

# Colorado Basin

Colorado Scheme - Benefits / Problems

# River Basin Management

**By the end of this section you should be able to :**

- Describe and explain the benefits and problems of the Colorado scheme.
- Use a range of resources.
- Extract information from given resources.
- Write, redraft and assess your answers against set criteria.

# River Basin Management

## Colorado Scheme - Benefits / Problems

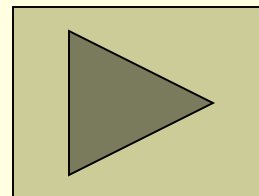
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# River Basin Management

## Colorado Scheme - Benefits / Problems

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This is the big question!

- A review of the past papers will show that this is core knowledge.
- You need to master one management project.
- What I shall do is provide you with the master set of key points that you can use for the Colorado.

# River Basin Management

## Colorado Scheme - Benefits / Problems

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### Thinking Skills Activity

- Open the pack with the fact slips..
- Place the slips face up on the desk.
- Sort the facts into as many groups as you see fit.

Be prepared to give reasons for your choices.

# River Basin Management

## Colorado Scheme - Benefits / Problems

1. Flood Control – the dams like Parker, Hoover and Lakes Mead and Powell allow water to be controlled.

2. Reduced deaths and damage from flooding  
Damage from flooding reduced. Water in the river downstream now generally at the same level.

3. Power – HEP Hoover, Davis, Parker etc..  
Create HEP supplies to ½ million homes. Pays for the cost of supplying water to farmers.

### Benefits of the Colorado Scheme

4. Increase in electricity availability has improved the quality of life and increased recreational and recreation opportunities (California).

5. Recreation – encourages the tourist industry e.g Lake Mead – fishing, boating, caravan sites. Lake Mead has 6 marinas.

6. World famous dams attract tourists. Scenery improved (e.g. attractive lake landscape).

# River Basin Management

## Colorado Scheme - Benefits / Problems

7. Agriculture – a greater variety of crops are now grown – alfalfa and citrus crops, vegetables.

8. The Imperial valley is the largest area of irrigated land in the USA, providing the possibility for food surpluses, double cropping, growing new cash crops and increasing yields

9. Output has increased with the amount of suitable land for irrigation.

### Benefits of the Colorado Scheme

12. Employment opportunities created in tourism, fishing, construction

10. Water Supply – canals like the Colorado Aqueduct supply water to LA, San Diego, Tucson, Phoenix etc... drinking water, lawn irrigation, swimming pools etc.... Growing populations can be supported. (40 million people drink water from the Colorado River).

11. Industry – mining and mineral industries in Arizona, Electronics industries. Improve communications (e.g. roads across dam, ferries) HEP allowing industrial development with jobs, money and exports.

# River Basin Management

## Colorado Scheme - Benefits / Problems

13. Wildlife – artificial lakes and sanctuaries for water fowl e.g Lead Mead - 250 species found around the lakes recreational areas. New habitats created, especially around the dam and reservoir

14. Sediment control – Hoover dam traps sediment – Dams like the Imperial Dam have desilting facilities.

15. Political cooperation - Encourages co-operation and partnerships (e.g. USA/Mexico). Costs can be shared between countries./states

Benefits of the Colorado Scheme



# River Basin Management

## Colorado Scheme - Benefits / Problems

1. Salinity – the amounts of salts in the soil have risen – increased when water stored in reservoirs due to evaporation – very obvious in Mexico.

2. Water Loss – reservoirs lose water through evaporation and seepage. Lake Powell – layers of sandstone – seepage. High evaporation resulting in water loss (25% of water lost through evaporation in the Colorado). Micro climatic changes and the hydrological cycle altered

Problems still to be overcome

3. Water Waste – farmers use most water 45% of the land grows crops which are surplus. Overuse of the available water (e.g. the Colorado dries up).

4. Groundwater supplies of Groundwater being used at An increasing rate – drop In the water table can cause subsidence.

5. Increased water pollution from farming, industry and settlement.

# River Basin Management

## Colorado Scheme - Benefits / Problems

6. Water Politics – management schemes tend to be about politics rather than good management of the resource. Politicians want to attract votes from farmers and others by promoting new developments.

