.

33 Susie Gabrelson, Jeff Yorg and Richard Keith (ca 1998), 'Urban Containment Principles: Services, Growth Boundaries and Zoning' (Internet resources).

34 'Structure Planning: Three Key Principles to Structure Planning', (Structure planning in Australia, internet resource).

35 The RMA Planning Resource, 'Structure Planning' (Structure planning in New Zealand, Internet resource).

36 The RMA Planning Resource, 'Guidance on the Plan Development Process' (Structure planning in New Zealand, Internet resource).

37 The Scottish Executive (1983), Town and Country Planning (Structure and Local Plans)(Scotland) Regulations 1983, Circular 32/1983, Annex A.

38 The Scottish Executive (1983), Town and Country Planning (Structure and Local Plans)(Scotland) Regulations 1983, Circular 32/1983, Annex C.

**Weeks 11, 12, 13: Your seminar presentations.**