7. Increased soil erosion on riverbanks below dam.

8. Problems over how to allocate water resources and costs persist.

Problems still to be overcome

9. Problems over dealing with pollution. Complex legislation to solve disputes.

11. Environmental damage – natural wildscapes destroyed e.g beavers from Tucson. Birdlife in Colorado Delta disappeared. With loss of historic sites tourism may decrease.

10. Silting of the reservoirs. Loss of alluvium deposited downstream. Over watering resulting in water logging and increased salinity.

# River Basin Management

## Colorado Scheme - Benefits / Problems

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### Thinking Skills Activity

#### Phoenix Mystery

Why is Jeff Ridges (from Phoenix) annoyed that his water bill has gone up again?

- Open the pack with the fact slips..
- Place the slips face up on the desk.
- Sort the facts into as many groups as you see fit.

Be prepared to give reasons for your choices.

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# River Basin Management

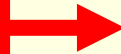
## Colorado Scheme - Benefits / Problems

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As a follow -up to the Phoenix Mystery we will now watch the video:

Oases in the desert Pt 2.

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# River Basin Management

## Colorado Scheme - Benefits / Problems

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### Typical Questions.

For your chosen River Basin Management Scheme describe and account for the Benefits and Adverse consequences of the scheme. You should refer to Social, Economic, Environmental and Political Consequences. (17 marks)

Or

(i) For the Lesotho Highlands Water Project or water control projects in an African or North American river basin you have studied, describe and account for the social, economic and environmental benefits and adverse consequences. (12 marks)

Plus

(ii) The Lesotho Highlands. Water Project is one of many around the world which cross the political boundaries of two or more countries or states.

Giving examples from Africa or North America, describe these problems which this can lead to and suggest ways in which they may be overcome (5 marks)

# River Basin Management

## Colorado Scheme - Benefits / Problems

### Task 10 - Homework 5

For your chosen River Basin Management Scheme describe and account for the Benefits and Adverse consequences of the scheme. You should refer to Social, Economic, Environmental and Political Consequences. (17 marks)

#### Checklist

Did you remember to:

1. select and name one water management scheme - Colorado
2. describe aspects of the scheme.
3. account for all the aspects described.
4. mention benefits of the scheme.
5. mention adverse consequences of the scheme.
6. specifically talk about social benefits and adverse consequences.
7. specifically talk about economic benefits and adverse consequences.
8. specifically talk about environmental benefits and adverse consequences.
9. specifically talk about political benefits and adverse consequences.
10. link the various aspects together.

Assess your self  
at this point.

Go back if necessary and  
add extra information.

# River Basin Management

(db) - description of benefit  
(dadv) - description of adverse consequence  
(ab) - account of benefit  
(aadv) - account of adverse consequence.

## Colorado Scheme - Benefits / Problems

### Task 10 - Homework 5

Compare your answer with this example.

Possible answer

In the case of the Colorado Water Basin Management Scheme there have been many advantages and disadvantages. As far as social advantages are concerned the scheme has provided water for huge numbers of people(db). Water is supplied to Los Angeles, and also to the cities of Tucson, San Diego and Phoenix(db); this water allows people to have swimming pools, pleasant neighborhoods with lakes, golf courses etc(db) thus ensuring that the quality of life for people in desert areas is high(db). The scheme also allows for the opportunity for recreation(db), for example around Lake Mead there are facilities for fishing, boating, camping and caravanning. Lake Mead itself has 6 marinas(db).

More electricity is now available from the power stations (db)built at the dams and as a result air conditioning systems are widespread(db). In the Colorado Basin there are no significant social dis-advantages except that cities have expanded to such an extent that new highways are having to be built (dadv)to cope with the increase in traffic (dadv)and as a result people are losing their homes to allow for the building (dadv)of these roads. There is also such a demand for water that there will soon be problems in providing enough water(dadv)for cities like Phoenix.

Dams have provided water for irrigation (lab)and as a result farming has benefited (lab)greatly. In the Colorado Basin crops like Alfalfa and Citrus fruits are grown and the Imperial Valley is one of the largest irrigated areas in the USA(db).

Jobs have been created(db) because of the availability of HEP especially in the High Tech Industries in Tucson and Phoenix(lab). These are all economic advantages. There are several economic disadvantages. Firstly the cost of providing this water and power(dadv); the initial cost (laadv)of building the dams and maintaining them(laadv) is very high and 45 of the farm crops which are grown are surplus(laadv).

Environmental advantages include the creation of new bird and waterfowl sanctuaries(db) thanks to the creation of artificial lakes like Lake Mead(lab). However many people feel that the natural wildscape of the Colorado has been destroyed(laadv). Many animals and birdlife have lost their natural habitats(dadv). Further environmental disadvantages include the increased the increased salinity of the water(dadv), which is increased when water is stored in reservoirs and evaporation is increased(laadv). This problem is very obvious where the Colorado enters Mexico(dadv). Other environmental problems are the silting up of the reservoirs(dadv) and increased loss due to evaporation(laadv).

Political difficulties occur as a result of the fact that in the case of the Colorado a number of different states are involved and also Mexico(dadv). It took years for agreement(laadv) to be reached on sharing costs and allocation of water. There continue to be problems and disagreements with smaller states feeling that California gets more than its fair share of water(laadv).

# River Basin Management

## Colorado Scheme - Benefits / Problems

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### Task 11 - Homework 6

The Lesotho Highlands. Water Project is one of many around the world which cross the political boundaries of two or more countries or states.

*Giving examples from Africa or North America, ` describe this problems which this can lead to and suggest ways in which they may be overcome (5 marks)*



# River Basin Management

## Colorado Scheme - Benefits / Problems

### Task 11 - Homework 6

The Lesotho Highlands. Water Project is one of many around the world which cross the political boundaries of two or more countries or states.

*Giving examples from Africa or North America, ` describe this problems which this can lead to and suggest ways in which they may be overcome (5 marks)*

### Checklist

Assess your self  
at this point.

Did you remember to:

1. select and name one water management scheme - Colorado
2. mention those involved.
3. describe various problems.
4. how these problems affect different States/Countries.
5. mention solutions to the problems.
6. specifically talk about political benefits and adverse consequences.
7. link the various aspects together.

Go back if necessary and  
add extra information.

# River Basin Management

(d) - description

(s) - suggestion

## Colorado Scheme - Benefits / Problems

### Task 11 - Homework 6

Compare your answer with this example.

The Lesotho Highlands. Water Project is one of many around the world which cross the political boundaries of two or more countries or states.

*Giving examples from Africa or North America, describe this problems which this can lead to and suggest ways in which they may be overcome (5 marks)*

#### **Possible answer**

Political difficulties occur as a result of the fact that in the case of the Colorado a number of different states, including Colorado, Utah, Arizona, New Mexico and California, are involved as well as Mexico(✓d). The main problem lies around the allocation of water to all and the cost each should contribute(✓d). It took years for agreement(✓s) to be reached on sharing costs and allocation of water(✓s). However, there are still problems and disagreements with smaller states(✓d) feeling that California gets more than its fair share of water(✓d). Mexico feels that it has got a raw deal(✓d). Once the waters of the Colorado reached the Gulf of California and Mexico got a share, now with increasing demand in the US to use the waters of the Colorado Mexico's share could in the future be far less(✓d). Open conflict is not an option in this area so the various States and Mexico use all the various political pressures(✓s) they can to get federal political influence on their side so funds can be allocated to meet their perceived needs(✓s). The basic problem is there is insufficient water(✓d) to meet all the increasing demands, no agreement will give everyone what they want. Maybe political agreement has to be reached that forces a reduction in the amount of water used through various conservation measures(✓s).

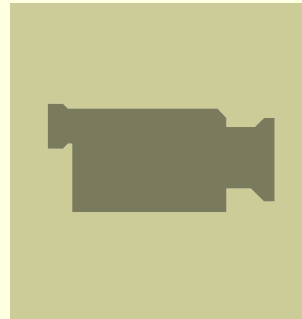
# River Basin Management

## Colorado Scheme - Benefits / Problems

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# River Basin Management

## Colorado Scheme - Benefits / Problems

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As a summary we will now watch the video:

Miracle of Water

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